



**DOCTORATE in BUSINESS ADMINISTRATION**

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**DIGITAL SERVICES PLATFORM STRATEGY  
A QUALITATIVE SYSTEM DYNAMICS APPROACH  
WITH GROUNDED THEORY FOR PLATFORM-BASED  
ECOSYSTEMS**

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## **DEDICATION**

To my daughters and my wife. Very special thanks for inspiring me to make a better future for our lovely family with this “Executive DBA”.

## **ACKNOWLEDGEMENT**

To my supervisor, my academic advisor and my professors, and the supporting team. Very special thanks for helping me during the long “Executive DBA” exciting, enjoyable, and challenging learning journey.

## ABSTRACT

The digital platforms business model appeared several years ago as a new business model that helps organizations expand beyond their physical limitations and achieve new levels of success. Later on, digital platforms became a catalyst for strategic success not only on the single organization level but also on the level of a full cooperating digital business ecosystem, in what is called the digital platform-based ecosystems. Currently, giant digital platform enterprises have the highest market value of all companies all over the world, with some of them are orchestrating the value creation, delivery, and capturing across complex ecosystems.

However, digital platforms usually have the winner-takes-all syndrome, which means that the competition between market players is usually severe and sometimes bloody. This leads to and shifts the focus towards the strategy that was employed either behind the winner-takes-all success or behind the go-out-of-business failure.

This academic and business research project aims to introduce a rupture grounded theory that provides a holistic framework for strategy formulation and implementation. The discovered theory is going to be a general substantive prescriptive theory, which is going to help practitioners and decision-makers navigate a series of strategic choices for designing and operating the digital platforms that orchestrating value dynamics in a completely enabled ecosystem. Hence, with this discovered/generated explicit knowledge theory, the strategy formulation and implementation for designing and operating these digital services platforms are no longer going to be an ad-hoc nor a black box mission that depends on the tacit knowledge in the mind of platform owners or operators. Furthermore, they will be able to link the initial optimistic sky-limited visions and strategic choices to the most daunting down-to-earth implementation action items.

To manage the scope of the research, this research is going to be limited to establishing digital services platforms as a new venture, either by a well-established organization or by a well-funded project, which excludes typical entrepreneurship challenges as well as the original digital maturity of the owner/operator organization. In addition, the research is going to be conducted from the demonstrative-inductive approach/constructivism paradigm theoretical perspective, with the classical grounded theory as a holistic research methodology. Mixed methods are going to be used for data collection including case studies along with suitable several data analysis techniques, such as Gioia Method.

The research project is going to capitalize on the latest state-of-the-art and leading globally recognized case studies for the digital platform-based ecosystems divided into two substantive areas. The first substantive area that is related to the literature as secondary data contains any case study found in the literature according to the carefully designed screening protocol as well as a set of successfully proved and published empirical case studies that dominated the economic cycle ended with the 2007 American great recession. On the other hand, the second substantive area focuses on the “UBER Technologies Inc.” as a single case design from an empirical point of view.

Actually, UBER Technologies Inc. was selected as a single case study design because the UBER digital platform is a platform from the "Services/Transactions" type as well as it orchestrates a digital services platform-based ecosystem whose size is huge in comparison to the original physical organization and it is totally separated from the original physical owning organization. Furthermore, the UBER digital platform has one of the highest market capitalization among many well-known transactions digital services platforms worldwide, which can be considered as a proxy for how successfully UBER has been able to achieve the desired success. With no comparable competitors within the transportation services industry, this market capitalization can also be considered as a proxy for achieving the winner-takes-all syndrome. This means that UBER strategy is one of the best-fit answers for the research question of this DBA thesis and through its strategy, it was able to both survive and thrive in the new generation of the digital platform-based ecosystems economy.

Regarding the literature review, there is no conducted extensive literature review upfront, however, and as recommended by the classical grounded theory, the literature review is used to support the emergence of the classical grounded theory around the emerged core category related to the initially determined core concern. In this DBA thesis, the emerged core category is the ability of the digital service platform to achieve the ultimate success key performance indicator (i.e. the network effect), while the initially determined core concern is the ability of the digital service platform to survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy. Of course, through a classical grounded theory about the strategy formulation and implementation that will be discovered in this DBA thesis.

The remaining of the DBA thesis is going to give the details for the research objectives and question, the desired theory type for the discovered theory, the research scope and critical business considerations, the expected theoretical and practical contributions as well as the managerial implications. Then, the research epistemology and research paradigm will be determined plus shedding some light on the birth of the research idea. This is going to be followed by a detailed description of the research methodology, methods and techniques, and the research domains/substantive areas as well as a rationalized explanation about the role and contribution of the literature and literature review in the whole research project. Finally, the different stages of the research project will be presented, including the transition from the thin version of the discovered theory to the full version of the discovered theory including two upgrading processes.

## KEYWORDS

Digital Platforms  
Services Platforms  
Platforms Strategy  
Classical Grounded Theory  
Platform-Based Ecosystems  
Qualitative System Dynamics

## RÉSUMÉ

Le modèle commercial des plateformes numériques est apparu il y a plusieurs années comme un nouveau modèle commercial qui aide les organisations à dépasser leurs limites physiques et à atteindre de nouveaux niveaux de réussite. Plus tard, les plateformes numériques sont devenues un catalyseur de succès stratégique non seulement au niveau de l'organisation unique, mais également au niveau d'un écosystème commercial numérique pleinement coopérant, dans ce que l'on appelle les écosystèmes basés sur les plates-formes numériques. Actuellement, les entreprises de plateformes numériques géantes ont la valeur marchande la plus élevée de toutes les entreprises du monde entier, certaines d'entre elles orchestrent la création, la livraison et la capture de valeur dans des écosystèmes complexes.

Cependant, les plateformes numériques présentent généralement le syndrome du vainqueur qui emporte tout, ce qui signifie que la concurrence entre les acteurs du marché est généralement sévère et parfois sanglante. Cela conduit à et déplace l'attention vers la stratégie qui a été employée soit derrière le succès du vainqueur, soit derrière l'échec de la fermeture de l'entreprise.

Ce projet de recherche universitaire et commerciale vise à introduire une théorie fondée sur la rupture qui fournit un cadre holistique pour la formulation et la mise en œuvre de stratégies. La théorie découverte sera une théorie normative de fond générale, qui aidera les praticiens et les décideurs à naviguer dans une série de choix stratégiques pour concevoir et exploiter les plateformes numériques qui orchestrent la dynamique de la valeur dans un écosystème complètement activé. Par conséquent, avec cette théorie de la connaissance explicite découverte/générée, la formulation et la mise en œuvre de la stratégie pour la conception et l'exploitation de ces plates-formes de services numériques ne seront plus une mission ad hoc ni une mission de boîte noire qui dépend de la connaissance tacite dans l'esprit de la plate-forme, propriétaires ou exploitants. En outre, ils seront en mesure de lier les visions optimistes initiales limitées et les choix stratégiques aux éléments d'action de mise en œuvre terre-à-terre les plus intimidants.

Pour gérer la portée de la recherche, cette recherche se limitera à établir des plates-formes de services numériques en tant que nouvelle entreprise, soit par une organisation bien établie, soit par un projet bien financé, ce qui exclut les défis typiques de l'entrepreneuriat ainsi que l'original maturité numérique de l'organisation propriétaire/exploitant. En outre, la recherche sera menée du point de vue théorique de l'approche démonstrative-inductive/du paradigme du constructivisme, avec la théorie ancrée classique comme méthodologie de recherche holistique. Des méthodes mixtes seront utilisées pour la collecte de données, y compris des études de cas ainsi que plusieurs techniques d'analyse de données appropriées, telles que la méthode Gioia.

Le projet de recherche va capitaliser sur les dernières études de cas de pointe et reconnues mondialement pour les écosystèmes basés sur des plates-formes numériques, divisés en deux domaines importants. Le premier domaine de fond qui est lié à la littérature en tant que données secondaires contient toute étude de cas trouvée dans la littérature selon le protocole de dépistage soigneusement conçu ainsi qu'un ensemble d'études de cas empiriques prouvées et publiées avec succès qui ont dominé le cycle économique terminé avec le 2007 Grande récession américaine.



D'autre part, le deuxième domaine de fond se concentre sur les « Technologies UBER Inc. » comme un plan de cas unique d'un point de vue empirique.

En fait, UBER Technologies Inc. a été sélectionnée comme conception d'étude de cas unique car la plate-forme numérique UBER est une plate-forme de type "Services/Transactions" et orchestre un écosystème basé sur une plate-forme de services numériques dont la taille est énorme par rapport à la l'organisation physique d'origine et elle est totalement séparée de l'organisation physique d'origine. En outre, la plate-forme numérique UBER possède l'une des capitalisations boursières les plus élevées parmi de nombreuses plates-formes de services numériques de transactions bien connues dans le monde, ce qui peut être considéré comme un indicateur de la réussite d'UBER à atteindre le succès souhaité. En l'absence de concurrents comparables au sein de l'industrie des services de transport, cette capitalisation boursière peut également être considérée comme un indicateur pour atteindre le syndrome du gagnant rafle tout. Cela signifie que la stratégie UBER est l'une des réponses les mieux adaptées à la question de recherche de cette thèse de DBA et, grâce à sa stratégie, elle a pu à la fois survivre et prospérer dans la nouvelle génération de l'économie des écosystèmes basés sur les plateformes numériques.

En ce qui concerne la revue de la littérature, il n'y a pas de revue de littérature approfondie menée en amont, cependant, et comme le recommande la théorie ancrée classique, la revue de la littérature est utilisée pour soutenir l'émergence de la théorie ancrée classique autour de la catégorie de base émergée liée à la première préoccupation centrale déterminée. Dans cette thèse de DBA, la catégorie de base émergée est la capacité de la plate-forme de service numérique à atteindre l'indicateur de performance clé de succès ultime (c'est-à-dire l'effet de réseau), tandis que la principale préoccupation initialement déterminée est la capacité de la plate-forme de service numérique à survivre et à prospérer. dans la nouvelle génération à venir de l'économie des écosystèmes basés sur les plateformes numériques. Bien sûr, à travers une théorie ancrée classique sur la formulation et la mise en œuvre de la stratégie qui sera découverte dans cette thèse de DBA.

Le reste de la thèse du DBA donnera les détails des objectifs et de la question de recherche, le type de théorie souhaité pour la théorie découverte, la portée de la recherche et les considérations commerciales critiques, les contributions théoriques et pratiques attendues ainsi que les implications managériales. Ensuite, l'épistémologie de la recherche et le paradigme de la recherche seront déterminés et apporteront un éclairage sur la naissance de l'idée de recherche. Ceci sera suivi d'une description détaillée de la méthodologie de recherche, des méthodes et techniques, et des domaines/domaines de recherche ainsi qu'une explication rationalisée du rôle et de la contribution de la littérature et de la revue de la littérature dans l'ensemble du projet de recherche. Enfin, les différentes étapes du projet de recherche seront présentées, notamment le passage de la version allégée de la théorie découverte à la version complète de la théorie découverte incluant deux processus de mise à niveau.

## MOTS CLÉS

Plateformes numériques  
Plateformes de services  
Stratégie des plateformes  
Théorie classique enracinée  
Écosystèmes basés sur des plates-formes  
Dynamique des systèmes qualitatifs

## RESEARCH DESIGN SUMMARY

The following table is going to provide a snapshot of the research design as a brief blueprint, which is going to be explained in detail in the remaining parts of this research proposal. The purpose of this blueprint is to provide a compact bird eye view for the whole proposed research project.

| No | Research Element          | Research Proposal Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A  | Research Objectives       | Rupture theorizing to discover a theory about the digital services platform strategy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| B  | Research Question         | What is the strategy for designing and operating the digital services platform, which helps the platform to both survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy?                                                                                                                                                                                                                                                                                                                                                                       |
| C  | Targeted Theory Type      | <p>The discovered theory will be a general substantive prescriptive theory that:</p> <ul style="list-style-type: none"> <li>- Contains a full set of theory elements, such as why, what, and how as well as the contextual conditions</li> <li>- Is going to saturate from two parallels substantive areas</li> <li>- A prescriptive theory (Type-V), which provides answers to the following elementary questions such as (<i>what should be done?</i>) and (<i>how should it be done?</i>)</li> </ul>                                                                                    |
| D  | Research Scope            | <p>The scope of this research is going to be limited to:</p> <ul style="list-style-type: none"> <li>- New digital services platforms that are being established as a new venture, either by a well-established organization (<i>i.e. Intrapreneurship</i>) or a well-funded project</li> <li>- Assuming funding and managerial/technical skills availability is excluding the typical entrepreneurship and start-ups lack-of challenges</li> <li>- The original digital maturity of the owner and/or operator organization is out-of-scope and is not taken into considerations</li> </ul> |
| E  | Theoretical Contributions | <p>Introducing a rupture grounded theory that provides a holistic framework for strategy formulation and implementation to invite scholars and academics to a novel research line that:</p> <ul style="list-style-type: none"> <li>- Focus on the employing the grounded theory as a holistic research methodology to the field of the</li> </ul>                                                                                                                                                                                                                                          |

|          |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                | <p>digital platforms that enable and provide services to the digital ecosystems</p> <ul style="list-style-type: none"> <li>- Adding value through a well-rationalized research design that utilizes mixed methods and techniques for data collection and analysis</li> <li>- Capitalizing on the latest state-of-the-art and leading globally recognized case studies</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>F</b> | <b>Practical Contributions</b> | <p>Introducing a rupture grounded theory that provides a holistic framework for strategy formulation and implementation to help practitioners and decision-makers navigate a series of strategic choices for designing and operating digital platforms with:</p> <ul style="list-style-type: none"> <li>- Focus on the platforms that enable and provide services in the digital ecosystems economy</li> <li>- Adding value through well-rationalized prescriptive strategic actions</li> <li>- Capitalizing on the latest stat-of-the-art and leading globally recognized case studies</li> </ul>                                                                                                                                                                                                                                               |
| <b>G</b> | <b>Managerial Implications</b> | <p>For practitioners and decision-makers:</p> <ul style="list-style-type: none"> <li>- The strategy formulation and implementation for designing and operating digital services platforms are no longer going to be an ad-hoc nor a black box mission that depends on the tacit knowledge in the mind of platform owners or operators.</li> <li>- By providing a detailed formwork, which starts from the most primitive strategic choices to the most detailed prescriptive strategic actions, they will be able to link the initial optimistic sky-limited visions to the most daunting down-to-earth implementation action items through a logical well-rationalized framework that contains categories of interlinked and interdependent strategic choices/decisions that have a complex dynamic supportive and limiting effects.</li> </ul> |
| <b>H</b> | <b>Epistemology/ Paradigm</b>  | <p>The theoretical perspective will follow:</p> <ul style="list-style-type: none"> <li>- The demonstrative-inductive approach at the extreme edge of the constructivism paradigm</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>I</b> | <b>Literature Review</b>       | <p>To be done to match the classical grounded theory as follows:</p> <ul style="list-style-type: none"> <li>- No up-front extensive literature review</li> <li>- As additional data after discovering the core category</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>J</b> | <b>Research Methodology</b>    | <p>The classical grounded theory as a holistic research methodology</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|          |                                                        |                                                                                                                                                                                                                                                                                                                                                                 |
|----------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>K</b> | <b>Research Roadmap and Domains/ Substantive Areas</b> | <p>Two parallel domains/substantive areas are going to be examined as follows:</p> <ul style="list-style-type: none"> <li>- Theoretical research with classical grounded theory for the peer-reviewed and gray literature as data source</li> <li>- Empirical research with classical grounded theory for a leading globally recognized case studies</li> </ul> |
| <b>L</b> | <b>Data Collection Methods</b>                         | <p>Mixed methods for data collection are going to be used as follows:</p> <ul style="list-style-type: none"> <li>- Holistic single-case study design that use primary and secondary data sources</li> <li>- Peer-reviewed and gray literature as data source</li> </ul>                                                                                         |
| <b>M</b> | <b>Data Analysis Techniques</b>                        | <p>Several techniques for data analysis are going to be used as follows:</p> <ul style="list-style-type: none"> <li>- Gioia Method for rigorous coding structure</li> <li>- Theory Landscaping Review (TLR) as a Theory Mining Review (TMR) for the literature as data sources</li> </ul>                                                                       |

## THESIS STRUCTURE, SECTIONS, LOGICAL FLOW, AND THE POSSIBLE NAVIGATION PATHS

The following figure provides a snapshot and a bird-eye view of the overall “Executive DBA” thesis structure, sections, logical flow, and the possible navigation paths. Due to the relatively lengthy text size, some guidance may reduce the complexity of the thesis as well as maximizing the clearness of the text. As indicated in Figure 1, the thesis includes many chapters that can be classified into three different categories or groups with three different colors.

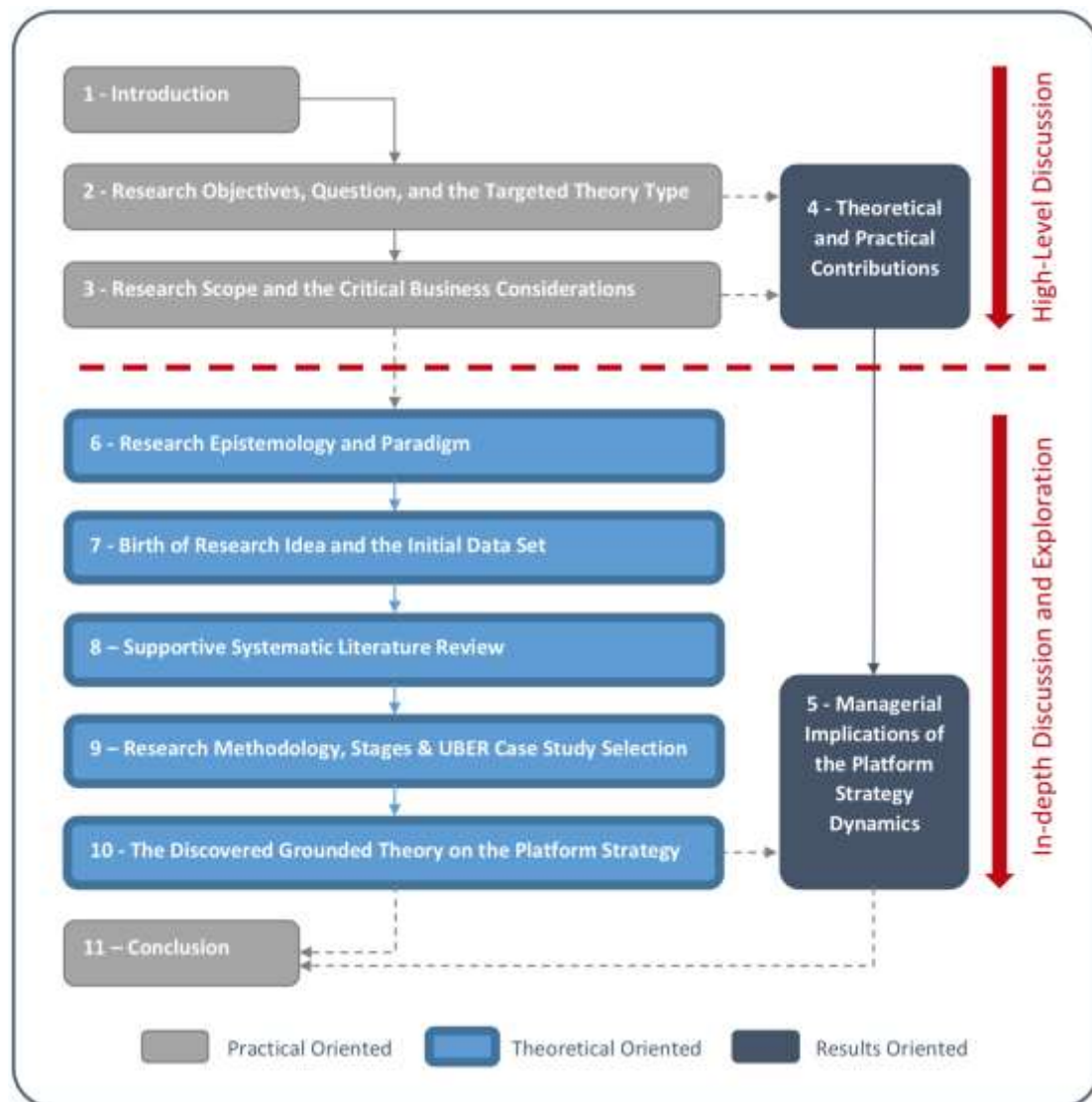


Figure 1: Thesis Structure, Sections, Logical Flow, and the Possible Navigation Paths

They are the practical-oriented chapters, the theoretical oriented chapters, and finally the result-oriented chapters. The total number of chapters is eleven chapters other than and besides the necessary additional appendices.

The first group includes the chapters that focus on discussing the topic from a more practical-oriented point of view by focusing on the business and applied side of the discussed topic and issues. Furthermore, the discussion can be assumed and expected to have a higher-level and more abstraction than other chapters.

These four chapters include the following:

- Chapter-1: Introduction
- Chapter-2: Research Objectives, Question, and the Targeted Theory Type
- Chapter-3: Research Scope and the Critical Business Considerations
- Chapter-11: Conclusions

However, to provide a logical bridge between the disconnected parts, other chapters can be taken as a Logical Bridge. This bridge is provided between the first three chapters and the final Conclusions chapter and is provided through the third category of chapters, which are the Result-Oriented chapters. These two result-oriented chapters include:

- Chapter-4: Theoretical and Practical Contributions
- Chapter-5: Managerial Implications of the Platform Strategy Dynamics

Chapter-4 is from the high-level discussion category that appears above the dotted red line, while the second practical-oriented chapter (i.e. Chapter-5) is from the more in-depth discussion and exploration category.

Hence, to conclude, a more business-focused logical flow can be found through the first possible navigation path for reading, which goes through the practical-oriented chapters 1, 2, and 3 and then goes through the result-oriented chapters 4 and 5. Then, it ends with the practical-oriented conclusion as shown in Figure 2 in the next page with the grey and dark blue colored emphasized chapters.

The third remaining group is the heart of the thesis and represents the more rigorous and academic part of the thesis. These are the theoretical-oriented chapters that range from chapter 6 to chapter 10 in a row. Furthermore, the discussion can be assumed and expected to have a more in-depth-level of discussion and exploration and more details than other chapters. These chapters include:

- Chapter-6: Research Epistemology and Paradigm
- Chapter-7: Birth of Research Idea and the Initial Data Set
- Chapter-8: Supportive Systematic Literature Review
- Chapter-9: Research Methodology, Stages & UBER Case Study Selection
- Chapter-10: The Discovered Grounded Theory on the Platform Strategy

Hence, to conclude the second conclusion, a more academic-focused logical flow can be found through the second possible navigation path for reading, which goes through the practical-oriented chapters 1, 2, and 3 and then goes through the theoretical-oriented chapters 6, 7, 8, 9, and 10. Then, it ends with the practical-oriented conclusion as shown in Figure 3 that appears in the page after the following one due to the size limitation of the typical page with the grey and light blue colored emphasized chapters.

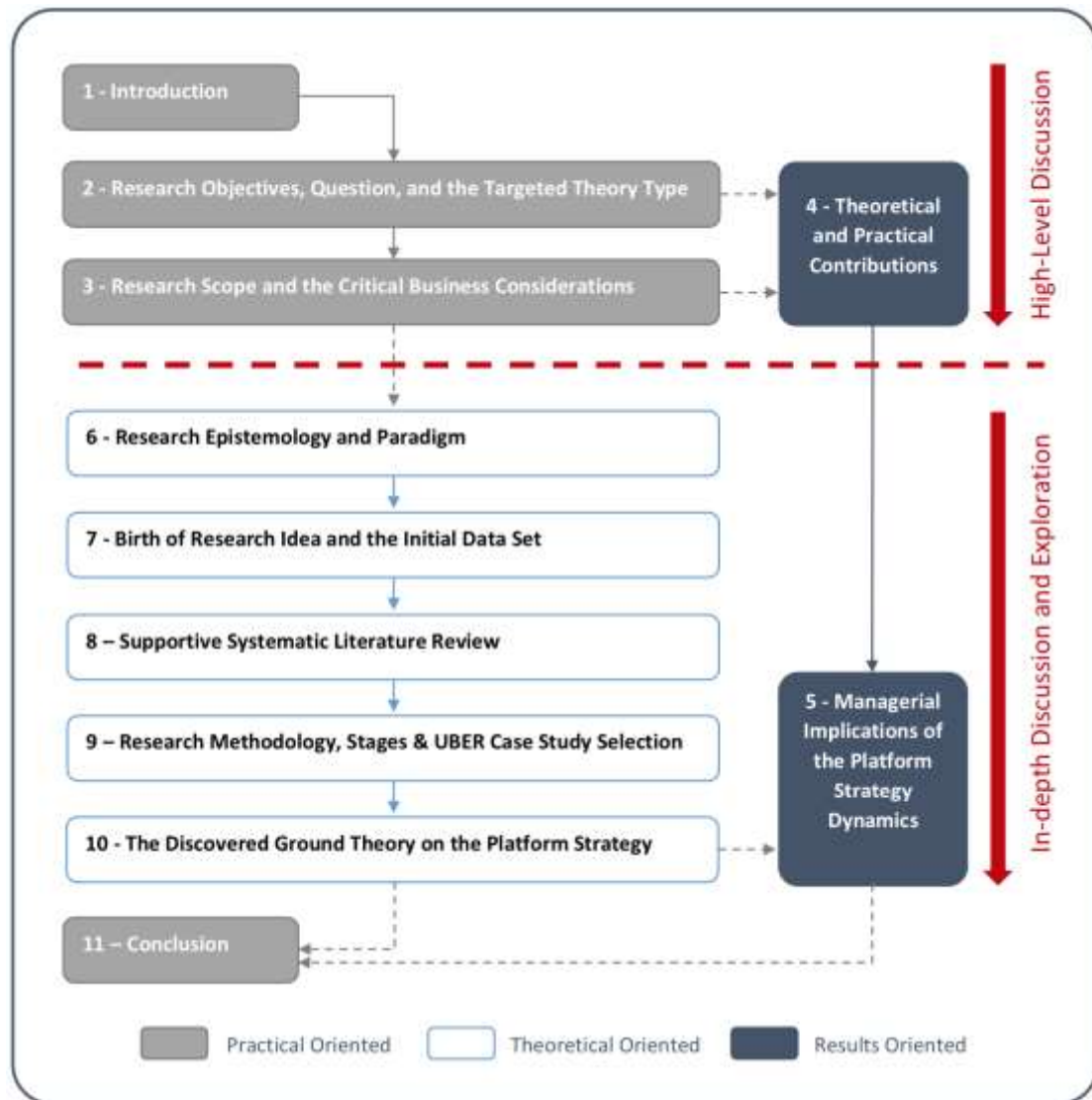


Figure 2: Business-Focused Logical Flow or the First Possible Navigation Path

Of course, to have the full-picture, it is worth mentioning that the normal default navigation path can provide the maximum value by following all chapter in a row without skipping any one of them. This will provide the full mix of the practical-oriented chapters, the theoretical oriented chapters, and the result-oriented chapters along with both levels of depth, which are the high-level discussion and the in-depth discussion and exploration as shown in Figure 1.

The rationale behind selecting this structure is to make it easier for managers, decision-makers, and practitioners, on the executive level, and from outside the academic field to read and grasp the knowledge that was produced from a rigorous academic research project. These managers, decision-makers, and practitioners represent a critical target audience group for the DBA thesis as explained by Beaulieu & Kalika (2020). Actually, this is what is expected from the DBA thesis over the typical PhD thesis.



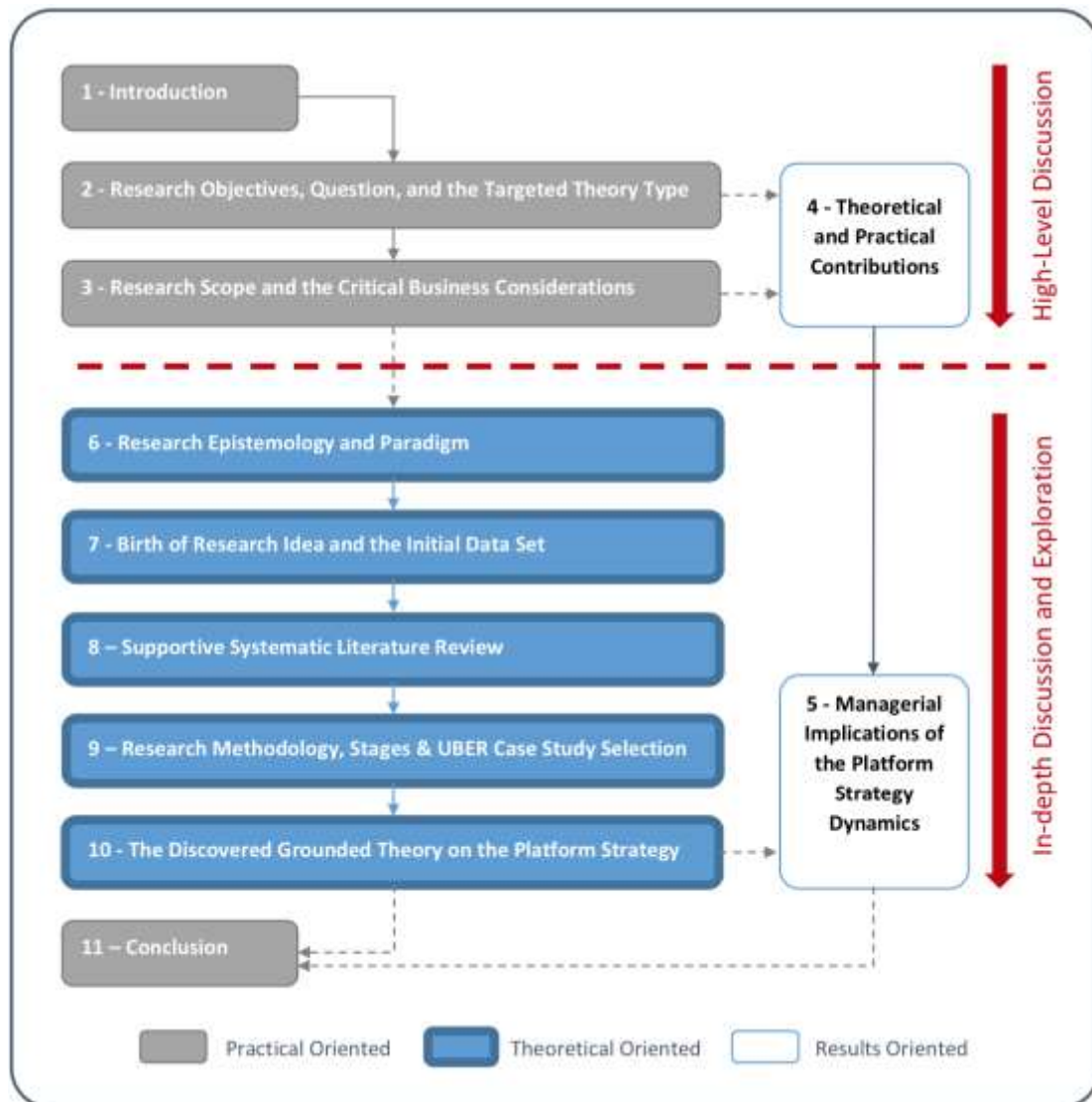


Figure 3: Academic-Focused Logical Flow or the Second Possible Navigation Path

According to Beaulieu & Kalika (2020), the most important distinguishing point between a DBA thesis and a regular PhD thesis is the practical orientation of the research as well as the depth of the practical recommendations that are presented based on the obtained results of the research project. These recommendations should be able to provide the anticipated depth (Beaulieu & Kalika, 2020), which helps to change the managerial practices, achieve real-life impact, and help managers do better business.”

This structure makes it possible for the managers, decision-makers, and practitioners, on the executive level, to have a full business-oriented and result-oriented reading flow (i.e. the “What” and “Why” parts of the story) that is totally separated from the rigorous academic chapters (i.e. the “How” part of the story) while containing only some inspiring hints about how these conclusions had been reached. These inspiring hints act as a mental stimulus for starting a deeper thinking process that triggers and generates many questions in the reader’s mind making her/him wonder how these aggressive and bold claims about critical conclusions have been reached or obtained in the first place.

An example of these inspiring hints is discussing expected contributions from discovered theories and their supporting literature review that have not been presented and discussed yet. Another example is the discussion around the methodological contribution through an innovative coding approach before investigating the details of the analysis process. A third example is detailing the prescriptive managerial implications that were derived from the prescriptive discovered theory before presenting the empirical setting and results.

Then, if the managers, decision-makers, and practitioners are interested in fully understanding how these conclusions were reached and are ready to deep dive searching behind these inspiring parts and go inside these most rigorous academic aspects, then they can do by reading the theoretical-oriented chapters. Even if they did, and inside these rigorous academic chapters, they will find each chapter deal with a single specific aspect of the research project, which helps them to go step by step and grasp the produced knowledge bit by bit.

Although there is some noticeable repetition in the contents of the successive chapters due to the usage of the previously explain structure of the DBA thesis, this structure was selected intentionally to use the progressive elaboration concept (Brown, 1975) and capitalizing on its power, which allows for discussing the same aspects several times with different levels of abstraction and/or details. Of course, by starting from the highest level of abstraction in the thesis abstract section to the highest level of details in the core chapters such as chapters 9 & 10 with gradual increase of the level of details through the introduction chapter and the other business-oriented chapters.

According to Brown (1975), the mind's retention ability of the information is dramatically improved by the use of progressively elaborated interactions with this information. Although this study was focusing on children, it is logical to assume that this power of the progressive elaboration concept is not limited to the children only and can be generalized to be used on the managerial and executive levels. Actually, Collyer & Warren (2009) already gave a successful example of the use of the progressive elaboration concept to successfully manage uncertain projects in the highly dynamic and challenging business environments through its ability to fill the knowledge gaps. Going to the extreme, and on the highest complex and strategic level in the business environments, Kenny (2003) explained the role and the contribution of the progressive elaboration concept in managing the complex strategic innovation and organizational change initiatives.

Hence, the rationale behind using this approach is to improve the understanding and the retention of the information through gradually navigating the complex topic investigated in this DBA thesis. Again, this approach was selected to match the managers, decision-makers, and practitioners on the executive level. However, following this approach and organizing the DBA thesis using this structure produced chapters that have different and somehow unbalanced lengths.

Although the sizes of the chapters are considerably different with the range from only four pages to around 60 pages, this happened due to several appealing factors. First, the design of the chapters followed the separation of concerns concept, which means that each chapter should address only a single aspect, concern, or perspective about the research project.

Second, the nature of each chapter was able to determine the size of its contents. As an example, the chapter that is going to explain the origin of the research idea is expected to have a smaller size in comparison to the chapter that is going to explain the details of the idea when it is completely formulated with all of its aspects, concerns or perspectives.

Although merging these relatively small chapters into a fewer number of chapters will produce more balanced chapters in terms of their sizes, the chapters are going to deal with mixed aspects, concerns, or perspectives. As an example, merging chapters 2 and 3 may produce a relatively bigger chapter, however, it will present so many aspects, concerns, or perspectives including the research objectives, the research question, the targeted theory type, the research scope, and the related critical business considerations in one place.

Finally, all of the previously discussed aspects about the thesis structure, sections, logical flow, and the possible navigation paths raise both a legitimate and appealing question at the same time, which is why in the first place this DBA thesis deviates from the typical standard and traditional approach of structuring simpler documents in the management and business studies? Usually, the DBA and PhD theses follow the common structure that contains the introduction, literature review, results, discussion, and conclusion chapters in order, which is different from what has been discussed and presented so far about this DBA thesis.

This drives our attention to what is called the “Stylish Academic Writing” topic, which started to appear several years ago and may gain some supporting momentum in the upcoming years. Sword wrote a book about this topic (Sword, 2012), which had the exact title “Stylish Academic Writing”. Sword, in her book, provided a detailed explanation of the different writing styles in the academic context and how these styles deviate from the standard style. Furthermore, Sergi (2014) introduced a concise review for this book in the *M@n@gement* journal article two years later.

Sergi (2014) explained that Sword's (2012) main goal from her book was to investigate what can be done differently from the standard with a detailed explanation of the dominant writing styles in ten different academic disciplines. Although the management and organizational studies were not one of these ten disciplines as indicated by Sergi (2014), it is logical to think and try to use an analogy from these ten disciplines and look within the management and business studies to see how can the new writing styles diverse from the standard ones? According to Sergi (2014), Sword (2012) emphasized a core concept, which is that “writing is about choice”. This means that the writer may choose to imitate the main style dominating the corresponding field or to go for a more risky approach exterminating and expressing different styles. Sergi (2014) quoted from Sword (2012) the following quote:

*“We can continue to ‘imitate the common type’ of academic writing, endlessly replicating the status quo. We can ‘imitate the successful,’ adopting the stylistic strategies of eminent colleagues. Or we can undertake ‘forms of learning’ – reading, reflection, experimentation – that will take our own work in new directions, so that we, in turn, can become the path-breakers whose writing others will emulate.” [p. 31 in Sword (2012)].*

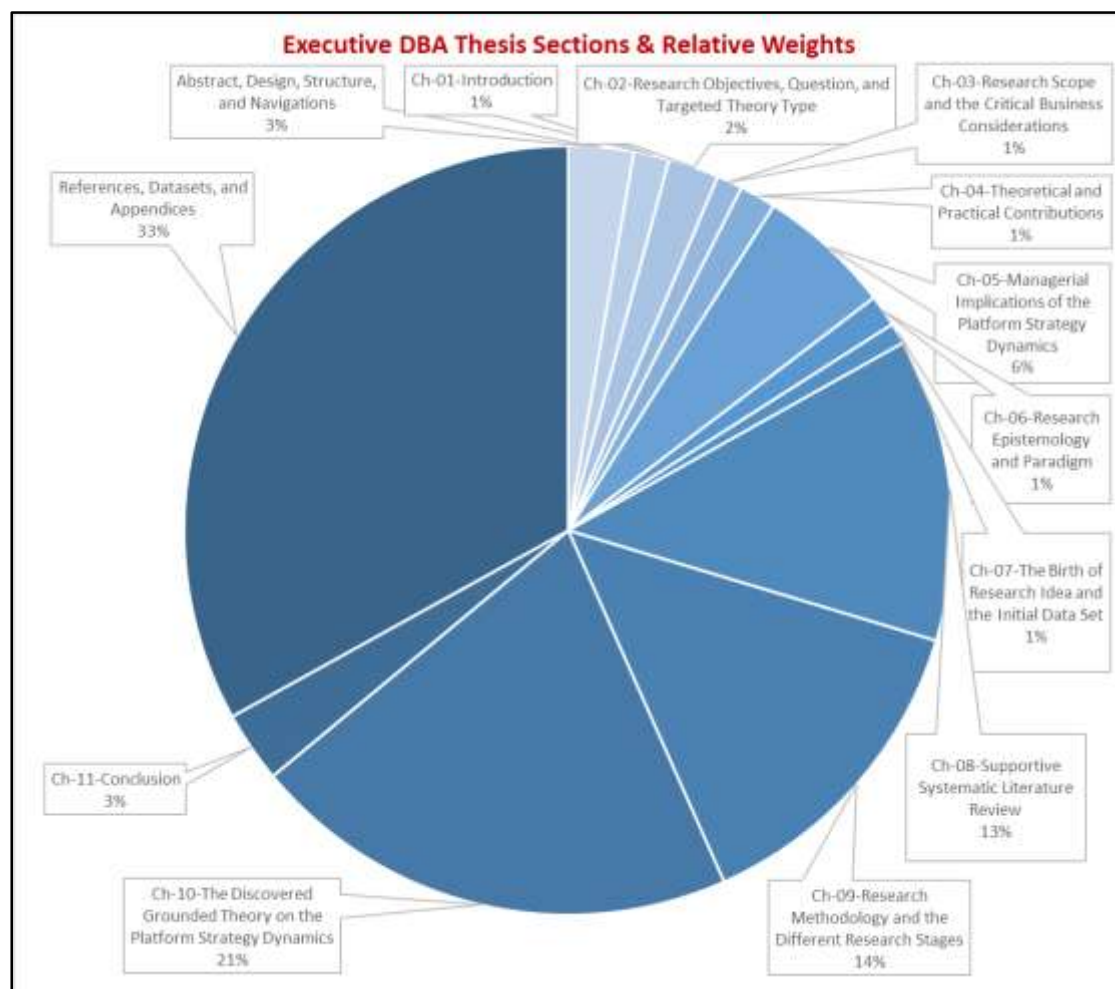
This shifts the focus to what can be the subject for these experimentations and what is non-negotiable? According to Sergi (2014), Sword (2012) determined five non-negotiable principles, which are clarity, coherence, precision, using active verbs, and storytelling. These non-negotiable principles should be adopted whatever the style that is used. On the other hand, Sword (2012) explained eleven "Aspects of Styles" that can define what the stylish academic writing style looks like.

Hence, it is logical to assume that this DBA thesis used, explicitly, at least two aspects of styles from these eleven, which are the "The Story Net" and the "Structure Design" (Sword, 2012). According to Sergi (2014), Sword (2012) indicated that the "The Story Net" aspect means that the writer should sustain a compelling story that is able to attract the attention of the target audience, while the "Structure Design" aspect means that the writer may questioning the standardized writing structures and experimenting with new structures and with new sections' headers and titles. It was just an attempt to produce something different that can open an innovative line of writing for a new line of research.

## THESIS SECTIONS AND THEIR RELATIVE WEIGHTS

The following figure provides a snapshot of the full “Executive DBA Thesis” sections and the corresponding relative weights of these sections to the overall words count, which is 136,000+ words. However, it is worth mentioning the following:

- These words represent the total of 130,000+ countable words that can be automatically counted with the Microsoft word automatic counter plus the images in Appendix-E that presents taken pictures from the countable raw data in Appendix-D (i.e. 5612 words).
- In addition, there are additional uncountable 100+ figures and tables, which are not countable due to their existence as images.



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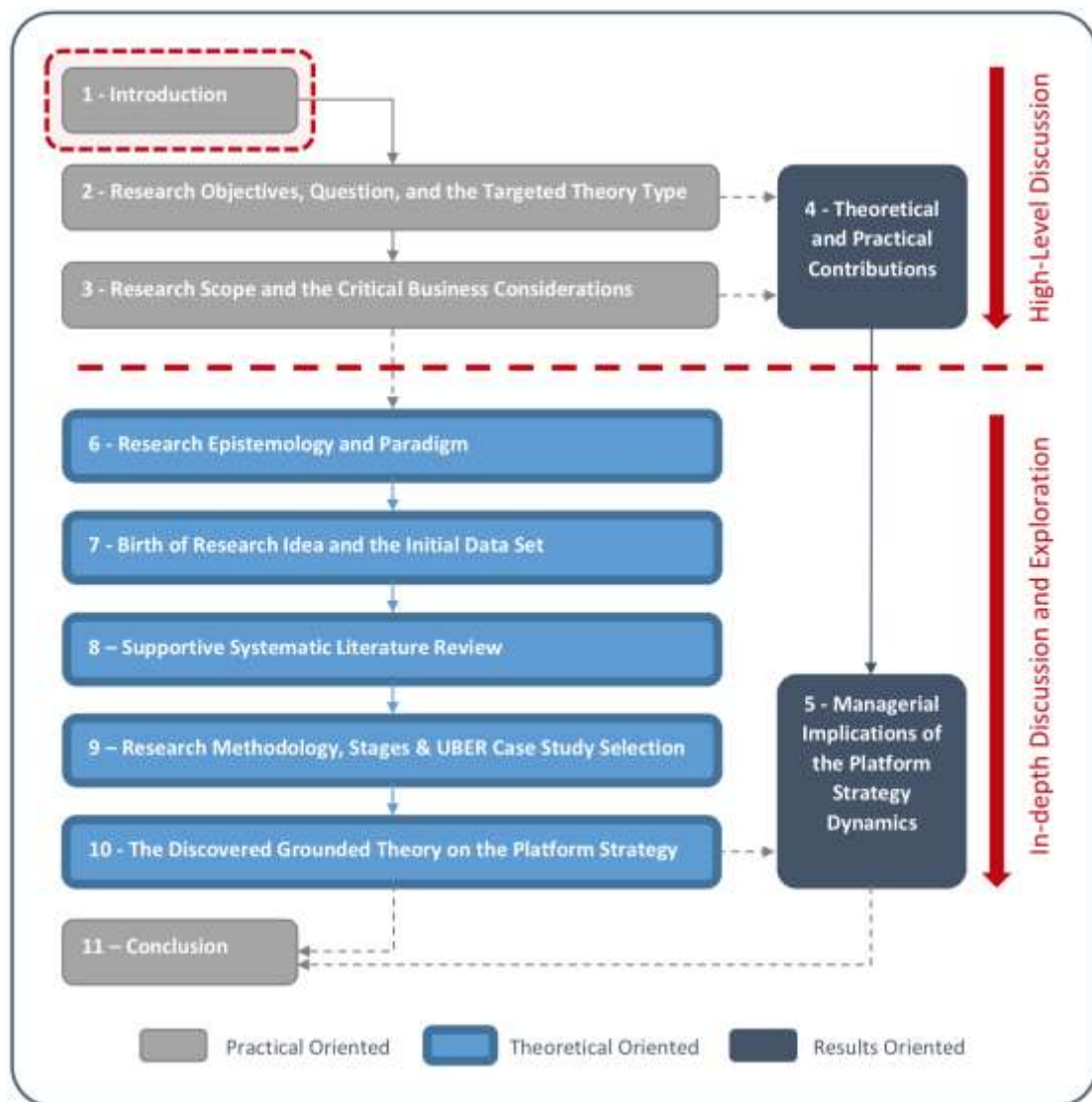
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# CHAPTER-1

## INTRODUCTION



# 1. INTRODUCTION

The digital platform strategies emerged as a hot research topic during the past seven years. The idea started to appear as an industry platform derived by the success of some giant information technology corporations such as Apple, Facebook, and Google. Then, the term “Digital Platform” started to dominate during the digital transformation wave emphasizing the critical role played by information technology in leading these platforms.

The topic of digital platforms includes many areas for research such as the business models, role of disruptive technologies in the game, the transformation strategies, and the factors that affect the profitability. However, among all these topics, the topic of digital platforms strategy appears as one of the most critical topics because it contains the set of critical strategic decisions that need to be taken by the platform owner and/or creator. These decisions are going to make or break the whole business or the whole organization. The real history contains many examples. Facebook was not the only known social media platform, but it became the largest and strongest one that seems to be impossible to compete with.

Apple and Google mobile application platforms were not the only two players in the marketplace of mobile operating systems. Microsoft was a typical competitor, who failed to prove successful and the industry ended up consolidated into apple and Google. Hence, it seems logical that there are some strategic options/choices that either fit with the challenge and create the required harmony and drive the success of the digital platform or break the whole story and fail to gain the required momentum ending up with a dramatic failure story. These elements of the digital platform strategy are worth the investigation time.

There are so many methodologies, models, and frameworks that are trying to explain what the digital business should look like as well as how the digital transformation strategies can be represented? However, focusing on how the digital business should look like at the end is the most critical in the age of the digital economy. Adding another level of complexity, what are the available strategic options that represent a set or a sequence of strategic decisions that should be considered while designing and implementing this destination? Currently, there is chaos in this domain that represents a knowledge gap that needs more attention. Although the digital platform strategy appeared lately as a dominant solution to this chaos, especially these platforms that enable and empower as full value exchange ecosystem, which is called the “Digital Platform-Based Ecosystems”, it is even so difficult to find a concrete definition of this strategy or a solid representation or description for this platform strategy. However, in the current service-based economy, in which services represent two-thirds of the overall economic GDP, it is logical to focus on the digital services platforms.

Currently, it is the era of a special type of the digital economy, which is the digital ecosystem economy era that is going to start from the year 2020. This era represents the final destination of the transition journey from the “Egosystems” that are based on strategic competition to the “Ecosystems” that are based on strategic cooperation and value distributions.

In this era, the companies with the ecosystem-based business model are going to be the most capable form for this strategic cooperation and value distribution. Hence, it seems logical to assume that the most capable business model for any organization in the upcoming era will be the digital services platform-based ecosystem.

Hence, it seems logical to conduct a research project that is able to answer the following question:

***“What is the strategy for designing and operating a digital services platform, which helps the platform to both survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy?”***

In order to achieve this ambitious mission, this research project is going to rupture theorizing to discover a theory about the digital services platform strategy. Furthermore, the aim is to discover a general substantive prescriptive theory that is going to generalize/formalize from two parallels substantive areas. In addition, this theory should be from a prescriptive theory (Type-V), which provides answers to some elementary questions such as (What should be done?) and (How should it be done?).

To maintain the scope of this research study reasonable and manageable at the same time, the scope of this research will be limited to new digital services platforms that are being established as a new venture, either by a well-established organization or by a well-funded project. Furthermore, the digital maturity of the owner/operator organization is out-of-scope and is not going to be taken into considerations.

From the theoretical point of view, this research project and the DBA thesis aims to start a novel research line, which focuses on employing the classical grounded theory as a holistic research methodology to the field of the digital platforms, through a well-rationalized research design that utilizes mixed methods and techniques for data collection and analysis following the philosophy of the classical grounded theory that “All is Data”. Furthermore, it capitalizes on the leading globally recognized case studies that aim to digitalize the services experience in the digital platform-based ecosystems divided into two substantive areas.

The first substantive area (i.e. literature as secondary data) contains any case studies found in the literature according to the carefully designed screening protocol as well as a set of successfully proved and published empirical case studies that dominated the economic cycle ended with the 2007 American great recession. These case studies are a set of cases that the researchers previously examined their success-assured network effects empirically. They cover a large number of business verticals and industry sectors as well as a so long time span. Most of these empirical cases around the network effects are related to the golden time when the topic of network effects gained a momentum and attracted the focus of the researchers. This period of time started few years before the internet or dot-com bubble and up to the 2007 American great recession, which represents a full economic cycle. It was the economic cycle that followed the invention of the internet technology and concurrently with business strategies that capitalized on this technology. On the other hand, the second substantive area focuses on the “UBER Technologies Inc.” as a single case design from an empirical point of view.

Actually, UBER Technologies Inc. was selected as a single case study design for this DBA thesis due to the following reasons. First, the UBER digital platform is a platform from the "Services/Transactions" type. Second, the UBER digital platform orchestrates a digital services platform-based ecosystem whose size is huge in comparison to the original physical organization. Furthermore, this platform-based ecosystem is totally separated from the original physical owning organization. These two criteria match this DBA thesis scoping and its critical business considerations that will be explained later on too. Third, the UBER digital platform has one of the highest market capitalization among many well-known transactions digital services platforms worldwide. This market capitalization value can be considered as a proxy for how successfully UBER has been able to achieve the desired success.

With no comparable competitors within the transportation services industry, this market capitalization is not only a proxy for achieving the desired network effect as the only studied success indicator in this DBA thesis but also a proxy for reaching the long-term impact of this network effect, which is the winner-takes-all syndrome. This means that UBER strategy is one of the best-fit answers for the research question of this thesis and through its strategy, it was able to both survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy.

Regarding the literature review, there is no conducted extensive literature review upfront, however, and as recommended by the classical grounded theory, the literature review is used to support the emergence of the classical grounded theory around the emerged core category related to the initially determined core concern. In this DBA thesis, the emerged core category is the ability of the digital service platform to achieve the ultimate success key performance indicator (i.e. the network effect), while the initially determined core concern is the ability of the digital service platform to survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy. Of course, through a classical grounded theory about the strategy formulation and implementation that will be discovered in this DBA thesis.

From the practical point of view, this research project aims to help decision-makers and practitioners to navigate one of the most challenging strategic missions, which is the strategy formulation and implementation for the previously mentioned type of digital platforms. It will add value through well-rationalized prescriptive strategic action items.

The most evident benefits from the obtained results of this research project will be that the strategy formulation and implementation for designing and operating digital services platforms are no longer going to be an ad-hoc challenge nor a black box mission that depends on the tacit knowledge in the mind of platform owners or operators.

The decision-makers and practitioners will be given a clear structure for what this strategy should look like and its decisions, these decisions' categories and the optimum sequence for taking these decisions as well as the degrees of freedom in each decision. Furthermore, the interrelationships and interdependences of these decisions will be given too. Finally, the impact of these decisions on the key performance indicators "KPIs" in the short and long time span will be clear too to help them plan for this success.



Accordingly, to enable and match the selected context, research question, desired theoretical and practical contributions, as well as the targeted managerial implications, it is fair to say that the suitable epistemological position for this research proposal is following the demonstrative-inductive approach.

The selected research methodology to carry out this research project is the classical grounded theory with the Gioia Method. This DBA thesis will discuss open and selective coding, the different stages of the research, and the usage of the system dynamics and system archetypes as a tool for theoretical sorting and the overall theory integration. This is going to be followed by the designed research paths and selected research domains/substantive areas as well as the data collection methods, the data analysis techniques, and finally, the research quality criteria. According to the different stages of the research journey, the final shaped and integrated discovered classical grounded theory will be a full version of the theory.

Hence, this DBA thesis is going to present the obtained results to show the validity of the idea, including the following:

- The open coding stage and the emerged core category.
- The conceptualized theory outcome.
- Summarized overview for the digital platform strategy dynamics, or how it works.
- The currently partial unsaturated selective coding.
- The further selective and theoretical coding.
- The different approaches to check the theoretical saturation.
- The different steps for the theoretical sorting.
- The logic of increasing the conceptualized depth of the theory through two upgrading processes.
- The modeling scope and the bridge to system dynamics.
- Finally, elaborated descriptions for the obtained theory dynamics will be given.

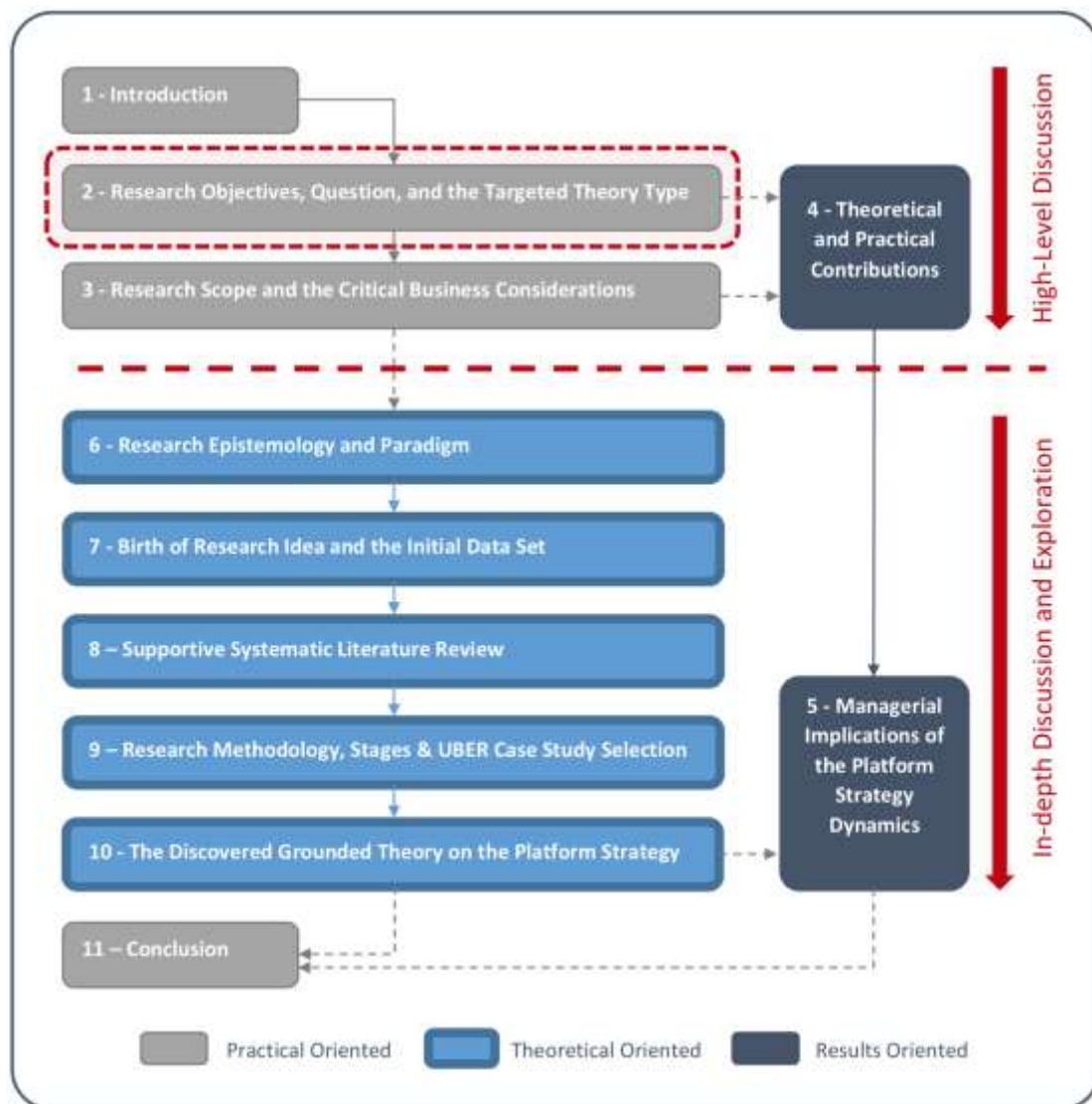
The remaining of the DBA thesis is going to give the details for the research objectives and question, the desired theory type for the discovered theory, the research scope and critical business considerations, the expected theoretical and practical contributions as well as the managerial implications. Then, the research epistemology and research paradigm will be determined plus shedding some light on the birth of the research idea.

This is going to be followed by a detailed description of the research methodology, methods, and techniques and the research domains/substantive areas as well as a rationalized explanation about the role and contribution of the literature and literature review in the whole research project.

In addition, the research methodology chapter is going to highlight the rationale behind the selection of the “UBER Technologies Inc.” as an empirical case study as well as how the related data will be collected. Finally, the different stages of the research project will be presented, including the transition from the thin version of the discovered theory to the full version of the discovered theory including two upgrading processes.

## CHAPTER-2

### RESEARCH OBJECTIVES, QUESTION, AND THE TARGETED THEORY TYPE



## **2. RESEARCH OBJECTIVES, QUESTION, AND THE TARGETED THEORY TYPE**

There are so many methodologies, models, and frameworks that are trying to explain what the digital business should look like as well as how the digital transformation strategies can be represented? Although digital transformation as a journey represents a great challenge and that there is so much academic and gray literature that was trying to solve this dilemma, what seems more critical to be understood is the destination at the end of this journey. This means that focusing on how the digital business should look like at the end is the most critical in the edge of the digital economy. Usually, validation, which is building the right thing, is more important than verification, which is building the thing right.

Adding another level of complexity, if this destination is more important from the strategic point, then, what are the available strategic options that represent a set or a sequence of strategic decisions that should be considered while designing and implementing this destination? Currently, there is chaos in this domain that represents a knowledge gap that needs more attention.

Although the digital platform strategy appeared lately as a dominant solution to this chaos, especially these platforms that enable and empower as full value exchange ecosystem, which is called the digital platform-based ecosystems, it is even so difficult to find a concrete definition of this strategy or a solid representation or description for this platform strategy.

Jacobides, et. al. (2018) provided a clear and detailed explanation for the general concept of ecosystems including the details of the ecosystems definition, ecosystems operation mechanisms, when and how ecosystems may emerge, and how ecosystems differ from other business governance forms. Later on and in more specific terms, Hein, et. al. (Hein, et al., 2019) focused on explaining the nature of the digital platforms as well as the digital platform ecosystems and more importantly on how both concepts can integrate together successfully.

Simply, and according to Jacobides, et. al. (2018) and (Hein, et al., 2019), the digital platform-based ecosystems are semi-regulated and multisided digital marketplaces that foster cooperation between the market players in order to maximize the co-value creation.

Typically, there are many types of platforms that can be considered a subject to this research project. As an example, there is the technology platforms (Aalst, Hinz, & Weinhardt, 2019) and product platforms (Parker & Alstyne, 2014) that provide technology and innovation support, especially, the internal platforms (Hsieh & Wu, 2019) are going to be excluded from the scope of this research project. Apple app store and Google Play are clear examples of this excluded type.

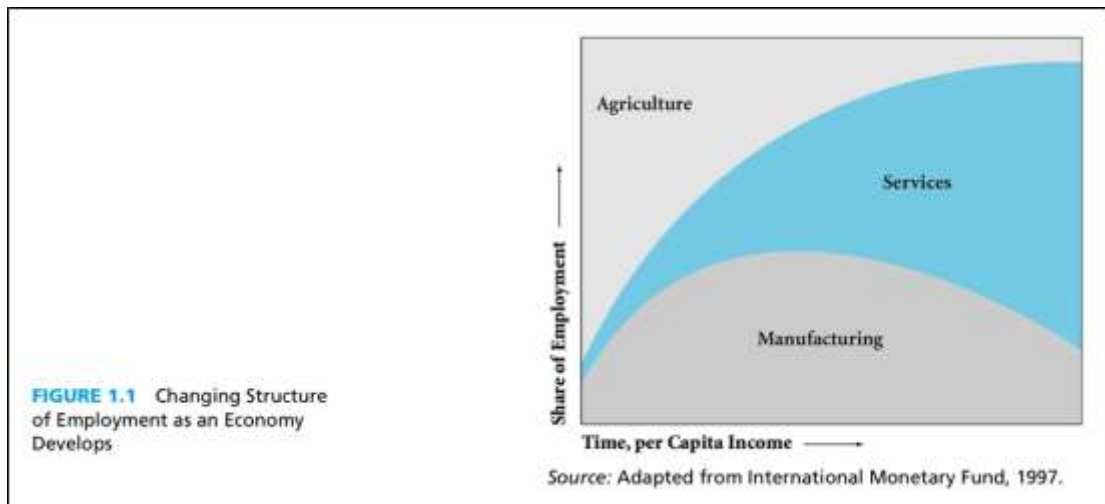


Figure 4: Changing Structure of the Economy & Employment - Source: Figure 1.1 in (Lovelock & Wirtz, 2011)

However, in the current service-based economy as per the International Monetary Fund-IMF in Lovelock & Wirtz (2011) and as shown in Figure 4, in which services represent 64% of the overall economic GDP (Figure 5) as indicated by Lovelock & Wirtz (2011), it is logical to focus on services economy. Hence, this research is going to focus on the digital services platforms, which can be considered, in its simplest form, from the transaction platforms or network platforms categories (Hsieh & Wu, 2019), (Aalst, Hinz, & Weinhardt, 2019) and (Parker & Alstyne, 2014). UBER, Upwork, and LinkedIn are clear examples of this type.

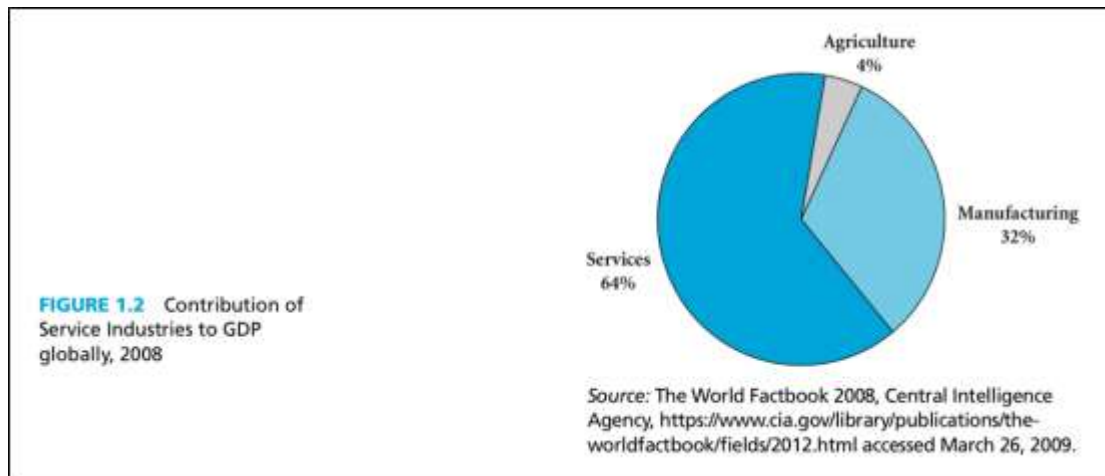


Figure 5: Services Economy Contribution in the Global GDP - Source: Figure 1.2 in (Lovelock & Wirtz, 2011)

Actually, there are so many types of digital platforms that can be analyzed in this research project and DBA thesis. However, scoping is always a good. Hence, it is better to give some additional details about which digital platforms type is in scope and what is out of scope.

Going back to the predominant types of the digital platforms as one of the primary decisions, Hsieh and Wu (2019) provided good insight about the simplest classifications, which are the internal platforms and external platforms to the organization. Furthermore, Hsieh & Wu (2019) referenced a more useful classification based on the overall functionality, which includes the innovation platforms, transaction platforms and the integration platforms. In addition, Aalst et. al. (2019) provided a more similar classification, which includes only two types, which are the transaction platforms and the technology platforms. Finally, another simple classification was mentioned by Parker and Alstyne (2014), which included only the product platforms and network platforms.

Hence, as almost two thirds of the economy is a service economy and we are in the age of the service-based economy, it is logical to focus the research in this DBA thesis is on the digital services platform that provide services, which can be considered, in its simplest form, from the transaction platforms or network platforms categories (Hsieh & Wu, 2019), (Aalst , Hinz, & Weinhardt, 2019) and (Parker & Alstyne, 2014). UBER, Upwork and LinkedIn are clear examples of this type and are within the scope.

On the other hand, the technology platforms (Aalst , Hinz, & Weinhardt, 2019) and product platforms (Parker & Alstyne, 2014) that provide technology and innovation support, especially, the internal platforms (Hsieh & Wu, 2019) are going to be excluded from the scope of this report. Apple app store and Google Play are clear examples of this excluded type. However, to be clearer, the DBA thesis may touch both apple app store and Google Play from different perspective and consider them within the scope. These platforms can be considered from the concept of the augmented service product, which provide services that are based on a core product. What is excluded is the innovation process itself for creating the products and how these platforms is supporting the software product development either from the technical or managerial perspectives.

This makes the original concept of the servuction model, explained by Lovelock & Wirtz (2011) based on Langeard and Eiglier work, applied within this scope. Any digital services platform has the model components that appear in Figure 6.

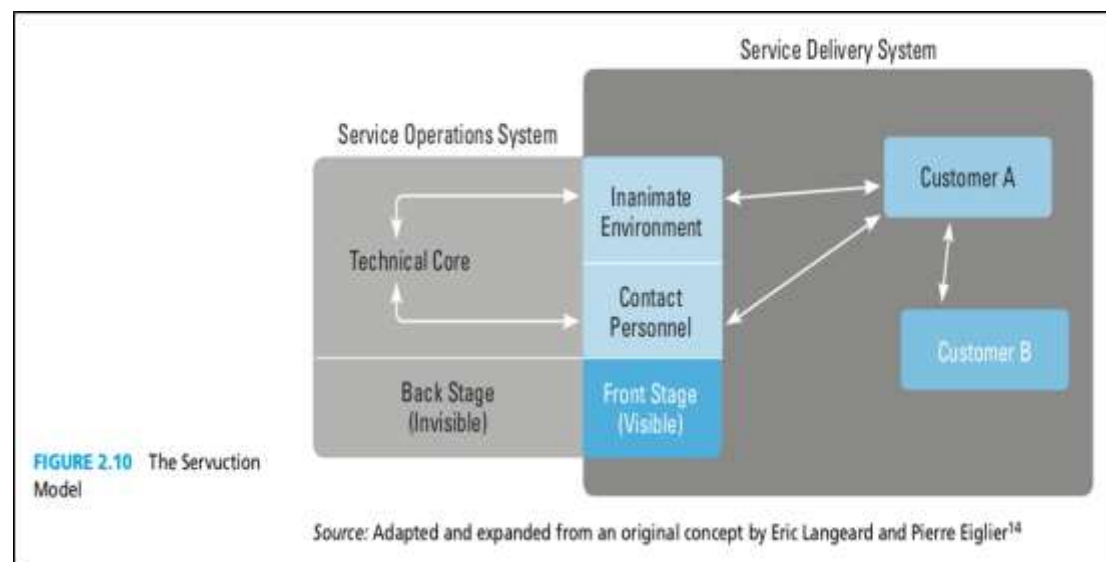


Figure 6: The Servuction Model - Source: Figure 2.10 in (Lovelock & Wirtz, 2011)

Any digital service platform has its own service operation system that has the technical core, which is the invisible backstage. Furthermore, it has the front stage that includes the inanimate environment and the contact personnel, or the front line employees that along with the customers themselves represent the service delivery system (Lovelock & Wirtz, 2011).

Taking UBER taxi service platform as an example, the previously mentioned elements can be mapped to the UBER scenario. The front-end inanimate environment is the mobile app that users use to book and manage their trips. The contact personnel are the drivers themselves who provide the transportation service as well as the call center personals who manage customer calls and complaints. On the other hand, the service operations systems and its technical core component is the cloud software application that supports the front mobile application and its artificial algorithms that determine the nearest drivers and calculate dynamically priced fares.

However, this core transportation service is not the only service provided by UBER digital service platform. There are many additional augmented services, which add value to the core service. According to Lovelock & Wirtz (2011), there are both the Information Processes as well as the Physical Processes that form together the concept of the Augmented Service Product that has been mentioned before and is shown in Figure 7. As this research project DBA thesis are focusing on the digital platforms, the Information Processes may come to be a focal point or at least one of the critical business decisions because all of these processes are usually automated with software-enabled workflows within the digital platform.

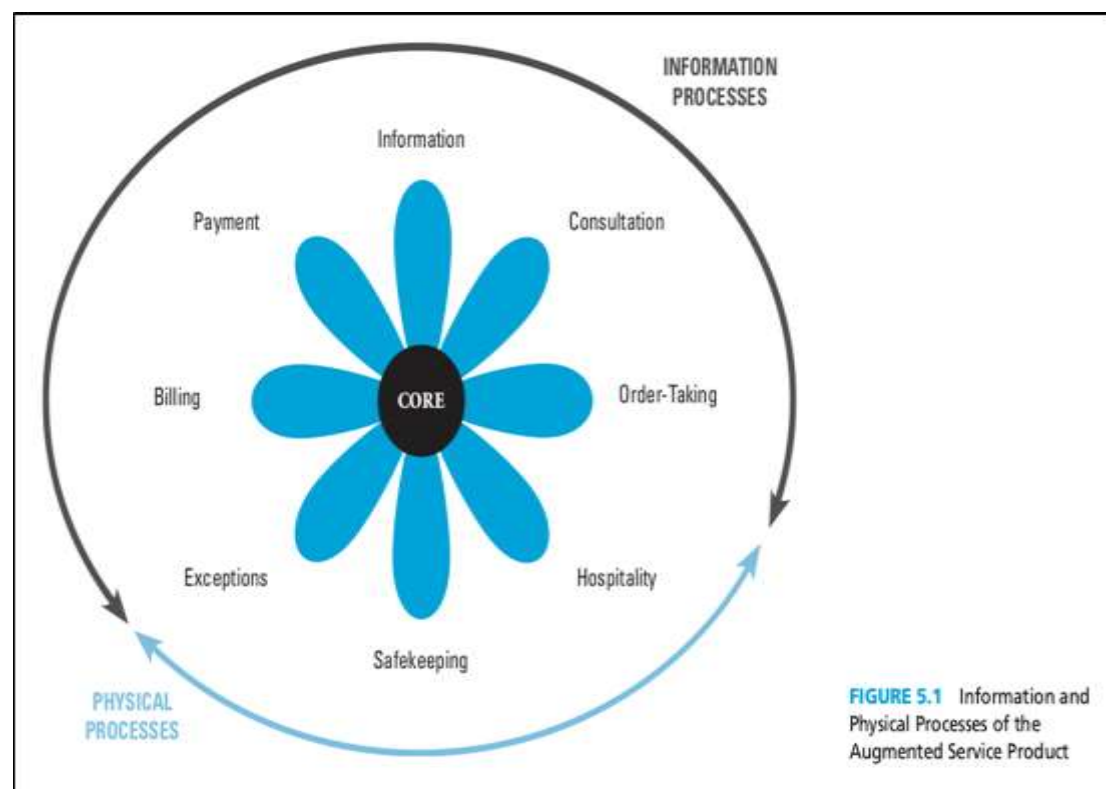


*Figure 7: The Information and Physical Processes of the Augmented Service Product*  
 - Source: Figure 5.1 in (Lovelock & Wirtz, 2011)

Going back to the UBER example, we can find some of these information processes so evident. As an example, the payment and billing processes can be automated by linking the mobile account to the credit card to automatically deduce the fair amount (*i.e. Payment*) that was calculated through the dynamic priced algorithm (*i.e. Billing*). By default, the order-taking and information processes are automated by the mobile application and the supporting backend cloud software application. The exception handling process is usually handled by the call center personnel who manage customer calls and complaints

It is worth mentioning that according to the UNCTAD Digital Economy Report (UNCTAD, 2019); the digital services platforms represent the narrowed scope of the overall digital economy as shown Figure 8.

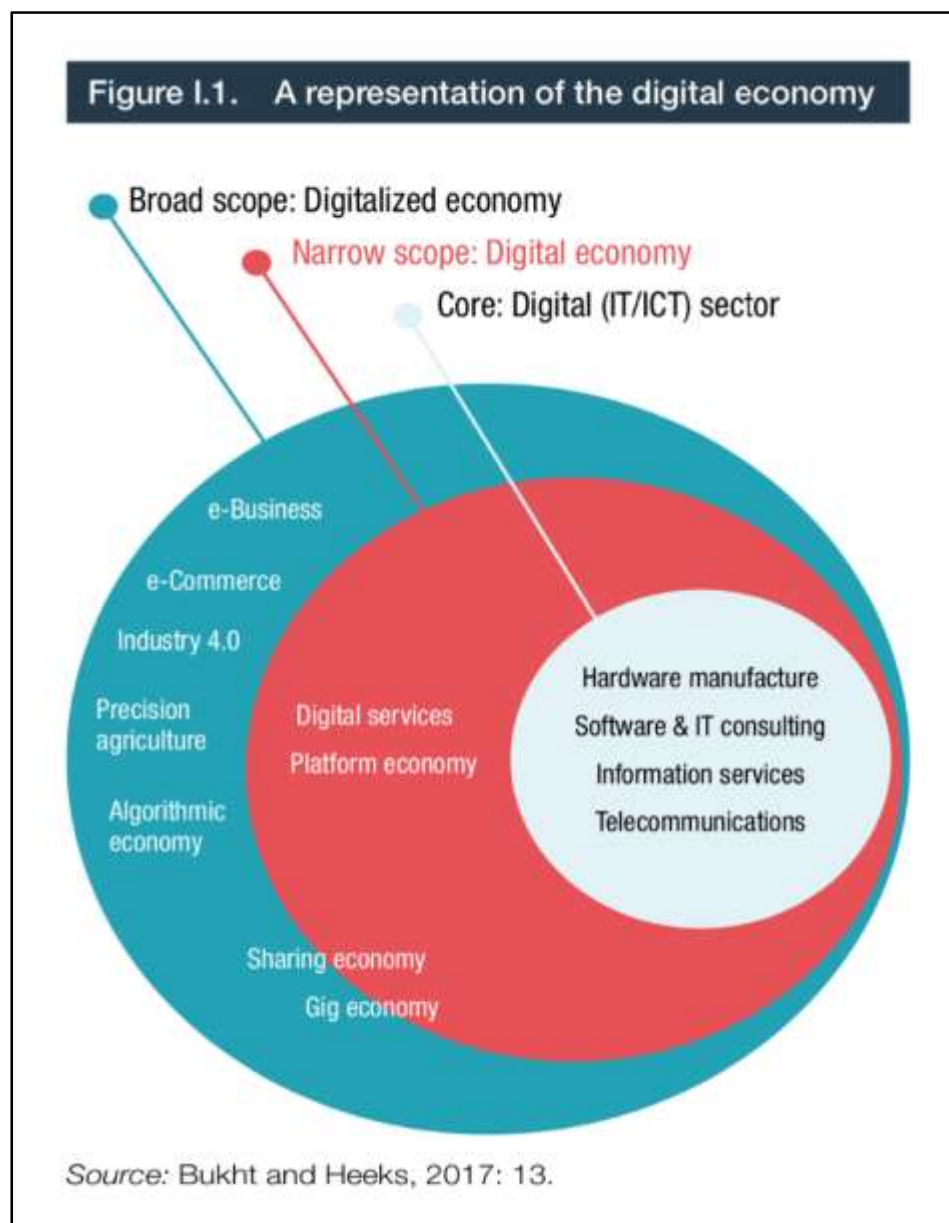


Figure 8: Digital Services Platform Economy - Source: Figure 1.1 in (UNCTAD, 2019)



Finally, according to the Platform Innovation Kit (2020), there are four company types that have different business models, which are the product-based business model, the service-based business model, the platform-based business model, and the ecosystem-based business model as shown in Figure 9. Furthermore, there were four economic eras that are empowered through different disruptive technologies as follows:

- First era: starting from the pre-industrialization era before 1900.
- Second era: the industrial economy era that lasted from the year 1900 to the year 2000
- Third era: the digital economy era that spanned from the year 2000 to the year 2020.
- Fourth era: special type of the digital economy, which is the digital ecosystem economy that is going to start from the year 2020.

These four economic eras represent the full transition journey from the “Egosystems” that are based on strategic competition to the “Ecosystems” that are based on strategic cooperation and value distributions as shown in Figure 9.

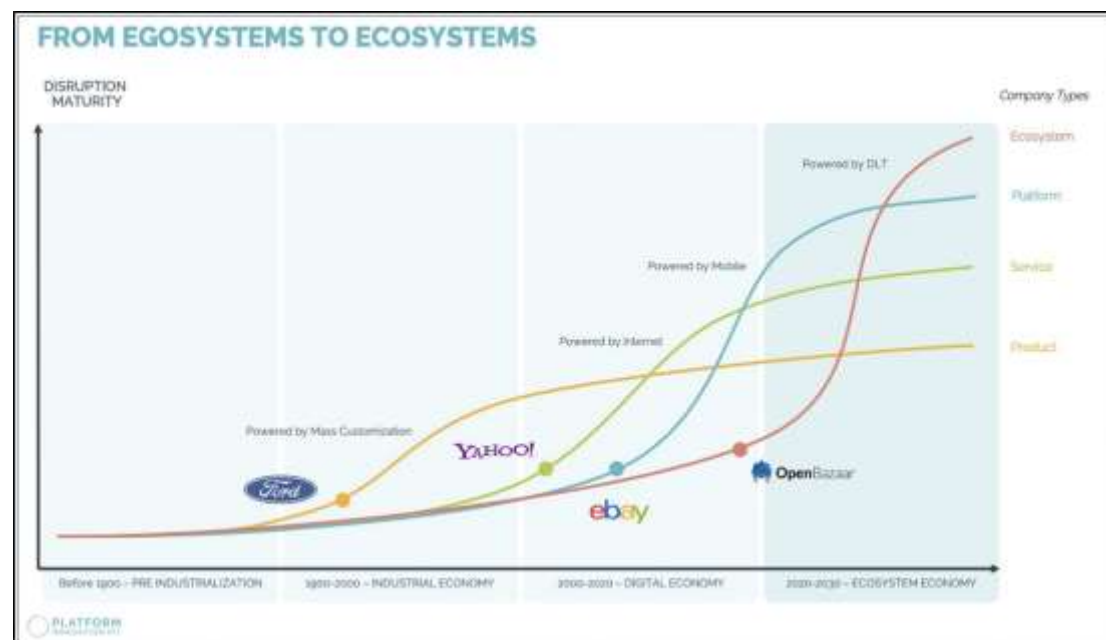


Figure 9: The Age of Ecosystems Economy - Source: (The Platform Innovation Kit, 2020)

Actually, Hedman & Henningsson (2015) explained how cooperation had become the new normal within the ecosystems by focusing on the mobile payments ecosystem as a case study. Furthermore, recently, Jones et. al. (2021) explained how the cooperation behavior is evolving in face of the conflict and competition with the focus on the mobile telecom standards development as an innovation ecosystem. Both provided vivid business cases for the benefits of the cooperation over the competition and how it is going to become the new normal in the ecosystem economy.

In this upcoming digital ecosystem economy era, the companies with the ecosystem-based business model are going to be the most capable of this strategic cooperation and value distributions. Then, followed by the companies with platform-based business model, and then the companies with service-based business model as shown in Figure 9. Hence, it seems logical to assume that the most capable business model for any organization in the upcoming era will be the one that combines the power of these three business models, which is the digital services platform-based ecosystem.

Hence, it seems logical to conduct a research project that is able to answer the following question:

***“What is the strategy for designing and operating a digital services platform, which helps the platform to both survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy?”***

Currently, it is so difficult to reach concrete answers for the previously mentioned questions due to the scattered knowledge that can be found in many research papers, business reports, books, blogs, learning courses, and tracks. This research proposal has a target to close this knowledge gap.

Although the existing of this research gap, some researcher highlighted that the world is going into an era of “Platformania” (Yoffie, Gawer, & Cusumano, 2019) in which every single business may try to build a platform despite the low success rate that is only around 17% as indicated by Yoffie et. al. (2019). Furthermore, and as mentioned before, digital platforms usually have winner-takes-all syndrome, which means that the competition between market players is usually severe and sometimes bloody. This leads to and shifts the focus towards the strategy that was employed either behind the winner-takes-all success or behind the go-out-of-business failure. Yoffie et. al. (2019) listed some of the major strategic decisions that usually lead to the Platforms Failure.

On the success realm, Jacobides (2019) and Gawer & Cusumano (2015) provided many advices on how to achieve the desired platforms success. To give a quantitative sense for the size of the successful platforms market from the financial point of view; Cusumano et. al. (2020) gave figures and future estimates for the capital value. Through sound statistical tests, they proved how the platform companies are more profitable than typical ones. Hence, it is logical to study why only 17% of the platforms are successful and how to provide sound and value recommendations to the new entrants to this world.

However, this research project is not going to focus on incremental theorizing and depending solely to close any research gaps that are going to be found from an extensive literature review. The aim of this research project is to discover a theory that is in rupture with the existing theories and literature. As a summary, in order to achieve this ambitious mission, the research project is going to rupture theorizing (Holton & Walsh, 2016) to discover a theory about the digital services platform strategy. This theory should include all the basic elements of the well-defined full theoretical theory, as explained by Whetten (1989), which contains: (1) the “What” or the concepts within a complete business strategy and business model; (2) the “How” or the complete relationships between model and strategy elements; (3) the “Why” or the logical explanations for these relationships and; (4) the other “Contextual Conditions” within which the strategy and model are valid.

Furthermore, the aim of this research project is to discover and generate a general substantive prescriptive theory (Holton & Walsh, 2016) that is going to generalize/formalize from two parallel substantive areas, which are the latest state-of-the-art and leading globally recognized case study and the currently available literature as a secondary data. In addition, this theory should be from a “Prescriptive Theory (Type-V)” (Holton & Walsh, 2016), which provides answers to the following elementary questions such as (*What should be done?*) and (*How should it be done?*) as explained by Holton & Walsh (2016).

In the beginning, the targeted discovered theory type will be from the “Type-IV: Explanatory and Predictive Theory” according to Holton & Walsh (2016). This type of theories predicts what can happen in the future as well as provides and highlights testable causal explanations to how this is going to happen. However, later on, and due to the usage of the system dynamics domain, the causal loop diagrams, and the well-tested system archetypes (Braun, 2002) to produce more sound, reliable and rigorous conceptual diagram, the targeted discovered theory type will be automatically upgraded to the “Type-V: Prescriptive Theory” according to Holton & Walsh (2016).

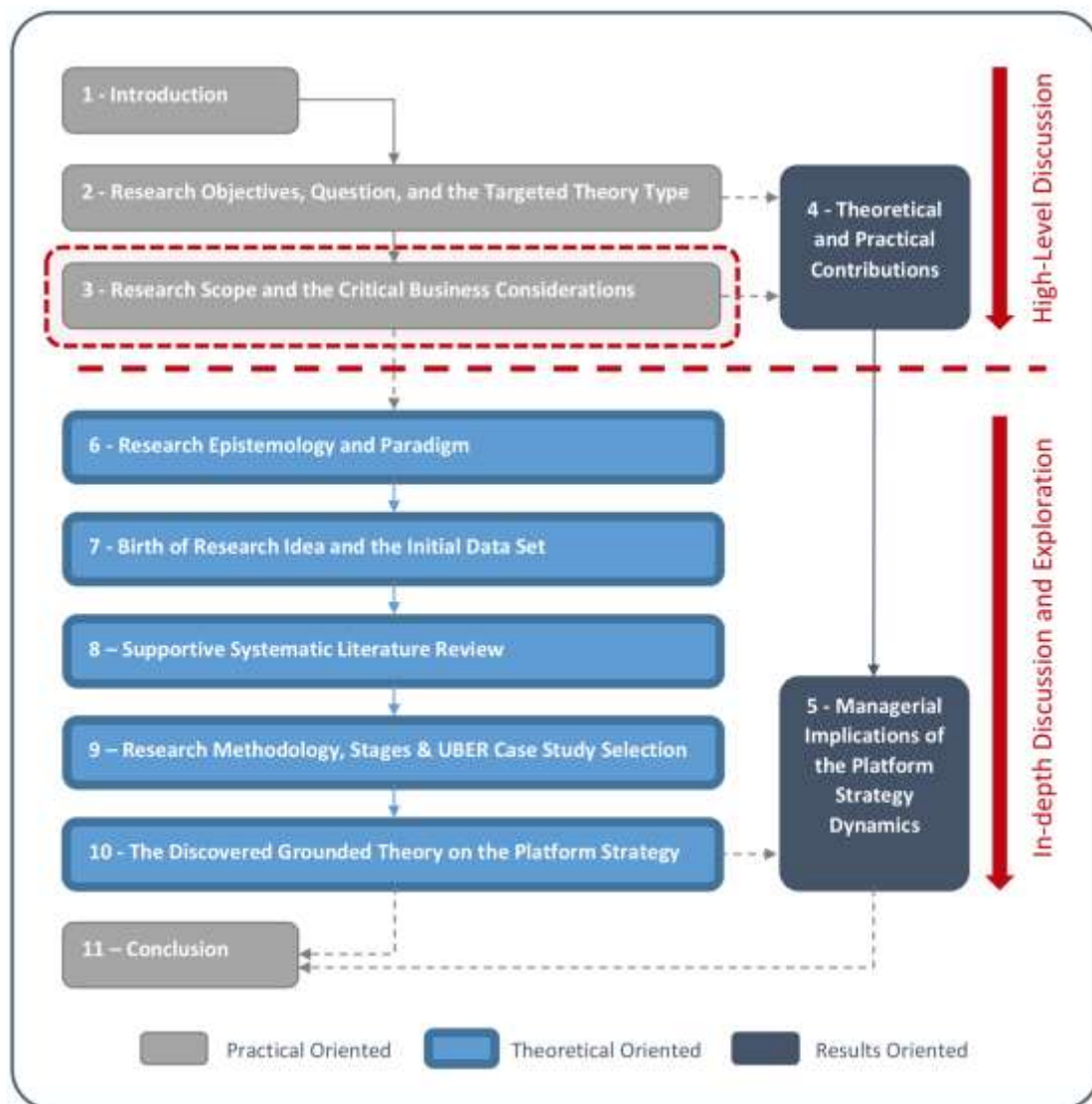
The rationale behind this automatic theory upgrading process is that these used well-tested system archetypes explained by Braun (2002) provide a set of daunting down-to-earth implementation action items that were both discovered and validated in several previous research studies related to the discipline of system dynamics and summarized in Braun (2002) reference.

This resulted in an upgraded theory that is going to explicitly prescribe what should be done and how it should be done through a set of methods, techniques and principles and, more specifically to this research proposal and project, with a set of well-proved implementation action items.

Hence, the research is going to start with the aim to discover a theory, describe things as they are, theorize on what actually done as it is, and from all the best, good, bad and worst practices, which matches the typical inductive perspective of the classical grounded theory. However, later on, and at the delayed stage, it shifts towards discover a prescriptive theory, describe things as they should be managed by strategists, practitioners, and decision-makers, theorize on what should be done as future recommendations with the usage of system dynamics approach and still matches the typical nature of the classical grounded theory in its highest order as explained by Holton & Walsh (2016).

## CHAPTER-3

### RESEARCH SCOPE AND THE CRITICAL BUSINESS CONSIDERATIONS



### **3. RESEARCH SCOPE AND THE CRITICAL BUSINESS CONSIDERATIONS**

This chapter is going to explain and discuss the “**Research Scope and the Critical Business Considerations**”. The following subsections will present the major related aspects including the following:

- 3.1 Excluding the Typical Entrepreneurship/Start-ups Lack-of Challenges**
- 3.2 Organization Scoping and the Concept of the Dual Organization**

### **3.1 Excluding the Typical Entrepreneurship/Start-ups Lack-of Challenges**

As mentioned before, typically, there are many types of platforms that can be subject to this research project. Away from the technical and academic classifications, there are many business considerations that may affect the selection of the types that are going to be part of the study and the others that are going to be out of scope.

The life cycle stage of the owner/operator organization is important. Is this organization a well-established one or start-up. These two different categories have different goals and face different challenges. As an example, the well-established organization may have a strategic goal to shift from the product-based business model towards the service-based business model, which is called “Servitization” (UNCTAD, 2019), and is doing this by building a digital services platform to provide augmented services to its core products (UNCTAD, 2019). While in the case of the start-up, the organization may be trying to just build the minimum viable version of its product and associated services to attract additional funds and survive. Although it is a strategic goal, it is also a tactic to overcome the lack of fund challenge.

However, the fund availability challenge is not usually tightly coupled with the stage of the organizations. In some cases, there are funding opportunities that can be provided by the governments or unions to help building these digital services platforms. A clear example of this case is the “Tourism 4.0 Digital Services Platform” (Tourism 4.0, 2020), which is targeting to revolutionize the digital tourism experience worldwide by adding the research and development capability to the tourism industry. Many of its projects are co-financed by governments such as the Slovenian Government and the European Union (Tourism 4.0 TRL.3-6, 2020).

Another and more important example can be given with the “UBER Technologies Inc.”, which is the case study that will be analyzed in this DBA thesis in detail. Although it was established as a startup in March 2009 (UBER, 2021), the startup era will be excluded from the analysis in this DBA thesis and the focus will be on the period that was fully equipped by the fund, which is the post-startup era or the UBER hypergrowth era that can be considered from the year 2014 to the year 2021 according to Brickell (2019) (i.e. after around five years from its establishment).

The same can be mentioned about the challenge of the availability of the required managerial and technical skills. Well-established organizations usually have sufficient budget to acquire and hire the needed skills, while in the case of the start-up, this may prove to be impossible in many cases. Hence, assuming funding and managerial/technical skills availability excluding the typical entrepreneurship/start-ups lack-of challenges.

### 3.2 Organization Scoping and the Concept of the Dual Organization

Furthermore, and to define a more accurate scope for the research project, in many cases, the digital maturity of the original owner organization is not linked to the digital maturity of the digital services platform itself. This is the typical case of a previously mentioned well-established organization that shifts from the product-based business model towards the service-based business model, or doing the strategic “Servitization” (UNCTAD, 2019).



*Figure 10: The Concept of the Dual Organizations*

The concept of digital maturity of the enterprise started to attract much attention in the past several years, especially with so many organizations starting their journey to go digital during the recent digital transformation wave. Before this wave, there were some attempts to measure the organizational maturity in regard to the usage of the information and communication technologies ICT. Pham (2010) is a clear example of one serious attempt in this track. Later on and during the recent digital transformation wave, these attempts continued, which resulted in several models that try to define a practical way to measure the different levels of the digital maturity of the organizations. Bumann & Peter (2019) identified eighteen different digital maturity models and provided a detailed comparison between them. These eighteen models were published starting from the year 2011 and up to the year 2018 (Bumann & Peter, 2019).

However, all these models can help measure the digital maturity of the organizations either during its digital transformation journey (i.e. while the organization is “Going Digital”) or at the end of its digital transformation journey (i.e. after the organization had “Gone Digital”). On the other hand, Monaghan et. al. (2019) discussed a totally different story, which is when the organization is “Born Digital” from scratch in its day one instead of being transferred from a physical organization to a digital one (i.e. “Going Digital”) or completed its transformation from a physical organization into a digital one (i.e. “Gone Digital”). The differences between the three cases had been explained in details by Monaghan et. al. (2019). This third type (i.e. “Born Digital”) is what this DBA thesis is focusing on. This means that measuring the digital maturity of this digital services platform is not needed as it is already assumed to be designed from day one to be on the highest digital level, while the owner organization is totally out of scope. The UBER case study used in this DBA thesis already has this dual nature with an out-of-scope original physical organization that is totally separated from its digital services platform that was born digital in the first place (Evans & Gawer, 2016).

This new digital services platform and its resources can be considered as a totally new venture that has been born digital and maybe born digital & global too (Monaghan, Tippmann, & Coviello, 2019) in the international context. Being considered as a totally new venture has nothing to do in relation to the legal side of the establishment. The critical aspect in this situation is that the owner/operator organization itself may be evidently behind this new venture from the perspective of the digital maturity. The born-digital, and global, has a green field advantage over the legacy structure of the owner organization as shown in Figure 10. The scoping is going to include three aspects, which are the coverage of the organization, the market place structures, and the platform predominant types.

The first aspect is the coverage, which is concerned with what is going to be under consideration when discussing the selected metaphors. The discussion can focus only on the limited scope, which is the digital platform (Figure 10). This DBA thesis is going to focus on the digital platform only as an organization under investigation. Furthermore, the owner/moderator organization itself is going to be excluded from the scope. The reason behind this decision is these two organizations may be very different. In some cases, the owner/moderator organization may be a startup that is full of dynamics and is looking forward to adapt to its environment as quickly as possible, while the whole platform is subject to the highest level of controls and governance.

The second aspect is the marketplace structure. This DBA thesis is going to focus on two types of marketplaces that are usually controlled by a single player. This decision was taken only for the sake of simplicity as the shared control is expected to raise the complexity of the analysis and can be covered in some further work as a separate dedicated study. According to Ghazawneh and Henfridsson (2015), these two types are:

- Type-A (Closed Marketplace): which is controlled by a single player and focus on a specialized scope of functionality.
- Type-B (Censored Marketplace): which is controlled by a single player and support the generalized scope of functionality.

The third aspect is the platform predominant type. This DBA thesis is going to focus on the work mediated platforms explained by Kenney and Zysman (2015). The other type, which is platforms for platforms (Kenney & Zysman, 2015), is going to be excluded. Again, this decision was taken only for the sake of simplicity as the platforms for platforms can be considered as Business-to-Business-B2B platform, which is expected to raise the complexity of the analysis above the work-mediated platforms that are Business-to-Customer-B2C platforms. The excluded type can be covered in some further work as a separate dedicated study.

Finally, it is worth mentioning that this DBA thesis is not going to focus on or exclude other previously mentioned marketplace classification by Gawer and Cusumano (2014) about the number of marketplace sides. Furthermore, the same is going to be done regarding the classification of the platform predominate types explained by Hsieh & Wu (2019) or Aalst et. al. (2019) about the support of the technology, innovation, and commercialization. For the third time, this decision was taken only for the sake of simplicity and can be covered in some further work as a separate dedicated study.

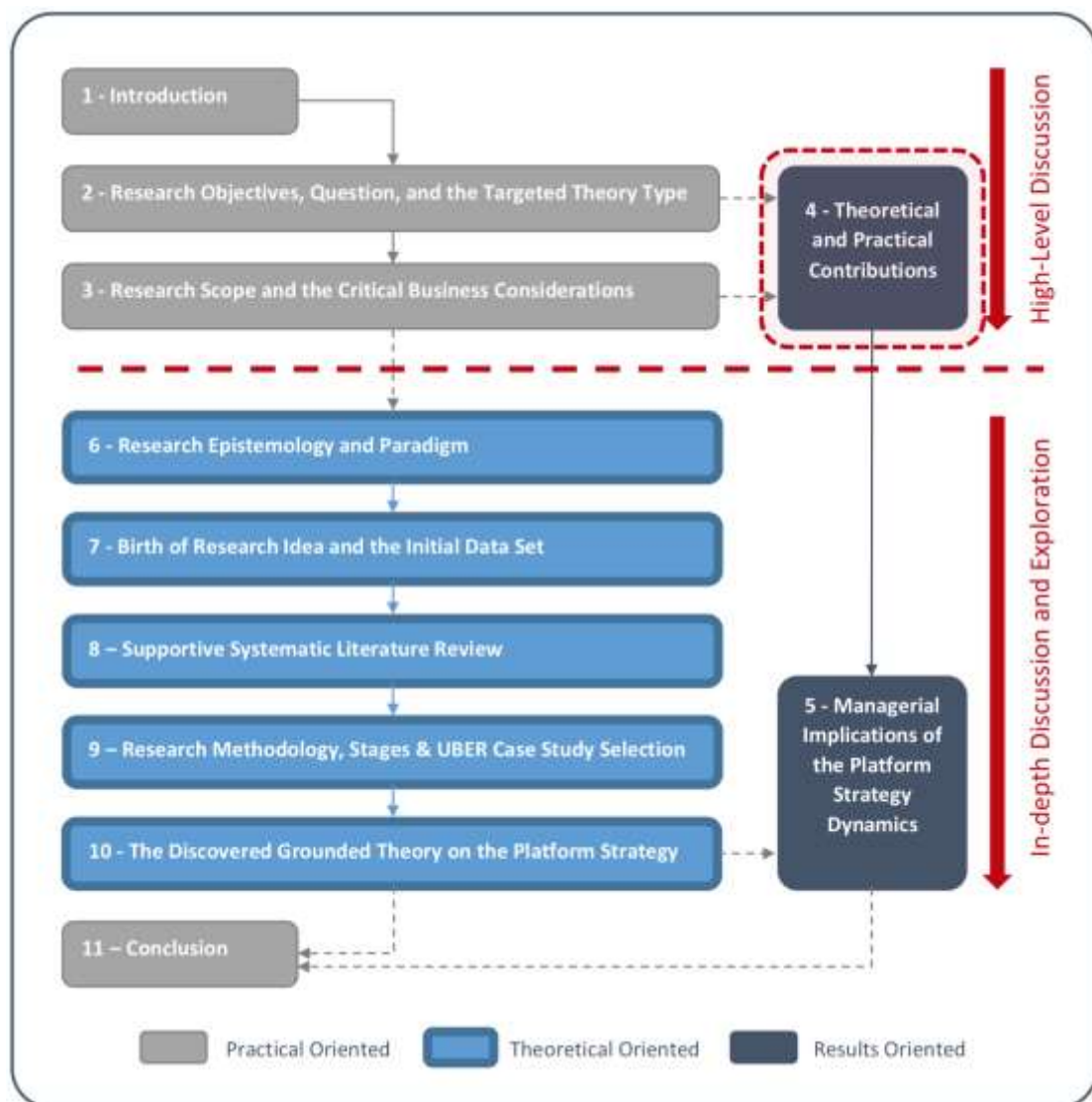


Hence, to maintain the scope of this research study reasonable and manageable at the same time, it seems logical to make the scope of this research limited to:

- New digital services platforms that are being established as a new venture, either by a well-established organization (*i.e. Intrapreneurship*) or by a well-funded project. Assuming funding and managerial/technical skills availability excluding the typical entrepreneurship/start-ups lack-of challenges.
- The original digital maturity of the owner/operator organization is out-of-scope and is not going to be taken into considerations.
- The marketplace structure is controlled by a single player and focus on a specialized or generalized scope of functionality.
- The platform predominant type this report is going to focus on the work mediated platforms that are by definition “Business-to-Customer-B2C” platforms.

## CHAPTER-4

### THEORETICAL AND PRACTICAL CONTRIBUTIONS



## **4. THEORETICAL AND PRACTICAL CONTRIBUTIONS**

This chapter is going to explain and discuss the “**Theoretical and Practical Contributions**”. The following subsections will present the major related aspects including the following:

### **4.1 Theoretical Contributions**

### **4.2 Practical Contributions**

## 4.1 Theoretical Contributions

The following subsections are going to present the expected knowledge contributions either on the theoretical or the practical levels. The start is going to focus on theoretical contributions and then followed by the practical contributions. Of course, adding to human knowledge by creating new knowledge and discovering a new theory is the most evident theoretical contribution of this research project as in any other research project or thesis. However, it will be helpful to highlight the main features of this research project. The main features of the discovered theory itself were discussed in detail in previous sections.

First, this research project aims to start a novel research line that has some special features. First, focus on employing the classical grounded theory as a holistic research methodology to the field of the digital platforms that enable and provide services to the digital ecosystems. This research field is relatively new and challenging at the same time, which is going to benefit from the classical grounded theory as research methodology that support the logic of discovery over the logic of verification (Holton & Walsh, 2016).

Second, adding value through a well-rationalized research design that utilizes mixed methods and techniques for data collection and analysis (Walsh, 2015) to enrich the research design and experience and to enhance the ability to discover new theories following the philosophy of the classical grounded theory that “All is Data” (Holton & Walsh, 2016). All is data as a pivotal concept played a major role in this DBA thesis.

Third, capitalizing on many leading globally recognized case studies, in the digital platform ecosystems, that achieved a proved real-life success in achieving the determined success through the key performance indicators “KPIs”. This helps gaining insight from the long-term accumulated theoretical knowledge and business experiences. The discovered classical grounded theory in this DBA thesis about the digital services platform strategy can be considered as a universal strategy that accumulates the overall previously produced academic knowledge and previously gained practical business experience known so far during the past three decades, which is the overall lifetime of this research filed. These three decades are a relatively long time span or period, which represent the historical basis for any upcoming produced knowledge or gained experience.



*Figure 11: The Discovered CGT as a Universal Strategy for the Digital Platform Ecosystems*

Furthermore, the discovered theory is a universal one because it incorporates all the published historical research schools of thoughts and all the published emergent research themes, which are related to the network effects as a dominate KPI (Figure 11). Details will be explained in the literature review chapter.

Hence, the results of this DBA thesis can be considered as a valuable millstone and solid foundation for future research that can benefit from the discovered theory and insight. Furthermore, according to Holton & Walsh (2016) based Glaser (1992) on original work, one of the four quality criteria of any discovered (good) classical grounded theory is its modifiability when new data is found and collected and/or new insight is discovered from the analysis of this data. For the discovered theory of this DBA thesis, this theory can be updated regularly when new academic knowledge is produced and practical business experience is gained. However, of course, this will be limited by the speed of published knowledge and gained experience around the core concern of this DBA thesis, which is the key performance indicators “KPIs” or simply the network effects. This speed is going to be the actual bottleneck towards this modifiability.

Fourth, this discovered strategy in this DBA thesis can be considered as a “Meta-Strategy” that is defining as well as containing many other business and management strategies that should be taken by the platform owner and/or operator. This meta-strategy contains a huge number of decision points that have been conceptualized in the four decision categories, which are the primary, secondary, dependent, and repetitive decisions as will be explained later on in detail. For example, one of the decision points or a strategy that should be selected by the platform owner as well as repetitively reviewed and adjusted is the pricing strategy. This pricing strategy is from the repetitive decision categories.

However, for the platform owner and/or operator to be able to take the right decision, good knowledge, and considerable experience in setting the pricing strategies are needed and cannot be replaced by any means. However, the real added-value of the discovered meta-strategy in this DBA thesis is that this meta-strategy inform the decision-maker with the following:

- This pricing strategy is a key decision point in the platform-based business.
- To what type this decision point is related, or which category.
- When and where in the strategizing process this decision should be considered.
- Its relation to and impact on the other elements in the overall meta-strategy.
- Its relation to and impact on the success key performance indicators or KPIs.
- The expected short-term and long-term variation in this impact on the KPIs.

Although presenting this met-strategy may give a first impression that this contribution is a practical one, which is not something that is wrong in itself. Of course, it is a practical contribution and will appear in the next section of these contributions.

However, it is a theoretical contribution by default and this can be considered more importantly. Up to our knowledge and up to the date of this DBA thesis, there is no other comparable or similar published strategy before in the field of digital services platform strategies. This proves the previously stated goal for producing a rupture classical grounded theory.

Fifth, on the methodological level, this DBA thesis suggests a change to the steps followed during the different coding stages to build the coding system of the discovered classical grounded theory. As explained by Holton & Walsh (2016), the coding stages in the classical grounded theory contain the open, selective, and theoretical coding that all of them depend on the ability of the researcher to find relevant valuable incidents and considering them into the built coding system properly. However, in this DBA thesis, a software tool support was used to find some relevant incidents, to support checking saturation as well as to find any missed valuable incidents that were overlooked by mistake. This can be called a semi-automatic coding mechanism that may improve the richness of the discovered theory. The details of this step can be found in the latest part of the discovered theory chapter including information about the used software tools, the semi-automatic suggested codes, and how the results were integrated into the overall coding system.

## 4.2 Practical Contributions

From the practical point of view and for the benefits of the managers and executives, this research project aims to help decision-makers and practitioners to succeed in navigating one of the most challenging strategic missions in the era of the digital economy and especially, the digital ecosystems economy. This mission is the strategy formulation and implementation for designing and operating the digital services platforms that enable a full digital ecosystem. Benefiting from this study, they will be able to navigate a series of complex and interdependent strategic choices that, without this framework, may appear so challenging. This is going to happen with the focus on:

- Focus on the platforms that enable and provide services to the digital ecosystems for the previously mentioned reasons.
- Adding value through well-rationalized prescriptive strategic action items. A detailed description of these action items, that have been obtained from the initial results so far, will be explained in the upcoming managerial implications section.
- Capitalizing on the latest state-of-the-art and leading globally recognized case studies.

Second, the discovered classical grounded theory is providing a readymade out-of-the-box scenario for the challenges that will face the decision-makers, owners and/or the operators of the digital platform and how to deal with them with a group to down-to-earth action items that has clear set of proven managerial implications.

Third, and as mentioned in detail in the previous theoretical contributions section, this discovered strategy in this DBA thesis can be considered as a meta-strategy that is defining as well as containing many other business and management strategies that should be taken by the platform owner and/or operator. Hence, briefly and to avoid providing redundant information, this meta-strategy gives clear image for the what, when, where, and why a certain strategy can be employed to achieve the overall success of the platform based business as well as how well is the impact of all the previous dimensions.

Fourth, discovered theory in this DBA can be considered rehearsals enabling strategy that can help each decision-maker to make some trials and errors in the test lap and examine his own strategies and decisions before being attacked by the real market situations. This added value is gained through using the system dynamics models as embedded element in the theory structure. Usually, system dynamics models are built to understand and deal with chronic wicked problems just after being affected by its negative consequences as well as failing to solve by intuitive simple solutions (Rittel & Webber, 1973). In other words, system dynamics try to solve the problems after the fact. However, in this DBA thesis, system dynamics have been used proactively.

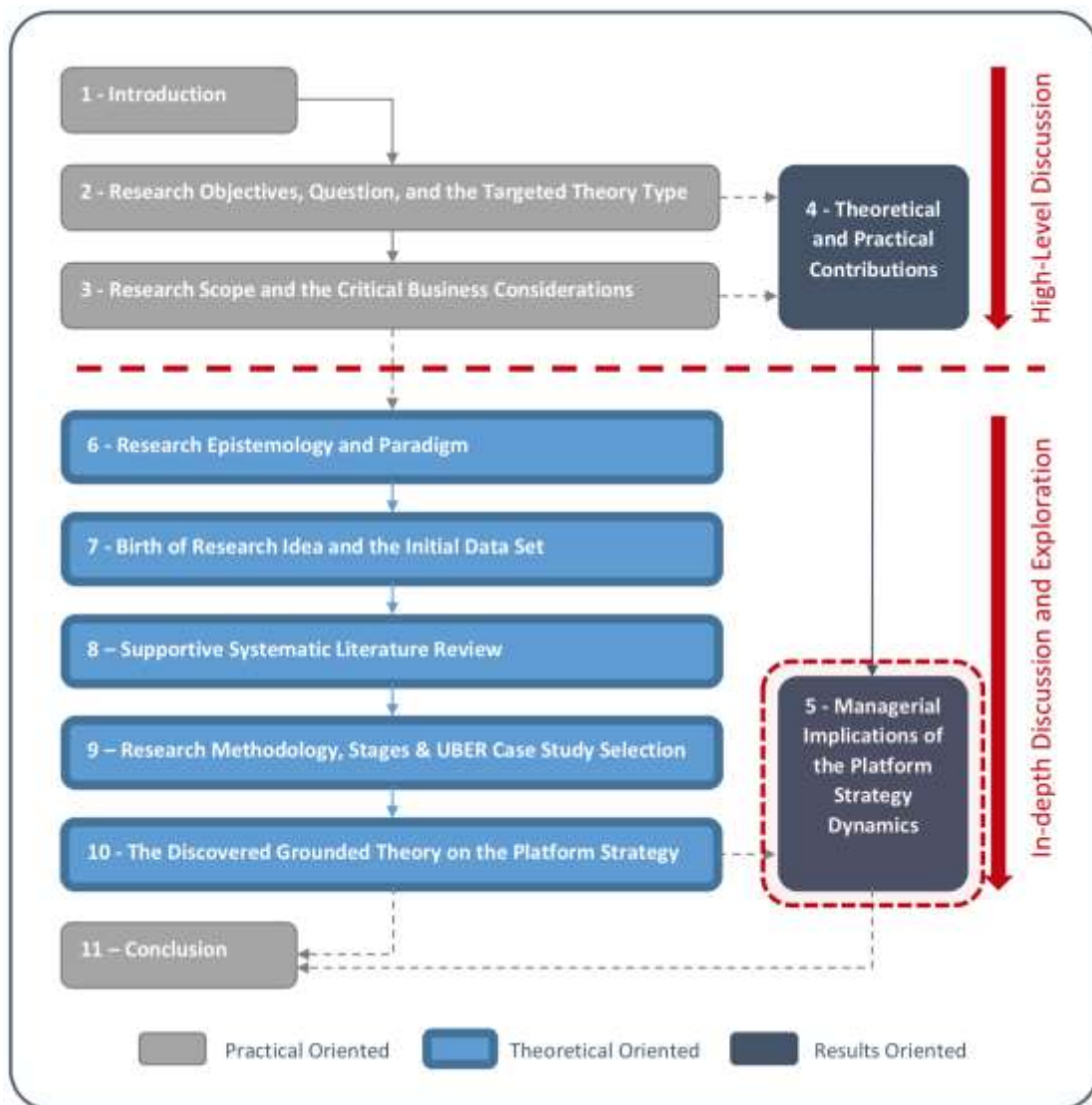
However, the added value of this built-in system dynamics model within the discovered theory is that it can help decision-makers to save years in trials and errors with wrong decisions or directions along with the expected losses of million dollars or euro.

The decision-makers can simply figure out the consequences of the decisions that should be taken in the first year, second year, or later years to come just before starting anything in the real world. furthermore, decision-makers will be confident that these obtained conclusions is as much accurate as possible because the strategizing framework or theory that is followed is accumulating long-term knowledge and experiences as discussion in a previous point as well as used this knowledge and experience to enable qualitative logical simulation of the decision consequences in the future. Of course, this power came from the well-tested and proved system dynamics archetypes as will be explained in detail later on.



## CHAPTER-5

### MANAGERIAL IMPLICATIONS OF THE PLATFORM STRATEGY DYNAMICS



## 5. MANAGERIAL IMPLICATIONS OF THE PLATFORM STRATEGY DYNAMICS

According to Beaulieu & Kalika (2020), the most important distinguishing point between a DBA thesis and a regular PhD thesis is the practical orientation of the research as well as the depth of the practical recommendations that are presented based on the obtained results of the research project. These recommendations should be able to provide the anticipated depth (Beaulieu & Kalika, 2020), which helps to change the managerial practices, achieve real life impact, and help managers do better business.

Simply, the most evident benefit from the obtained results of this research project and its discovered theory for practitioners and decision-makers is that the strategy formulation and implementation, for designing and operating digital services platforms, are no longer going to be an ad-hoc challenge nor a black box mission that depends on the tacit knowledge in the mind of platform owners or operators. They will be given a clear structure for what this strategy should look like and its related decisions, decisions' categories and the optimum sequence for taking them as well as the degrees of freedom in each decision. Furthermore, the interrelationships and interdependences of these decisions will be given too. Finally, the impact of these decisions on the key performance indicators "KPIs" will be clear helping them plan for this success.

In addition, as mentioned before, the most powerful practical contribution of this research is the ability to provide a detailed strategy formulation and implementation formwork for designing and operating digital services platforms, which start from the most primitive strategic choices to the most detailed prescriptive strategic actions. This framework links the initial optimistic sky-limited visions to the most daunting down-to-earth implementation action items through a logical well-rationalized framework that contains categories of interlinked and interdependent strategic choices/decisions that have complex dynamic supportive and limiting effects. This power point came from the previously mentioned types of the discovered theory, which is a "Prescriptive Theory (Type-V)" (Holton & Walsh, 2016) that provides answers to many elementary questions including (*How should it be done?*) as explained by Holton & Walsh (2016).

The research results identified the critical mass & network effect as the most important key performance indicators "KPIs" for measuring the digital service platform's success. What makes these "KPIs" unique is that any competitor, who is able to achieve the network effects can gain many superior business benefits such as:

- Having More Effective Competitive Advantage over the Typical Quality of Services (Zhu & Xie, 2014).
- Expanding Product Line Offering (Bhargava, 2014).
- Charging Higher Prices for Services (Li, Liu, & Bandyopadhyay, 2010).
- Taking Better Trading Decisions (Lia & Penardb, 2014).
- Achieving Faster Growth (Garcia-Swartz, Muhamedagic, & Saenz, 2019) & (Chu & Manchanda, 2016).

- Achieving Market Leadership (Lee, Kim, Noh, & Lee, 2010).
- Overcoming Competition and Overlooking Other Substitutes (Srinivasan & Venkatraman, 2010).
- Gaining Higher Market Share (Zhu & Iansiti, 2007).
- Dominating the Market (Zhu & Iansiti, 2007) & (Mcintyre & Srinivasan, 2017).
- Reshape and Restructuring the Market (Zhu & Iansiti, 2007).
- Converging the Market towards the Long-Term Monopoly (Niculescu, Wu, & Xu, 2018).
- Securing Long-Term Suitability of all the Hard Won Benefits (Mullick, Raassens, Haans, & Nijssen, 2020).

These “KPIs” were represented in the discovered system dynamics and its causal loop diagrams model, which is going to be explained in detail later on, with a single strategic metric, which is the net number of subscribed users to the platform that can be calculated by subtracting the unsubscribed users variable from the new subscribed users variable.

This means that the recommendations that can be given to the digital platform strategists, decision-makers and other managerial levels concerned with the designing and operating of the digital services platforms focus on reducing, minimizing or at least controlling the number of the unsubscribed users as well as increasing or even maximizing, the number of the new subscribed users (Figure 12).

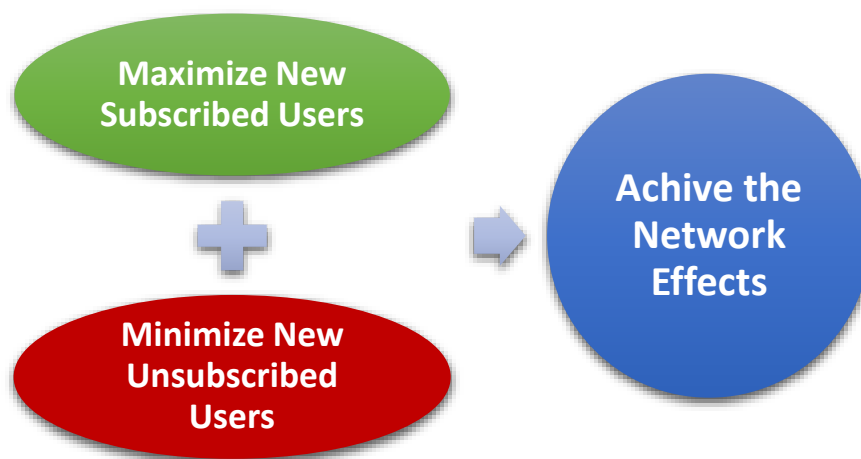


*Figure 12: The Two Required Action Items to Achieve the Network Effects*

How should this be done? Before going into the details, and to facilitate and simplify the mission of presenting the obtained results of this DBA thesis in terms of a detailed description of both strategic impacts and managerial recommendations, a basic “Recommendations Presentation Coding System” is going to be used as follows:

- Recommended Strategic Action Items (RSAI-01, RSAI-02,...etc.), which represent the highest level of the managerial recommendations that can be given to the decision-makers and practitioners in order to be able to achieve the required success of the digital service platforms or simply the network effect. However, they need more detailed tactical and operational action items to explain how they can be realized. This level has no associated embedded timing or ordering sequence to be followed when carried out in real life managerial practices. Hence, the two previously just recommended strategic action items, which have just appeared in Figure 12 can take the following codes. RSAI-01 for minimizing/controlling the unsubscribed users as well as RSAI-02 for increasing/maximizing the new subscribed users.
  
- Recommended Strategizing Process Decisions (RSPD-01, RSPD-02,...etc.), which represent the next tactical detailed level of the managerial recommendations that can be given to the decision-makers and practitioners in order to be able to achieve the required success of the digital service platforms or simply the network effect. However, they need more detailed operational action items to explain how they can be realized. This level has an associated embedded timing and ordering sequence to be followed when carried out in real life managerial practices. Furthermore, these action items are being recommended based on the obtained results of the final discovered classical grounded theory about the digital service platform strategy dynamics and its conceptualized and produced final conceptual diagram.
  
- Recommended Down-to-Earth Action Items (RDAI-01, RDAI-02,...etc.), which represent the next operational detailed level of the managerial recommendations that can be given to the decision-makers and practitioners in order to be able to achieve the required success of the digital service platforms or simply the network effect. They are the most detailed action items that explain how the higher strategic and tactical levels of action items can be realized. This level has no associated embedded timing and ordering sequence to be followed when carried out in real life managerial practices. Furthermore, these action items are being recommended based on the obtained results of the final discovered classical grounded theory about the digital service platform strategy dynamics, especially the system dynamics modeled part, its associate archetypes, its related continuous controllable variables (CCVs) of the theory, and the conceptualized and produced overall collective diagram of the co-existing archetypes.
  
- Recommended Implementation Action Items (RIAI-01, RIAI-02,...etc.), which are similar to the recommended down-to-earth action items in terms of the operational details, the no associate embedded timing and order sequence, and are recommended based on the obtained results of the discovered classical grounded theory. However, what makes them different is that they are being recommended based on the obtained results of the non-system dynamics part and its related discrete controllable variables (DCVs) in the final discovered classical grounded theory about the digital service platform strategy dynamics and its conceptualized and produced final conceptual diagram.

- **Recommended Continuous Monitoring Items (RCMI-01, RCMI-02,...etc.),** which are similar to the recommended down-to-earth action items in terms of the operational details, the no associate embedded timing and order sequence, and are recommended based on the obtained results of the discovered classical grounded theory. However, what makes them different is that they are being recommended based on the obtained results of the non-system dynamics part and both of the continuous uncontrollable variables (CUVs) and the discrete uncontrollable variables (DUVs) in the final discovered classical grounded theory about the digital service platform strategy dynamics and its conceptualized and produced final conceptual diagram. The embedded structural complexity of this discovered theory can be considered as an additional source for the recommendations too.
- **Recommended Repetitively Managed Items (RRMI-01, RRMI-02,...etc.),** which are similar to the recommended down-to-earth action items in terms of the operational details, the no associate embedded timing and order sequence, and are recommended based on the obtained results of the discovered classical grounded theory. However, what makes them different is that they are being recommended based on the obtained results of the special parts of the non-system dynamics part in the final discovered classical grounded theory about the digital service platform strategy dynamics and its conceptualized and produced final conceptual diagram. This is the special type that is related to the non-organic growth (NOG) part of the strategy.

After explaining the basic coding system for presenting the managerial recommendations, it is time to explain these recommendations in detail. Going back to the question raised just before explaining the coding system, which is: How should this be done? According to the obtained results in this DBA thesis and through the discovered classical grounded theory, this question can be answered through the following chronological intuitive strategizing process (Figure 13), which include four logical and timely stages as follows:

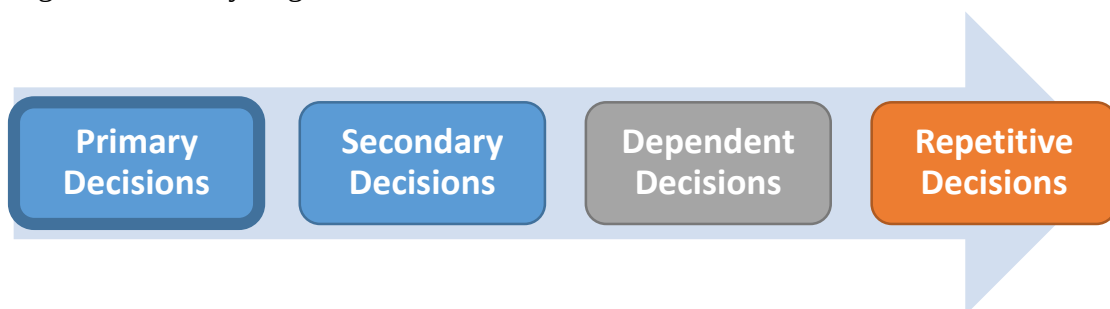


*Figure 13: The Chronological Intuitive Strategizing Process for Achieving the Platform Network Effects*

In the first stage, they should take the following primary decisions, from the previously mentioned recommended strategizing process decisions category (RSPD-01, RSPD-02,...etc.), that have the maximum degree of freedom:

- RSPD-01: Selecting the marketplace structure.
- RSPD-02: Selecting the pre-dominate platform type.
- RSPD-03: Selecting the architecture pattern.

Then the second stage is to take the following secondary decisions that came after the primary decisions in the timeline, but still have the same maximum degree of freedom. These decisions are:

- RSPD-04: Selecting the users' types.
- RSPD-05: Selecting the architecture layers.

Then the third stage is to take the following depended decisions that came after the primary and secondary decisions in the timeline and have the lower degree of freedom because they are tightly coupled and affected by the choices in the primary and secondary decisions. These decisions are:

- RSPD-06: Selecting the work modes.
- RSPD-07: Selecting the governance methods.
- RSPD-08: Selecting the launching strategies.
- RSPD-09: Overcoming the adoption challenges.

Then, the fourth stage is to continuously and endless take the following repetitive decisions that came after the three previous decision categories in the timeline, and still have the minimum degree of freedom. These decisions are:

- RSPD-10: Selecting the shaping strategies.
- RSPD-11: Selecting the behavior design strategies.

However, some of these decisions can be fine-tuned because they are depending on continues variable that can be continuously adjust. These type include the following:

- RSPD-08: Selecting the launching strategies.
- RSPD-09: Overcoming the adoption challenges.
- RSPD-11: Selecting the behavior design strategies.

With the aid of the designed and built systems dynamics models in this DBA thesis, the obtained results of the model determined a set of the daunting down-to-earth implementation action items that should be taken during the implementation of the strategy. They are form the previously mentioned recommended down-to-earth action items category (RDAI-01, RDAI-02,...etc.). Starting from the simplest one, reducing, minimize or at least controlling the number of the unsubscribed users, which is being affected by the single "Fixes that Fail" archetype, the digital platform strategists and/or the decision-makers should examine their problems solving techniques thoroughly as mentioned by Braun (2002) to avoid focusing on the short-term fixes. Braun (2002) recommended some prescriptive actions in this case including the following:

- RDAI-01: Identifying and removing the fundamental causes of the problems that push the existing users to unsubscribe from the platform.
- RDAI-02: Identifying and monitoring the side effects of these fixes to ensure avoiding negative consequences later on that is not obviously anticipated.
- RDAI-03: Developing a two-tier approach that is going to simultaneously apply short-term fixes and planning for the fundamental long-term interventions.

Shifting the focus to the more complex side of the equation, increasing or even maximizing the number of the new subscribed users, which is being affected by the other remaining four archetypes (i.e. the “Tragedy of the Commons”, the “Attractiveness Principle”, the “Growth and Underinvestment”, and the “Eroding Goals”), the digital platform strategists and/or the decision-makers should take care of the following aspect.

First, the digital platform strategists and/or the decision-makers should examine their launching strategies thoroughly, which is affecting the “Tragedy of the Commons” archetype. Although the typical situation that relates to the “Tragedy of the Commons” archetype, explained by Braun (2002), was related to internal commons to more than one department within the same organization, and hence, the resource allocation problem, this DBA thesis focused on the external commons in which more than one organization or platform in the same market are competing to attract. These commons are the market pie/customer base available for the competitors. Hence, it is logical to assume that not all Braun (2002) recommended prescriptive actions are valid in this case. The only remaining valid prescriptive actions recommended by Braun (2002) is:

- RDAI-04: Reevaluating the nature of the commons and finding ways to renew them. In the case of competition for digital platforms, the customer development initiatives that try to increase the market pie are a typical example of these prescriptive actions.

Second, they should examine their improvement plans & strategies thoroughly, which is being affected by the “Attractiveness Principle” archetype. Braun (2002) explained that, usually, there are some competing priorities that addressing multiple slowing factors. Hence, Braun (2002) recommended some prescriptive actions in this case including the following:

- RDAI-05: Identifying interconnected limits that affect the decisions.
- RDAI-06: Establishing clear priorities to support the decisions.
- RDAI-07: Identifying potential synergetic tactics to remove the balancing loop before dominating.

Third, they should examine their capital planning & strategies thoroughly, which is being affected by the “Growth and Underinvestment” archetype. Braun (2002) explained that capital investment to enhance capabilities and core competencies overcome growth limits. Hence, Braun (2002) recommended some prescriptive actions in this case including:

- RDAI-08: Take responsive capacity addition to the declined performance.
- RDAI-09: Linking the future investment decisions to external benchmarks and signals instead of past performance measures.

Fourth, the digital platform strategists, and/or the decision-makers should stay Focused on Strategic Vision firmly, which is being affected by the “Eroding Goals” archetype.

Braun (2002) explained that the vision might drift under reality pressures. Hence, Braun (2002) recommended some prescriptive actions in this case including the following:

- RDAI-10: Linking strategic goals to external frame of references and/or benchmarks instead of sliding past performance measures.
- RDAI-11: Identifying any implicit hidden actual goals in the system that conflict with the stated goals.
- RDAI-12: Defining explicit transition plans may represent a resistive wall against this unconscious goals drift.

Figure 14 shows the compiled list of all required implementation action items to achieve the network effects. All come from and are based on the discussed archetypes in the previous two pages, which were totally inspired by Braun (2002) as just explained.



*Figure 14: Down-to-Earth Action Items to Achieve the Network Effects (From System Dynamics (Braun, 2002))*

In addition to the previously mentioned and presented action items that were recommended based on the built system dynamics model and its archetypes (Braun, 2002), there are many other implementation action items that can be recommended based on the two types of the discovered theory elements, which are the direct relationships to the network effects as well as the other “Discrete Controllable Variables-DCVs”. They are from the previously mentioned recommended implementation action items (RIAI-01, RIAI-02,...etc.) category.

For example, most of the recommended implementation action items that are related to the services orientation (Lovelock & Wirtz, 2011) of the digital platforms are from the direct relationships type. While, on the other hand, something like governance mechanisms and homing policies (Song, Xue, Rai, & Zhang, 2018) are from the discrete controllable variables’ type. Hence, this leads to recommending some additional prescriptive actions including the following not ordered list and Figure 15:



- RIAI-01: Managing the data as strategic assets related to platform (Tucker, 2019).
- RIAI-02: Designing the homing policies related to platform users (Wu & Chamnisampan, 2021).
- RIAI-03: Managing the six quality gaps in customers' expectations (Lovelock & Wirtz, 2011).
- RIAI-04: Managing the zone of tolerance in customers' expectations (Lovelock & Wirtz, 2011).
- RIAI-05: Designing the governance policies related to platform users (Song, Xue, Rai, & Zhang, 2018).
- RIAI-06: Designing the product offering mix related to different offerings (Feng, Chen, Feng, & Li, 2020b).
- RIAI-07: Managing the satisfaction-loyalty model in customers' expectations (Lovelock & Wirtz, 2011).
- RIAI-08: Designing the effective recovery model related to the delivered services (Lovelock & Wirtz, 2011).
- RIAI-09: Designing the customer experience joineries for each side of the marketplace (Lovelock & Wirtz, 2011).
- RIAI-10: Managing the inverted organizational pyramid of the delivered services (Lovelock & Wirtz, 2011).
- RIAI-11: Managing the timing of market entry strategies for different offerings (Wu & Chamnisampan, 2021).
- RIAI-12: Managing the value co-creation mechanisms for different marketplace sides (Fu, Wang, & Zhao, 2017).
- RIAI-13: Managing the sequential product positioning strategies for different offerings (Wang & Lyu, 2020).
- RIAI-14: Designing the proprietary technology openness for different market sides (Niculescu, Wu, & Xu, 2018).
- RIAI-15: Managing the strategic pre-announcements for different offerings (Dranove & Gandal, 2000).
- RIAI-16: Managing the hardware compatibility of the infrastructure (Gandal, Greenstein, & Salant, 1999).
- RIAI-17: Managing the software non-exclusivity for the platform application (Lee R. S., 2013).



*Figure 15: The Down-to-Earth Action Items to Achieve the Network Effects (Non System Dynamics)*

Furthermore, and to enrich the set of recommendations that can be given to the decision-makers based on the discovered theory, there are three elements that should be closely and continuously monitored to achieve the digital platform success and reaching the network effect. They are from the previously mentioned recommended continuous monitoring items (RCMI-01, RCMI-02,...etc.) category. These elements should always be present in the decision-makers' management agenda (Figure 16) as follows:

- RCMI-01: Monitoring continuously the uncontrollable continuous and discrete variables to gain sufficient and adequate situational awareness about the overall strategic situation especially due to the highly unpredictable environment that surrounds the digital platforms. The uncontrollability of the variable means that it is beyond the ability of the decision-makers to manipulate by any means (Patzner, 1984). Hence, they have to live with as it is and think how to get benefit from the situation.
- RCMI-02: Monitoring continuously the users' behavioral psychology as a critical dimension of the platform success especially that this dimension can be considered as a totally new for the management and business research related to the digital platforms field. Fogg model (2009) is a clear example of this dimension.
- RCMI-03: Monitoring continuously the synergetic effects that can result from the continuous change in the values of different elements from inside and outside the system dynamics model, especially that these changes can produce unanticipated patterns and effects.

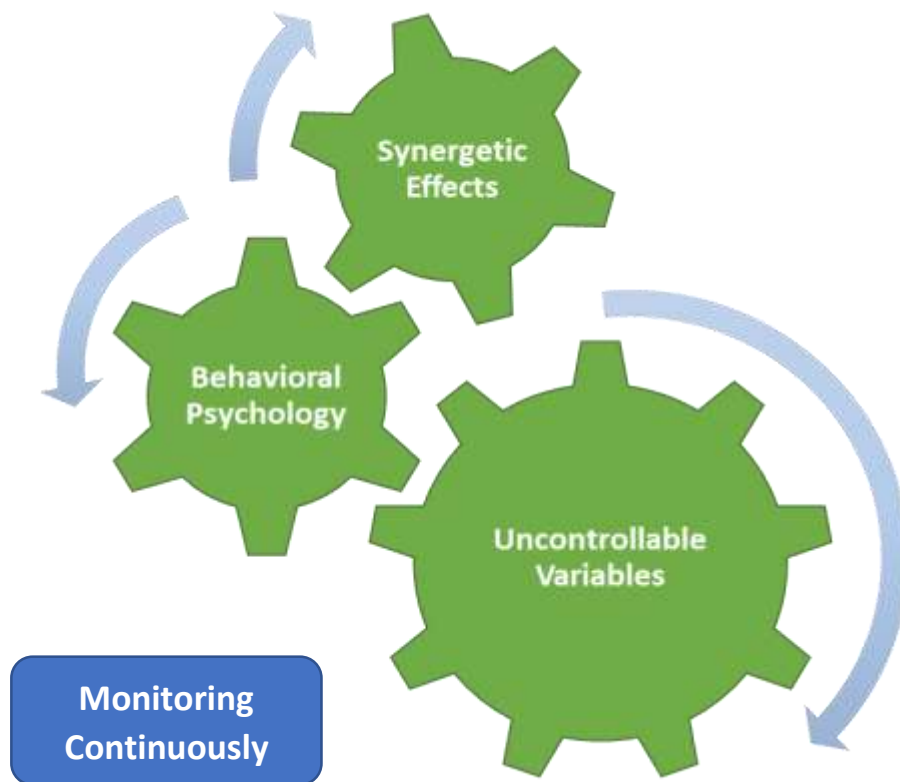


*Figure 16: The Decision-Makers' Management Agenda to Achieve the Network Effects*

Finally, and to complete the set of recommendations that can be given to the decision-makers based on the discovered theory with the previously mentioned recommended repetitively managed items (RRMI-01, RRMI-02,...etc.) category, there is one additional element, which is the “Non-Organic Growth-NOG”, that should be repetitively managed to achieve the digital platform success and reaching the network effect as follows (Figure 17):

- RRMI-01: Repetitively manage the possible strategic partnerships as a critical and special dimension of the platform success especially that this dimension can be considered as a totally different dimension for the management and business research related to the digital platforms field. The vast majority of the researches related to the success of the digital platforms focus on the competition between many platforms. Hence, implicitly, advocates the mindset of “Ecosystems” within the same platform, but strongly advocate the mindset of “Egosystems” between the different platforms. Successfully managing the strategic partnerships even between competing platforms shifts the platform-based ecosystem economy towards a new era of the platform of platforms or even to the extreme dream of the ecosystem of ecosystems.
- RRMI-02: Repetitively manage the possible synergetic acquisitions as a critical dimension of the platform success that can results in a continuous reshaping of the platforms competition landscape as well as it may even support the ambitious vision mentioned above related to the platform of platforms or even to the extreme dream of the ecosystem of ecosystems.

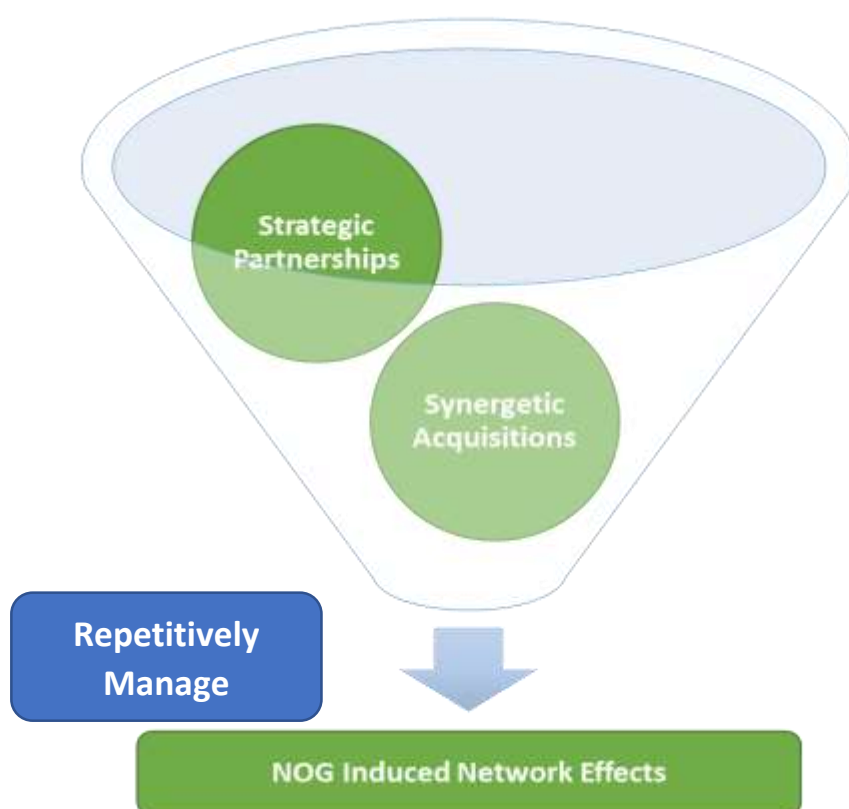


*Figure 17: Additional Strategic Action Items that the Decision-Makers Should Repetitively Manage*

After the detailed explanation of the basic coding system for presenting the managerial recommendations and the recommendations themselves, it can be helpful to map them to their sources from the DBA results in a simple tabular form as shown in the following table (Table 1), which follows the approach mentioned and recommended by Beaulieu & Kalika (2020) to present the managerial recommendations as a source of impact.

| No | Results of DBA Thesis                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Managerial Recommendations                                                            |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1  | The discovered and emerged core category during the classical grounded theory research methodology, which is the ability of the digital service platform to achieve the ultimate success key performance indicator (i.e. the network effect). It is related to the initially determined core concern, which is the ability of the digital service platform to survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy.                           | Recommended Strategic Action Items (RSAI-01 & RSAI-02)                                |
| 2  | The final discovered classical grounded theory about the digital service platform strategy dynamics and its conceptualized and produced final conceptual diagram.                                                                                                                                                                                                                                                                                                                           | Recommended Strategizing Process Decisions (Starting from RSPD-01 and up to RSPD-11). |
| 3  | The final discovered classical grounded theory about the digital service platform strategy dynamics, especially the system dynamics modeled part, its associate archetypes, its continuous controllable variables (CCVs) of the theory, and the conceptualized and produced overall collective diagram of the co-existing archetypes.                                                                                                                                                       | Recommended Down-to-Earth Action Items (Starting from RDAI-01 and up to RDAI-12).     |
| 4  | The non-system dynamics part and its related discrete controllable variables (DCVs) in the final discovered classical grounded theory about the digital service platform strategy dynamics and its conceptualized and produced final conceptual diagram.                                                                                                                                                                                                                                    | Recommended Implementation Action Items (Starting from RIAI-01 and up to RIAI-17).    |
| 5  | The non-system dynamics part related to the behavior design strategies and both of the continuous uncontrollable variables (CUVs) and the discrete uncontrollable variables (DUVs) in the final discovered classical grounded theory about the digital service platform strategy dynamics and its conceptualized and produced final conceptual diagram. The embedded structural complexity of this discovered theory can be considered as an additional source for the recommendations too. | Recommended Continuous Monitoring Items (RCMI-01, RCMI-02, and RCMI-03).              |
| 6  | The special parts the non-system dynamics part in the final discovered classical grounded theory about the digital service platform strategy dynamics and its conceptualized and produced final conceptual diagram. This is the special type that is related to the non-organic growth (NOG) part of the strategy.                                                                                                                                                                          | Recommended Repetitively Managed Items (RRMI-01 and RRMI-02).                         |

*Table 1: Mapping the Results of DBA Thesis to the Managerial Recommendations*

The previous summary in Table 1 listed a total number of 47 recommendations on the different strategic, tactical, and somehow operational levels. Hence, it may add value to map these recommendations to their intended target audiences, especially due to this relatively large number, which follows the approach mentioned and recommended by Beaulieu & Kalika (2020) to present the managerial recommendations as a source of impact. According to Table 2, which provides this mapping, the decision-makers and practitioners such as platform owners and/or operators are the typical target audience for most of these recommendations. This is, by definition, intuitively logical due to the nature of the DBA thesis, the research project scope, and the collected datasets. However, there are two additional types of target audiences that worth mentioning and explanation in detail. The first target audience category is the advisors and consultants, who are going to help the accountable decision-makers and practitioners in their journey to achieve the required success of the digital services platform strategy or simply the network effect. Usually, the advisors and/or consultants play critical roles in advancing the business, especially in the digital economy that depends largely on the up-to-date discovered knowledge by helping them save time/money and accelerate the adoption and adaptation of the new methodologies and frameworks. In this case, they act as a knowledge proxy who has the responsibility to understand these new methodologies and frameworks thought putting their legs in the shoes of the original decision-makers and trying to provide them with the best-fit recommendations.

| No | Managerial Recommendations                                                            | Target Audience                                                                                                                                                                                           |
|----|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Recommended Strategic Action Items (RSAI-01 & RSAI-02)                                | Decision-makers and practitioners such as platform owners and/or operators.                                                                                                                               |
| 2  | Recommended Strategizing Process Decisions (Starting from RSPD-01 and up to RSPD-11). |                                                                                                                                                                                                           |
| 3  | Recommended Down-to-Earth Action Items (Starting from RDAI-01 and up to RDAI-12).     | <i>Note: Advisors/Consultants can be within this group if they are going to help the decision makers/practitioners</i>                                                                                    |
| 4  | Recommended Implementation Action Items (Starting from RIAI-01 and up to RIAI-17).    |                                                                                                                                                                                                           |
| 5  | Recommended Continuous Monitoring Items (RCMI-01, RCMI-02, and RCMI-03).              | Decision-makers and practitioners such as platform owners and/or operators.<br><br>In addition, The public policy makers may be interested in the uncontrollable variables including CUVs & DUVs.         |
| 6  | Recommended Repetitively Managed Items (RRMI-01 and RRMI-02).                         | Decision-makers and practitioners such as platform owners and/or operators.<br><br><i>Note: Advisors/Consultants can be within this group if they are going to help the decision makers/practitioners</i> |

Table 2: Mapping the Managerial Recommendations to the Target Audiences

The second target audience category is the public policy-makers, who may be interested in some of these recommendations that are closely monitored by the original decision-makers and practitioners in their journey to achieve the required success of the digital services platform strategy or simply the network effect. Usually, the public policy-makers play a critical role in either accelerating or de-accelerating the businesses through creating new public policies that have positive or negative effects on the digital platforms-based businesses. This may affect the uncontrollable variables within the discovered classical grounded theory, either discrete or continuous variables. These are usually the variables that affect the macro-economic conditions, which are totally out of the control of the decision-makers and practitioners and will affect several platforms at the same time. As an example, the macro-economic conditions that are affected by the public policies may affect the quality of the available suppliers at the whole industrial level. Typically, the digital platform-based organizations are going to depend on these suppliers in their value network. In this case, these public policies, which are uncontrollable for the decision-makers and practitioners, can help increase or decrease the success level of the digital services platform. Furthermore, it may work as an attraction point for some international markets over others. Although it is a critical aspect, the macro-economic level was outside the scope of this DBA thesis or even its suggested future work. Hence, Table 2 mentioned them as just a quick note to help the decision-makers and practitioners understand the existence and the impact of the other players especially that they are totally outside the scope of their platform organization.

Going a step further in investigating the nature of these managerial recommendations, it will be helpful to classify them based on the intuitive urgency and importance (Table 3), which follows the approach mentioned and recommended by Beaulieu & Kalika (2020) to present the managerial recommendations as a source of impact.

| No | Recommendations                                                                                                                        | Priority by Urgency | Priority by Importance |
|----|----------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------|
| 1  | Recommended Strategic Action Items (RSAI-01 & RSAI-02)                                                                                 | All the time        | High                   |
| 2  | Recommended Strategizing Process Decisions, including the primary and secondary decisions (Starting from RSPD-01 and up to RSPD-05).   | High                | High                   |
| 3  | Recommended Strategizing Process Decisions, including the depended and repetitive decisions (Starting from RSPD-06 and up to RSPD-11). | Medium              | High                   |
| 4  | Recommended Down-to-Earth Action Items (Starting from RDAI-01 and up to RDAI-12).                                                      | Medium              | High                   |
| 5  | Recommended Implementation Action Items (Starting from RIAI-01 and up to RIAI-17).                                                     | Medium              | High                   |
| 6  | Recommended Continuous Monitoring Items (RCMI-01, RCMI-02, and RCMI-03).                                                               | All the time        | Medium                 |
| 7  | Recommended Repetitively Managed Items (RRMI-01 and RRMI-02).                                                                          | Low                 | Medium                 |

*Table 3: Classification of the Managerial Recommendations by Urgency and Importance*

As indicated in Table 3, the recommended strategic action items are fixed recommendations that do not change over time. The success of the digital services platforms will remain measured in terms of the network effect through increasing the new subscribed users and decreasing the unsubscribed ones. Of course, it is logical to give this type the highest level of importance.

However, on the other hand, the second category including the recommended strategizing process decisions, including the primary and secondary decisions (Starting from RSPD-01 and up to RSPD-05), have a high urgency and high importance. These primary and secondary decisions are taken by definition in the earliest stages of the strategizing process to design and operate the digital services platform. Furthermore, they have the highest level of importance as they are almost unrecoverable or have a huge recovery cost if there is a need to be changed. As an example, selecting a specific marketplace structure for the newly designed digital service platform is a decision from the primary decisions category. The digital platform-based organization select the marketplace structure in the earliest stages of the strategizing process to design and operate the digital services platform. Furthermore, the selected marketplace structure are almost unrecoverable or have a huge recovery cost if there is a need to be changed. Hence, selecting the marketplace structure simply has a high urgency and high importance.

The third category appeared in Table 3, which is the recommended strategizing process decisions, including the dependent and repetitive decisions (Starting from RSPD-06 and up to RSPD-11), have a medium urgency and high importance. This medium urgency is because these dependent decisions are taken by definition in the middle stage of the strategizing process to design and operate the digital services platform. As an example, selecting the suitable platform governance method is a dependent decision that came after selecting the suitable marketplace structure. Hence, it has a medium urgency. However, of course, has a high importance because wrong governance's methods can break the whole digital services platform and case failure.

Furthermore, the repetitive decisions start in the middle stage of the strategizing process too but continue endlessly. Similarly, they have the highest level of importance as they can still make or break the success of the digital service platform strategy if done wrongly even with the relatively moderate recovery cost if there is a need to be changed. As an example, selecting the suitable pricing strategy is a repetitive decision that are being taken and revised endlessly, but start after selecting the suitable marketplace structure and the suitable governance methods. Hence, it has a medium urgency. However, of course, has a high importance because wrong pricing strategies can break the whole digital services platform and case failure.

Exactly, similar logic can be applied to both the recommended down-to-earth action items (Starting from RDAI-01 and up to RDAI-12) and the recommended implementation action items (Starting from RIAI-01 and up to RIAI-17). These two types are related to the dependent and repetitive decisions by definition.

The sixth category appeared in Table 3, which is the recommended continuous monitoring items (RCMI-01, RCMI-02, and RCMI-03), should be monitored all the time with medium importance.



It should be monitored all the time because the decision-makers cannot afford to ignore watching them, while they have logical medium importance due to the existence of the unanticipated synergetic effects that are unknown by definition but may surprise the decision-makers in very special cases. It is logical to assume that the existence of the unanticipated synergetic effects reduced the overall average importance of this sixth category.

The final category appeared in Table 3, which is the recommended repetitively managed items (RRMI-01 and RRMI-02), have a low urgency and medium importance. It is logical to assume that the low urgency is because it is totally unexpected to have massive partnerships and acquisitions in the early stages of the digital service platform strategizing process. Usually, these massive aggrieve strategies came later on when the platforms are well-established in the market. Furthermore, the importance is medium because not all decision-makers may have the same acceptance of the nature of these non-organic growth strategies. However, everything remains relative in each platform and this last category has the maximum possibility of relativity.

Finally, and by going the latest step further in investigating the nature of the managerial recommendations, it will be helpful to classify them based on their feasibility to be applied in the real-life (Table 4), which follows the approach mentioned and recommended by Beaulieu & Kalika (2020) to present the managerial recommendations as a source of impact.

| No | Recommendations                                                                                                                        | Technical Feasibility | Players' Support |
|----|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------|
| 1  | Recommended Strategic Action Items (RSAI-01 & RSAI-02)                                                                                 | High                  | High             |
| 2  | Recommended Strategizing Process Decisions, including the primary and secondary decisions (Starting from RSPD-01 and up to RSPD-05).   | High                  | High             |
| 3  | Recommended Strategizing Process Decisions, including the depended and repetitive decisions (Starting from RSPD-06 and up to RSPD-11). | Medium                | High             |
| 4  | Recommended Down-to-Earth Action Items (Starting from RDAI-01 and up to RDAI-12).                                                      | Medium                | High             |
| 5  | Recommended Implementation Action Items (Starting from RIAI-01 and up to RIAI-17).                                                     | Medium                | High             |
| 6  | Recommended Continuous Monitoring Items (RCMI-01, RCMI-02, and RCMI-03).                                                               | High                  | Medium           |
| 7  | Recommended Repetitively Managed Items (RRMI-01 and RRMI-02).                                                                          | Low                   | Low              |

*Table 4: Feasibility of the Managerial Recommendations*

However, it is worth mentioning that Beaulieu & Kalika (2020) suggested four dimensions in the first place to examine the feasibility of the managerial recommendations, which are the financial feasibility, the technical feasibility, the organizational feasibility, and the expected support from the other players. As indicated in Table 4, the financial feasibility and the organizational feasibility were omitted from the discussion and the examination. The rationale behind this cancelation is that according to the previously discussed DBA thesis scoping and critical business considerations, it is assumed that the digital platform-based organization will be well-funded and well-equipped by the required human resources and skills. There are no lack-off challenges in regard to the financial resources and the organizational resources. Hence, both dimensions are always highly feasible and there is no need to repeat this piece of information with every row.

As indicated in Table 4, the recommended strategic action items have the highest technical feasibility. This is, actually, the main contribution of this DBA thesis. The target of this DBA thesis is to make this success so feasible and not so challenging as it was before. Of course, it is logical to expect that this type will gain the highest level support from all players inside the digital platform organization. Similarly, the recommended strategizing process decisions, including the primary and secondary decisions (Starting from RSPD-01 and up to RSPD-05), have a high technical feasibility and will gain the highest level of support from all players too. The reasons are that these primary and secondary decisions are logically taken, by definition, by the players who want the platform to succeed, have more than enough fund, and well-equipped by the needed talents and skills. As an example, selecting a specific marketplace structure for the newly designed digital service platform is a decision from the primary decisions category. The digital platform-based organization should have the required human resources skills that are able to select the suitable marketplace structure, have the sufficient fund to implement this decision, and of course want the platform to achieve the required success. Hence, selecting the marketplace structure simply has high technical feasibility and will gain the highest level of support from all players.

However, on the other hand, the following three categories in Table 4 (i.e. categories 3, 4, and 5), have a medium technical feasibility logically and it is logical to expect that these types will gain the highest level of support from all players too. These three categories are as follows:

- The recommended strategizing process decisions, including the primary and secondary decisions (Starting from RSPD-01 and up to RSPD-05).
- The recommended strategizing process decisions, including the depended and repetitive decisions (Starting from RSPD-06 and up to RSPD-11).
- The recommended down-to-earth action items (Starting from RDAI-01 and up to RDAI-12).

They have medium technical feasibility due to the embedded complexity in the taken decisions. As explained before, the discovered classical grounded theory about the digital platform strategy dynamics can be considered as a meta-strategy that contains a huge number of decision points.

For example, one of the decision points, or the strategies that should be selected by the platform owner/operator as well as repetitively reviewed and adjusted is the pricing strategy. However, this meta-strategy only informs the decision-maker with the importance of this decision point, its decisions' category, when and where it should be considered, the relationships with and the impact on the overall meta-strategy, and the short-term and long-term impacts on the success indicator. The platform owner and/or operator has the full responsibility to be able to take the right decision and set the right price according to his own good knowledge and considerable experience in setting the pricing strategies. This responsibility cannot be replaced by any means.

Hence, it seems expected that these previously mentioned three categories will have medium feasibility due to their embedded complexity. Not every decision-maker and/or practitioner has the same knowledge and experience. On the other hand, of course, it is logical to expect that these three categories will gain the highest level of support from all players inside the digital platform organization. All internal players share the same goal to make the digital platform a successful one.

The sixth category appeared in Table 4, which is the recommended continuous monitoring items (RCMI-01, RCMI-02, and RCMI-03), have a high technical feasibility and it is logically expected to gain a medium level of support from the players. Intuitively, monitoring the happening changes are easier than causing the changes to happen as in the previous five categories, especially with the availability of the required fund and skills, which accounts for the high technical feasibility. However, as mentioned before in Table 2, some of the players are external to the digital platform-based organizations such as the public policy-makers, and it is logical to assume that in some times there will be some opposing interests. As an example, UBER, Facebook, or Apple usually have some conflicts with the public policy makers regarding the privacy of the personal information of the users.

The final category appeared in Table 4, which is the recommended repetitively managed items (RRMI-01 and RRMI-02), have low technical feasibility and it is logically expected to gain a low level of support from the players both internally and externally. Massive partnerships and acquisitions are by definition time-consuming, complex, and costly. The typical due-diligence process takes time, while the negotiations are usually a so complex process. Acquisitions too, usually, end up being so costly. UBER's acquisition of Careen can be considered as a clear example of how much money is required for a single acquisition, not to mention the massive repetitive that happened in the UBER case.

Before closing this chapter, it may add value to going back to what was mentioned briefly in the practical contributions section (4.2) in chapter-4, which is the theoretical and practical contributions chapter. As discussed before, the discovered theory in this DBA thesis can be considered as a rehearsal enabling strategy that can help managers, decision-makers, and practitioners, on the executive level, to make some trials and errors in the test lap and examine their own strategies and decisions before being attacked by the real market situations. This added value is mainly gained through the usage of the system dynamics models as an embedded element in the theory structure from the beginning. However, on the other hand, this added value is not limited to the system dynamics modeled and embedded parts only.

As explained before in the same section, using a concrete strategizing framework or theory, which is accumulating long-term knowledge and experiences, as a qualitative logical simulation for the consequences of the decisions that may happen in the future can be a critical strategic advantage for those managers, decision-makers, and practitioners, on the executive level.

Starting by the system dynamics modeled parts and its associate archetypes, its related continuous controllable variables (CCVs) of the theory, and the conceptualized and produced overall collective diagram of the co-existing archetypes, the managers, decision-makers, and practitioners can use the related recommended down-to-earth action items (RDAI-01 and up to RDAI-12), in order to achieve the recommended strategic action items (RSAI-01 for minimizing/controlling the unsubscribed users & RSAI-02 for increasing/maximizing the newly subscribed users. As an example, the managers, decision-makers, and practitioners can use the eighth recommended down-to-earth action items (i.e. RDAI-08: Take responsive capacity addition to the declined performance) seriously and focus on being responsive to invest and add the required adequate level of the additional IT capacity to the digital platform in order to be able to improve the performance level, which in turn is going to increase the number of the subscribed users.

Going a step further and capitalizing on the discovered concrete strategizing framework or theory and using it as a qualitative logical simulation tool for the consequences of the decisions, the dry-run of the platform strategy that is formulated by managers, decision-makers, and practitioners on the executive level can be stress-tested and evaluated in the lab using two quality indexes, which are the “Quantitative Quality Index” as well as “Qualitative Quality Index” as indicated in the following table in the next page (Table 5).

Each group of the managerial recommendations, which appear in Table 5, can be given a quantitative score and qualitative rank. The quantitative scores give a single point for each single recommended action item that is being taken into consideration into the formulated strategy. This can result in an accumulated quantitative score that has a range from zero to 45 as indicated in Table 5. This score can represent the level of quality of the formulated strategy. Of course, the quality level of the formulated strategy will go lower as more recommended action items are missed and not included in this strategy. As an example, a formulated strategy that has no explicit pricing strategy has a lower quality than the formulated strategy that has an explicit one.

On the other hand, the qualitative rank gives a specific rank for each recommended action items group, which can result in an accumulated qualitative rank that has a score from zero to 12 as indicated in Table 5. This score can represent the level of quality of the formulated strategy. Of course, the quality level of the formulated strategy will go lower as more recommended action items groups are designed wrongly in the strategy. As an example, a formulated strategy that has a wrong explicit pricing strategy, besides other elements in the same group, has a lower quality than the formulated strategy that has an explicit best fit one.

| No                                                            | Recommendations                                                                                                                        | Quantitative Quality Index           | Qualitative Quality Index                |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------|
| 1                                                             | Recommended Strategic Action Items (RSAI-01 & RSAI-02)                                                                                 | NA                                   | NA                                       |
| 2                                                             | Recommended Strategizing Process Decisions, including the primary and secondary decisions (Starting from RSPD-01 and up to RSPD-05).   | Score range from 0 to 5              | Rank range from 0-low, 1-medium & 2-high |
| 3                                                             | Recommended Strategizing Process Decisions, including the depended and repetitive decisions (Starting from RSPD-06 and up to RSPD-11). | Score range from 0 to 6              | Rank range from 0-low, 1-medium & 2-high |
| 4                                                             | Recommended Down-to-Earth Action Items (Starting from RDAI-01 and up to RDAI-12).                                                      | Score range from 0 to 12             | Rank range from 0-low, 1-medium & 2-high |
| 5                                                             | Recommended Implementation Action Items (Starting from RIAI-01 and up to RIAI-17).                                                     | Score range from 0 to 17             | Rank range from 0-low, 1-medium & 2-high |
| 6                                                             | Recommended Continuous Monitoring Items (RCMI-01, RCMI-02, and RCMI-03).                                                               | Score range from 0 to 3              | Rank range from 0-low, 1-medium & 2-high |
| 7                                                             | Recommended Repetitively Managed Items (RRMI-01 and RRMI-02).                                                                          | Score range from 0 to 2              | Rank range from 0-low, 1-medium & 2-high |
| <b>Accumulated Quantitative and Qualitative Quality Index</b> |                                                                                                                                        | Accumulated Score range from 0 to 45 | Accumulated rank range from 0 to 12      |

*Table 5: Quantitative and Qualitative Quality Indexes of the Digital Platform Strategy Dynamics*

Both the accumulated quantitative scores that have a range from zero to 45 and the accumulated qualitative rank that has a score from zero to 12 can result in a typology of four possible digital platform strategies types as shown in Figure 18. The desired digital platform strategy is the one that is both near the complete strategy and has best fit designed elements (i.e. the Complete & Best-fit Strategy). However, the worst strategy is the one that both has so few elements and has wrongly designed elements (i.e. the Incomplete & Worst-fit Strategy). Of course, there are the other remaining two mix-and-match alternatives, which are the (i.e. the Complete & Worst-fit Strategy) and the (i.e. the Incomplete & Best-fit Strategy) as shown in Figure 18.

The used color coding in Figure 18 indicates that completeness doesn't matter when the strategy elements are wrong. However, completeness does matter when the strategy elements are best-fit. Of course, in this case, the near-complete strategy is much better than the incomplete one. Hence, the discovered theory in this DBA thesis can be considered as a rehearsal enabling strategy that can help managers, decision-makers, and practitioners to make some trials and errors in the test lap and examine their own strategies and decisions using the power of the system dynamics archetypes and the just explained strategizing framework typology.

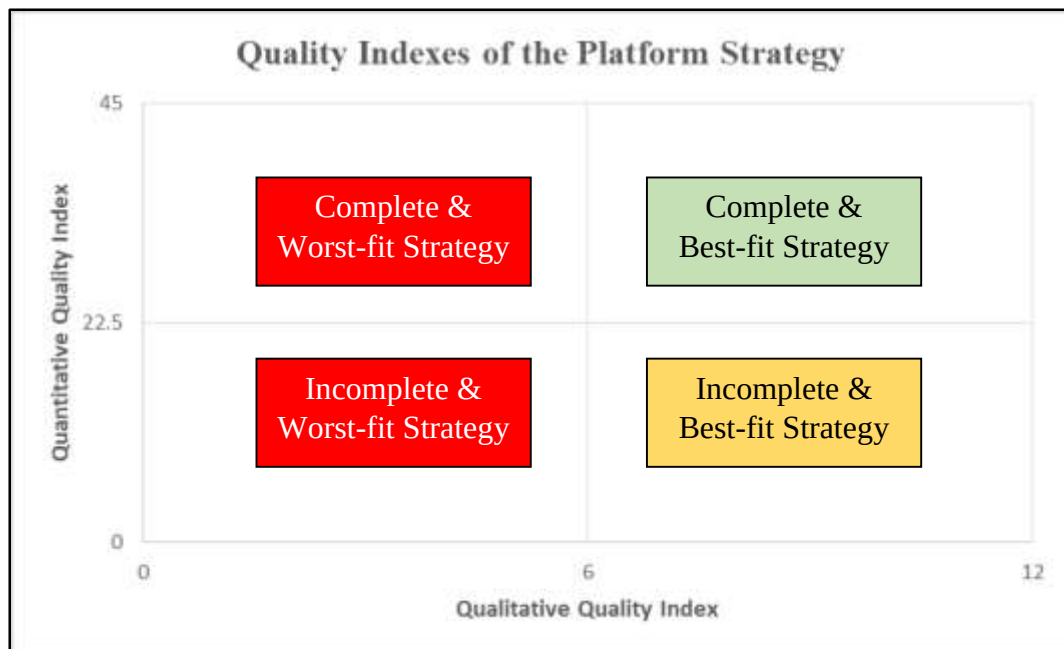
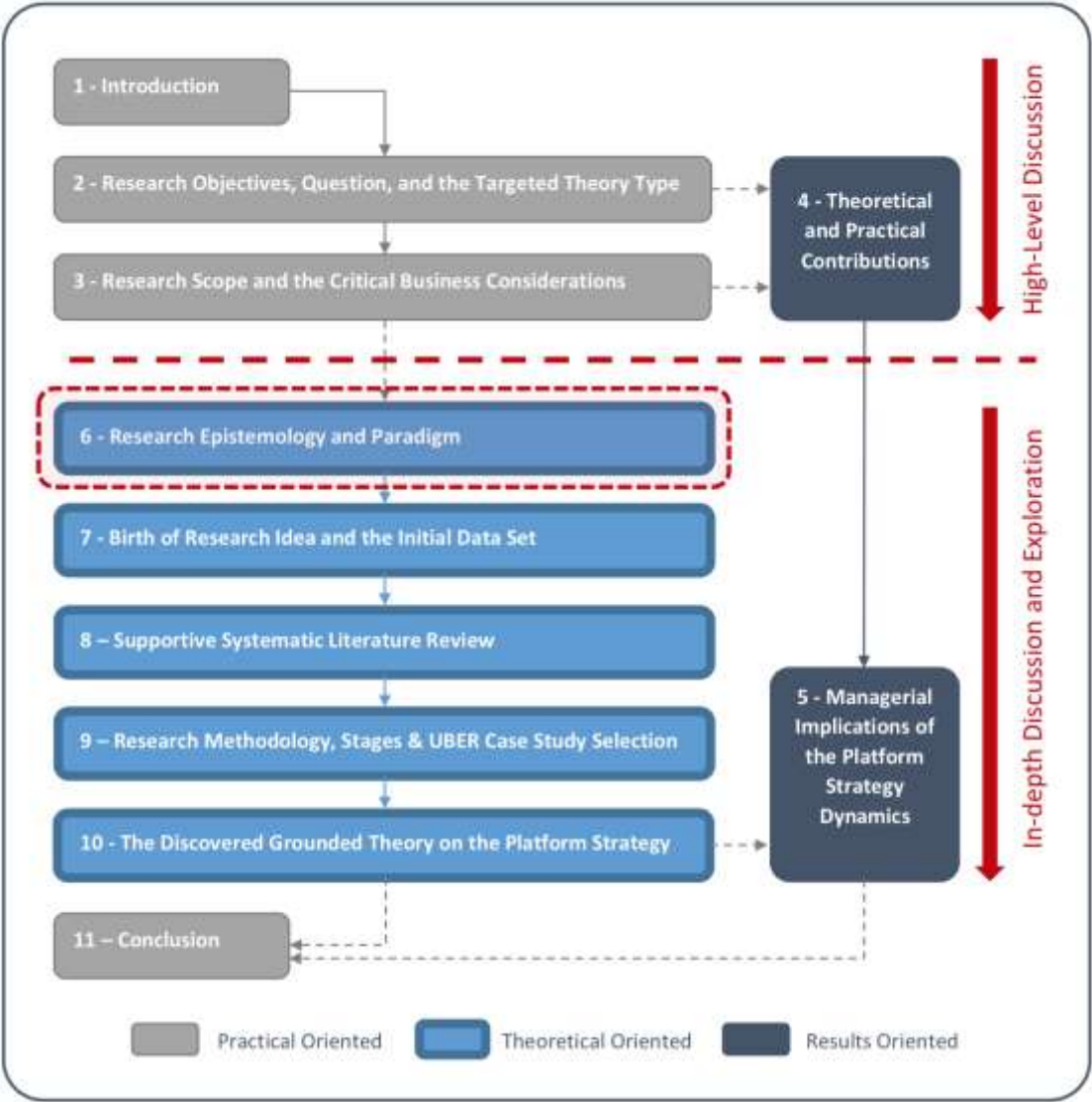


*Figure 18: The Typology of the Four Possible Digital Platform Strategy Types*

Hence, and to conclude this chapter, the managerial recommendations were coded according to a simple coding system and then were explained in detail. Later on, they were mapped to their sources from the DBA results in a simple tabular form, which followed the approach recommended by Beaulieu & Kalika (2020) to present the managerial recommendations as a source of impact. They were mapped to their intended target audiences, classified based on the intuitive urgency and importance, and finally classified based on their feasibility to be applied in the real-life. All of these classifications followed the approach mentioned and recommended by Beaulieu & Kalika (2020) to present the managerial recommendations as a source of impact too. Finally, the rehearsals enabling discovered theory in this DBA thesis can help managers, decision-makers, and practitioners to make some trials and errors in the test lap to examine their own strategies using the power of the system dynamics archetypes and the strategizing framework typology.

## RESEARCH EPISTEMOLOGY AND PARADIGM



## **6. RESEARCH EPISTEMOLOGY AND PARADIGM**

This chapter is going to explain and discuss the “**Research Epistemology and Paradigm**”. The following subsections will present the major related aspects including the following:

- 6.1 Epistemological Position & Research Paradigm Overview**
- 6.2 Rationale for Selecting This Position/Paradigm**
- 6.3 Implications of This Epistemological Position/Paradigm**



## 6.1 Epistemological Position & Research Paradigm Overview

The following subsections are going to present the detailed theoretical perspectives for conducting this research study including the epistemological position and research paradigm overview, the rationale for selecting this position/paradigm and their resulting implications for these selections.

Epistemology is necessary for management science because it affects managerial decisions, which are going to affect many organizations and hence is going to affect the quality of our life. This is much more critical in the case of the proposed research topic, which is the digital services platform strategy.

Digital transformation, in general, usually has a dramatic effect on the way of doing business, the organization structure, and strategy formulation. Furthermore, it may change the whole business and operational models. Hence, conducting research about digital transformation frameworks and strategies can have a much more intense impact on organizations and have wider and longer negative results if low-quality research was conducted.

What is meant by the low-quality research in the epistemological context is that there is low awareness about the meaning of what the researcher is producing, how it is being produced and it why we should trust the obtained results. In more scientific terms:

- What is the expected knowledge to be produced?
- How this knowledge is going to be produced?
- What is the validity of the produced knowledge?

In this research proposal, the above-identified research gap and questions were not given. However, they were noticed and formulated as direct results from my observations about the real cases of my customers in my daily work as well as from the initial literature review.

As mentioned before, there are different solutions to a single fuzzy represented problem statement. Furthermore, Vial (2019), after scanning around 282-literature work, was able to quote around twenty-three different formal definitions for the digital transformation term. In my case, these observations were a source of a big surprise that the field of digital transformation exists for many years now without clear or precise definition for many things. According to Popper (1979), observations can trigger a research question if they surprise us or conflicted with what we already know or expect.

According to (Mbengue & Vandangeon-Derumez, 1999), the order of the existence of both the empirical experience and the knowledge/theoretical models is the most critical aspect in determining the exact research approach. On one extreme, in the hypothetical-deductive approach of verification, which is related to and on the edge of the positivism paradigm, the researcher should know in advance what he is going to discover (Kirk & Miller, 1986) and that the research that he conducts consist of testing the observation related to his priory-constructed theory from the ivory tower. Hence, he is verifying a certain theory. However, on the other extreme, in the demonstrative-inductive approach, which is related to and on the edge of the constructivism paradigm, the research does not know in advance, what he is going to discover.

What he does is to observe freely without any prejudging and then tries to construct general laws. Hence, he is generating new knowledge and theoretical models.

These two competing research paradigms, which have the hypothetical-deductive approach of verification and the demonstrative-inductive approach of discovery on their edges, and their distinctive features are shown in Figure 19 as adapted from Lincoln & Guba’s (1985) and Lincoln & Guba’s (1994) detailed explanation. Accordingly, it is fair to stat that the suitable epistemological position for this research proposal is following the demonstrative-inductive approach.

|                                 | Nature of Knowledge Created | Nature of Reality            | Nature of Link Subject/Object | Social World View | Research Method    |
|---------------------------------|-----------------------------|------------------------------|-------------------------------|-------------------|--------------------|
| Positivism                      | Objective and a contextual  | Ontological Hypothesis       | Independence                  | Determined        | Least Action       |
| Constructivism (Interpretivism) | Subjective and contextual   | Phenomenologica l Hypothesis | Interdependence               | Intentional       | Intelligent Action |

Figure 19: The Competing Paradigms - Source: Lavastre’s Lecture/Adapted from (Lincoln & Guba, 1985)

## 6.2 Rationale for Selecting This Position/Paradigm

The demonstrative-inductive approach is the most suitable approach for this research project because:

- The empirical knowledge about the digital services platform-based ecosystem already exist a prior, from the typical daily work as an advisor for clients who are in different stages of their digital transformation journeys.
- There is no clear or prior imagination about what this research is going to discover. Furthermore, there is no prior theory to be verified. The research project is going to generate new knowledge.
- The proposal is focusing on observing what is happening on the ground (the “Wheel of Observation”) and scanning/analyzing what had appeared in the literature (the “Wheel of Literature Review”) freely without any prejudging and then try to construct general laws and theories that answer the research questions.
- The topic of digital services platform-based ecosystem is so complex in nature. Furthermore, there are few success stories that are known and documented so far and/or grounds that I may able to have access to. Hence, it is going to be so helpful for the management science community, practitioners and managers/decision-makers to receive useful inductive results and recommendations as an output from this research project to use in their own contexts and organizations.

### 6.3 Implications of This Epistemological Position/Paradigm

According to the explanation of Lincoln & Guba's (1985) and Lincoln & Guba's (1994) and as summarized and shown in Figure 20, the selected epistemological position has many consequences and implying a series of other decisions that are going to affect the research journey in this research project as follows:

| Axiom About                                             | Positivist Paradigm                                                                            | Constructivism Paradigm                                                                                                |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| The nature of reality                                   | The reality is unique, tangible and fragmentable                                               | Realities are multiple, constructed and holistic                                                                       |
| The relationship between the researcher and the subject | The researcher and the subject are independent; duality                                        | The researcher and the subject are interdependence, inseparable                                                        |
| The possibility of generalization                       | Generalization beyond time and context are possible                                            | Only hypothesis circumscribed in time and context are possible                                                         |
| The possibility of making casual links                  | There are real causes, temporary preceding the effects of presenting themselves simultaneously | All entities are in a state of simultaneous mutual formation. Thus, it is impossible to distinguish causes and effects |
| The role of values                                      | The investigation is neutral (value-free)                                                      | Investigation is linked to values (value-bound)                                                                        |

Figure 20: Competing Paradigms' Features - Source: Lavastre's Lecture/Adapted from (Lincoln & Guba, 1994)

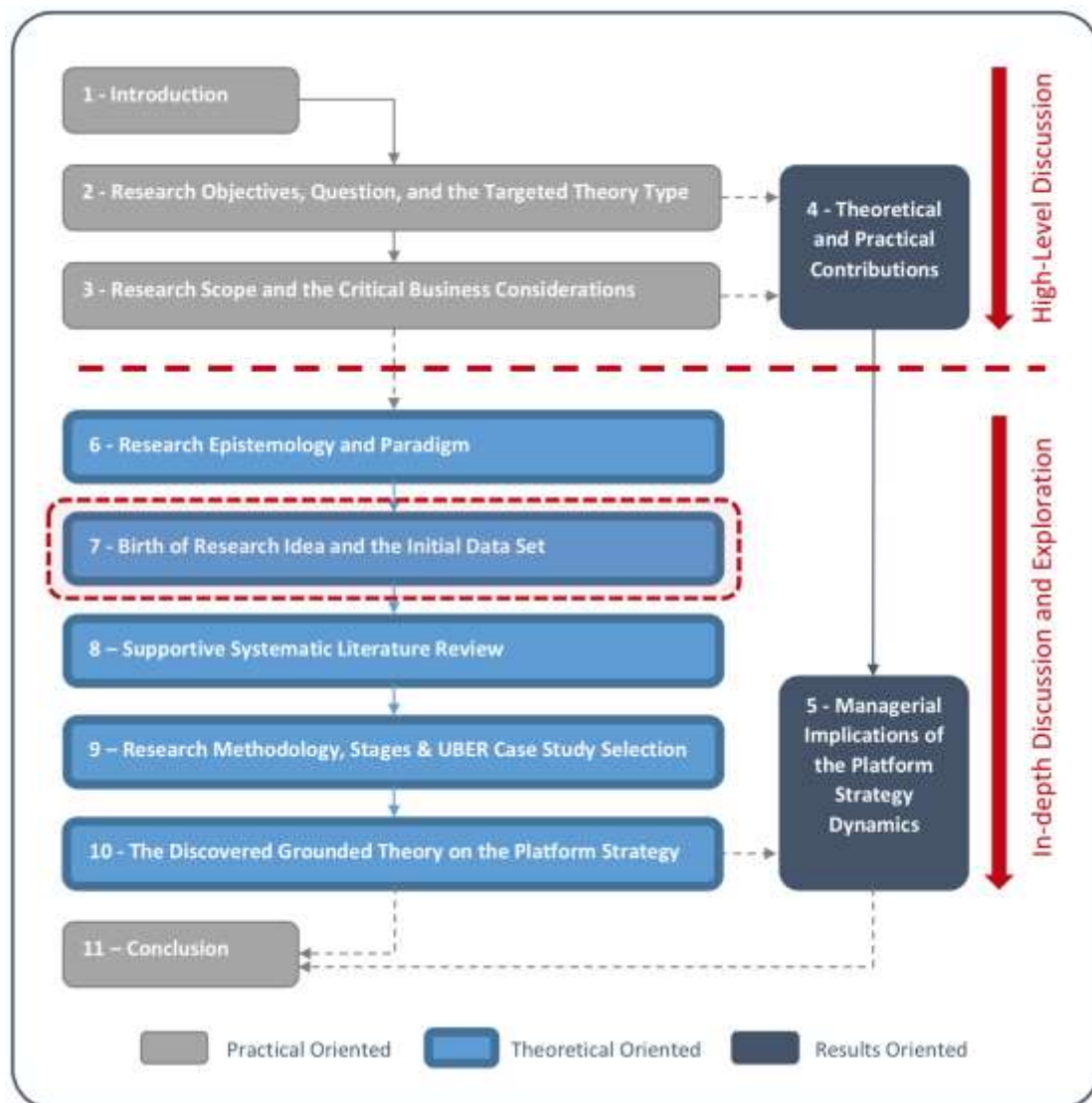
- First of all, the two wheels observations and literature review can go hand in hand, as there is no need to wait for completing a full and comprehensive literature review and formulating initial theories before going to the ground to verify. Both tasks can be achieved in parallel and examine the collected data freely without any prejudice to generate new knowledge and theoretical models.
- Furthermore, it is expected that the nature of the created knowledge is both subjective & contextual, which means that the principle of objectivity related to the positivism paradigm does not apply. The created knowledge is a direct result of the interaction between the researcher and the image that he sees in the object/ground. This confirms with the principle of subject-object interaction related to the constructivism paradigm.

- What is going to be discussed as a reality and its nature is going to be phenomenological and hypothesis, which means that the principle of ontological hypothesis related to the positivism paradigm does not apply. The truth does not exist outside the researcher who has a mission to discover and validate. The discussed reality and its nature is going to be a representation to the researcher's experience and his interpretation of the world. This confirms with the principle of phenomenological hypothesis related to the constructivism paradigm.
- The relation between the subject and the object is not going to be an independence, which means that the principle of naturalness of logic related to the positivism paradigm does not apply. The relation is going to be an interdependence and as a researcher, I have the responsibility to argue and provide comprehensive justification to the research results that I am going to obtain from the collected ground data. The ground-collected data itself should be comprehensively criticized and its meta-data should be mentioned to provide a full narrative and story about how this data was collected, treated, and analyzed including constraints and limitations to give a meaning to the obtained results. This confirms with the principle of general argument related to the constructivism paradigm.
- In addition, there is an aspect that worth to be mentioned. The topic of digital transformation in practice and the research that had produced so far around this topic are representations of a very complex social world. Which means that what is going to be discussed and analyzed from the wheel of literature review or from the wheel of observation should not be expected to be deterministic, which means that the principle of the wired world related to the positivism paradigm does not apply. Everything should be expected to be intentionally constructed as everyone or group is describing the reality according to his own or their own perceptions. This means that this research proposal is going to be concerned with the second-order reality or the built world, not the first-order reality or the wired world. This confirms with the principle of the constructed universe related to the constructivism paradigm.

Finally, there is a reflection on the research method that can be selected for this research proposal. It is not expected to use the simplest available method, which means that the principle of least action related to the positivism paradigm does not apply. As a researcher, my role is to play as designer-observer modeler who uses any logical form or reasoning or action strategy to analyze the ground/system of interest. This confirms with the principle of intelligent action related to the constructivism paradigm.

## CHAPTER-7

### THE BIRTH OF RESEARCH IDEA AND THE INITIAL DATA SET



## 7. BIRTH OF RESEARCH IDEA AND THE INITIAL DATA SET

Initially, the vision was so fuzzy. The starting point was as follows. In the current digital economy, how can we precisely define the digital business? Moreover, how can we accurately define the digital transformation methodologies, models, and/or frameworks? How can we ensure that we are able to formulate and implement an effective digital transformation strategy, especially the digital platform strategy? Is it possible to correctly assess the digital maturity or select a set of key performance indicators or digital “KPIs” to evaluate the progress towards this target?

All of the above-mentioned questions seem to represent a challenge to consulting firms and professionals. Actually, so many published research and professional reports introduced different solutions to a single fuzzy represented problem statement.

There are so many methodologies, models, and frameworks that are trying to explain what the digital business should look like as well as how the digital transformation strategies can be represented? There is chaos that represents a knowledge gap that needs more attention.

Currently, it is so difficult to reach concrete answers for the previously mentioned questions due to the scattered knowledge that can be found in many research papers, business reports, books, blogs, learning courses, and tracks. There is no consensus on what the digital enterprise really looks like, more importantly, what is the less risky approach for transformation from traditional enterprise to the digital native one. Although the digital platform strategy appeared lately as a dominant solution to this chaos, it is even so difficult to find a concrete definition of this strategy or a solid business model representation or description for this platform strategy.

This research proposal has a target to close this knowledge gap. In order to achieve this ambitious mission, the research project started initially with a very broad vision to answers the following major questions:

- What are the common elements between the currently appearing and trending digital business models as well as digital transformation methodologies, models and/or frameworks?
- What are the common patterns that can be identified (*if any*)?
- How these patterns can be recognized as reusable business architecture building blocks?
- What digital transformation strategies, especially the platform strategy, should look like in the organizations that are managing their business transformation joinery towards being a digital-native enterprise?
- How these strategies can/should evolve to chase the continuous change during the transformation period?
- What is the role of the new emerging disruptive technologies in the game?

- What is the predictive impact of these technologies in the short-term and long-term future?
- How to select a set of the key performance indicators or digital “KPIs” to evaluate the progress towards this target?

It was not too long before discovering and reaching important conclusions. These questions represent a too broad and too huge research scope that needs to be narrowed down to be practical to be addressed in a single research project.

First, there is a critical initial decision that should be taken, which is to either focus on the journey or the destination. It is too huge to cover both. Although digital transformation as a journey represents a great challenge and that there are so many academic and gray literature that were trying to solve this dilemma, what seems more critical to be understood is the destination at the end of this journey. This means that focusing on how the digital business should look like at the end is the most critical in the age of the digital economy.

Usually, validation, which is building the right thing, is more important than verification, which is building the thing right. Adding another level of complexity, if this destination is more important from the strategic point of view, then, what are the available strategic options that represent a set or a sequence of strategic decisions that should be considered while designing and implementing this destination?

Second, after making the decision to focus on the destination, the logical question became what is the starting point. The answer emerged naturally while doing the fifth knowledge core (*i.e. doing literature review*) and its theory mining review methodology in its theory landscaping review version. Only twelve references were selected for review as going to be explained in detail later on with a carefully designed protocol and resulted in an initial version of the discovered theory.

Later on and during the study of the remaining knowledge cores and elective courses in the DBA program, two main developments happened:

- It was so hard to figure in the beginning that what had happened during the theory, landscaping review is somehow similar to the steps of the classical grounded theory and that the literature was used as a secondary data. Hence, it was evident that this may be a good research direction.
- The discovered initial version of the theory was stress-tested from many different perspectives including if there are some logical categories and relationships that don't appear yet due to the limited number of used references. Later on, it was evident that some other method for data collection such as case studies can help in this area.

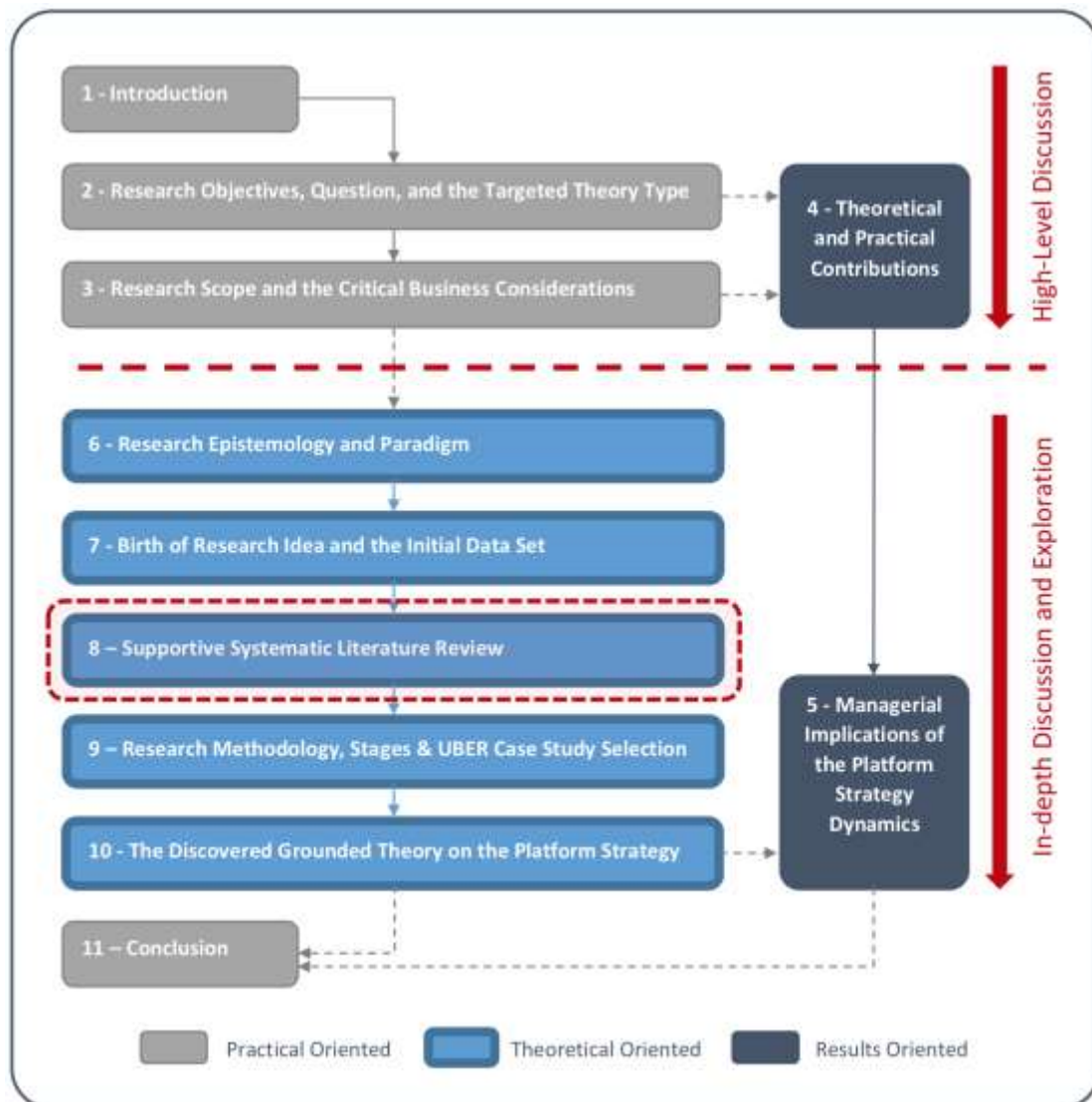
Hence, before discovering the grounded theory as a suitable research methodology that enables the researcher starts with an initial topic in mind and investigate openly, there was an inaccurate image about what this research project should handle or focus on.



Alternatively, even how the current literature is going to support or literature and how the literature review is going to be conducted and how these resources are going to be used. However, after discovered the classical grounded theory as a research methodology, its value was clear as being useful to guide the remaining of this research project.

## CHAPTER-8

### SUPPORTIVE SYSTEMATIC LITERATURE REVIEW



## **8. SUPPORTIVE SYSTEMATIC LITERATURE REVIEW**

This chapter is going to explain and discuss the “**Supportive Systematic Literature Review**”. The following subsections will present the major related aspects including the following:

- 8.1 The First Systematic Screening Protocol and Synthesis**
- 8.2 Practical Screening, Search Criteria, Quality Appraisal and Data Extraction**
- 8.3 Detailed Theory Landscaping Review**
- 8.4 Summary of the Synthesized Knowledge**
- 8.5 The Evolution of Literature Review during the Research Journey**
- 8.6 The General Data Analysis Journey beyond Description**
- 8.7 The Updated Systematic Screening Protocol**
- 8.8 Literature Data Collection and Preparation Steps Details**
- 8.9 Research Impact Based on Cited References Analysis**
- 8.10 Research Impact Based on Cited Journals Analysis**
- 8.11 Research Impact Based on Cited Authors Analysis**
- 8.12 Research Impact Based on Origin of the Cited References Analysis**
- 8.13 Research Schools of Thought Based on Co-cited References Analysis**
- 8.14 Research Themes Based on Bibliographic Coupling of the Cited References Analysis**

## 8.1 The First Systematic Screening Protocol and Synthesis

The following subsections are going to present the details of the used literature review data collecting protocol and data synthesis mechanism in the initial stage of the research that resulted in the current version of the thin discovered grounded theory.

This literature review was a theory landscaping review. Currently, each study or research project addressed the topic of the digital platform from a different perspective or for a specific purpose. This TLR aimed to landscape what appeared collectively and to provide a bird-eye view of the digital platform strategy. As this was the pilot study for my DBA research project, I was the one who is responsible for designing this protocol to guide the systematic literature review and to conduct the review by implementing this protocol. The knowledge bases, seeds, and quests of the fifth knowledge core were used to design the protocol. Hence:

- There was no need to train any additional one, at least, within the scope of this pilot study.
- The designed protocol was used as a quality checklist during the process to ensure the output quality.

The inductive theory building synthesis (Okoli, 2015), with the summative synthesizing technique (Okoli, 2015), was used due to the following reasons:

- It is suitable for TLR in general, and this TMR is a TLR.
- Will enable the listing of concepts, relationships and contexts found in the existing literature.
- The aim is to produce a comprehensive concept matrix.
- An additional textual presentation will be added to present and explain found concepts using the concept-centric approach.

## 8.2 Practical Screening, Search Criteria, Quality Appraisal and Data Extraction

The following databases were used during the search:

- Google Scholar: it includes a reach database of relative articles.
- Springer Link and Science Direct: both along with Google scholar were sufficient to find the required limited number of articles to conduct this review. Only ten were required.

The search was focusing on the following keywords, while searching previously mentioned databases and libraries, within the titles, abstracts, and keywords: “Digital Platform Strategy”

The search was conducted with the exact phrase operator (“ ”). For practitioners' articles, the search may not be a systematic search as these articles were collected during the past three years as part of my professional work during surfing many sources on the internet.

Regarding the quality appraisals for the found articles, no quality appraisals of any type were used to drop any piece of work. According to Appendix-A, the type of my TMR pilot project is TLR. Hence, it is exploratory in nature and as explained by Okoli (2015), it is highly recommended to not exclude any type of studies as it may give some useful information and/or insight.

Adapted from Okoli (2015), the following were the selected sub-set of the data elements to be extracted (Table 6). These elements were sufficient to achieve the purpose of the protocol. The full articles were read.

|   |                              |                                                                        |
|---|------------------------------|------------------------------------------------------------------------|
| 1 | General description of study | Study objectives and research questions ( <i>answered or not yet</i> ) |
| 2 | Elements of theory           | Definitions of concepts                                                |
|   |                              | Characteristics, dimensions, and level of analysis of the concepts     |
|   |                              | Relationships between concepts and their theoretical explanations      |
|   |                              | Contexts and boundary conditions                                       |
| 3 | Practical issues             | Success factors                                                        |
|   |                              | Issues or failure factors                                              |
| 4 | Future work                  | Suggested future work                                                  |

Table 6: Data Extraction Elements

### 8.3 Detailed Theory Landscaping Review

The previously mentioned theory landscaping review study was facilitated by a data extraction process from the relevant identified references. This process was supported by an excel-based data extraction matrix. The following concepts and their relationships were the focus of this data extraction process:

- A. Digital Platform Marketplace Structures.
- B. Digital Platform Users' Types.
- C. Digital Platform Predominant Types.
- D. Digital Platform Architecture Patterns.
- E. Digital Platform Architecture Layers.
- F. Digital Platform Key Performance Indicator-Network Effect.
- G. Digital Platform Launch Strategies.
- H. Digital Platform Governance Methods.
- I. Digital Platform Adoption Challenges.
- J. Digital Platform Key Performance Indicator-Critical Mass.
- K. Digital Platform Work Dimensions and Modes.

The following matrices present a summarized version of the data extraction sheet. Due to the limited width of the page, the concepts and then the relationships are going to be presented in two separate tables.

Table 7 shows the summarized concepts part of the data extraction sheet:

| No | Paper                                      | A | B | C | D | E | F | G | H | I | J | K |
|----|--------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|
| 1  | (Hsieh & Wu, 2019)                         |   |   | x |   |   |   |   |   | x |   |   |
| 2  | (Kazan, Tan, & Lim, 2014)                  |   |   |   | x | x |   |   | x |   |   |   |
| 3  | (Resca, Za, & Spagnoletti, 2013)           |   |   |   |   | x |   |   |   |   |   |   |
| 4  | (Mäntymäki, Baiyere, & Islam, 2019)        |   |   |   |   |   |   |   |   |   |   | x |
| 5  | (Gawer & Cusumano, 2014)                   | x |   | x |   |   | x |   | x |   |   |   |
| 6  | (Ghazawneh & Henfridsson, 2015)            | x | x |   |   |   |   |   |   |   |   |   |
| 7  | (Aalst, Hinz, & Weinhardt, 2019)           |   |   | x |   |   | x |   |   |   |   |   |
| 8  | (Edelman, 2015)                            |   | x |   |   |   | x | x |   | x | x |   |
| 9  | (Jacobides, Sundararajan, & Alstyne, 2019) |   |   |   | x |   | x |   | x |   |   |   |
| 10 | (Morvan, Hintermann, & Vazirani, 2016)     |   |   |   |   |   |   |   |   |   | x |   |
| 11 | (Kenney & Zysman, 2015)                    |   |   | x |   |   |   |   |   |   |   | x |
| 12 | (Parker & Alstyne, 2014)                   |   |   | x |   |   | x | x | x |   | x |   |

Table 7: Part (1) of the Concepts Matrix (Concepts Only)

Table 8 shows the summarized relationships part of the data extraction sheet:

| No | Paper                                      | A<br>B | B<br>I | B<br>G | C<br>I | C<br>K | A<br>G | A<br>H | I<br>F | D<br>E | D<br>H | G<br>F | H<br>F | A<br>F |
|----|--------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1  | (Hsieh & Wu, 2019)                         |        |        |        | x      |        |        |        |        |        |        |        |        |        |
| 2  | (Kazan, Tan, & Lim, 2014)                  |        |        |        |        |        |        |        |        | x      | x      |        |        |        |
| 3  | (Resca, Za, & Spagnoletti, 2013)           |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 4  | (Mäntymäki, Baiyere, & Islam, 2019)        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 5  | (Gawer & Cusumano, 2014)                   | x      |        |        |        |        |        |        |        |        |        |        | x      | x      |
| 6  | (Ghazawneh & Henfridsson, 2015)            | x      |        |        |        |        |        | x      |        |        |        |        |        |        |
| 7  | (Aalst , Hinz, & Weinhardt, 2019)          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 8  | (Edelman, 2015)                            |        | x      | x      |        |        |        |        |        |        |        |        |        |        |
| 9  | (Jacobides, Sundararajan, & Alstyne, 2019) |        |        |        |        |        |        |        | x      |        |        |        |        | x      |
| 10 | (Morvan, Hintermann, & Vazirani, 2016)     |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 11 | (Kenney & Zysman, 2015)                    |        |        |        |        | x      |        |        |        |        |        |        |        |        |
| 12 | (Parker & Alstyne, 2014)                   |        |        | x      |        |        | x      |        |        |        |        | x      |        |        |

*Table 8: Part (2) of the Concepts Matrix (Relationships Only)*

As an example, when Table 7 mentions that the reference (Ghazawneh & Henfridsson, 2015) addressed concepts A+B, it means that they discussed concept (A-Digital Platform Marketplace Structures) as well concept (B-Digital Platform Users' Types) individually. However, this doesn't indicate by any mean that they discussed or examined the relationship between concept (A) and concept (B).

On the other hand, when Table 8 mentioned that the same reference (Ghazawneh & Henfridsson, 2015) addressed the relationship AB, it means that they discussed and examined the link and the logical relationship (AB) between concept (A-Digital Platform Marketplace Structures) and concept (B-Digital Platform Users' Types). Hence, both tables are presenting a complementary bird-eye view for both the discussed concepts and their interrelationships.

## 8.4 Summary of the Synthesized Knowledge

The ultimate goal for any digital platform owner and/or creator is to reach the critical mass milestone by acquiring the required number of platform users. There is no clear definition of how many users are going to achieve this critical mass and it is logical to assume that it is a different number from a platform to another and may be different ranges from type to type. However, this may be considered one of the most confidential information that no owner is willing to reveal. Hence, it is better to understand the critical mass as a qualitative KPI, which represents a tipping point that indicates that the launching strategies of the digital platform were successful and the platform was able to take-off already. After this tipping point, the network effect starts to appear and the number of users is going to increase with time, may be exponentially.

Reaching this milestone, and achieving the network effect doesn't represent only the success of the digital platform, but represents also an entry barrier against new entrance that want to compete in the same market. The previously mentioned success indicators need careful preparation that includes taking a sequence of decisions that should achieve the desired harmony and fit together. Failure to match prior decisions with successor ones threaten the overall digital platform strategy. These KPIs are directly affected by the selected governance modes, success of launching strategies and overcoming the adoption challenges. These three are linked to previous decisions as follows:

- Briefly, first, the platform is going to face some adoption challenges that result from both chosen platform predominant types and the type of users that should be acquired.
- Second, the selected governance methods should match the determined marketplace structure and the selected architecture pattern.
- Third, the expected work dimensions and modes are going to follow the selected platform predominant type.
- Forth, the launch strategies are affected by the marketplace structure and users' types.

However, some factors that may affect the ability to achieve the network effect is somehow embedded into the earlier layer of decisions, specifically, the marketplace structure.



## 8.5 The Evolution of Literature Review during the Research Journey

Grasping a good insight about any single research field depends on carrying out the typical challenging task known as the literature review. To be more specific and accurate, and within the academic research context, the researcher needs to be able to correctly identify two major aspects. He needs the ability to identify the existing or historical schools of thought as well as the potential or future research themes within the particular research field.

However, what makes these tasks so challenging for most researchers is the typical research project constraints that face any research project or study. Usually, the researcher has a limited time and bonded interval to complete the literature review as well as a tremendous amount of references that can be found on different online research databases. Adding to the difficulty of the original challenge, the quality of the required and expected derived insight exerting more pressure over and above. Hence, some practical and feasible solutions are urgently needed.

Walsh & Renaud (2017) mentioned that this challenge became more daunting when the investigated field of science is well established because the number of published researches is more likely to be huge. Most probably, this is going to lead to a higher complex structure of the found schools of thought and the expected potential research themes, which can be considered together as research patterns in general.

Walsh & Renaud (2017) explained that to conduct an effective literature review, there are three known methodologies, which are the traditional qualitative and interpretive approach, the second one is the quantitative meta-analysis approach, and the last one is the bibliometrics analysis approach. According to Walsh & Renaud (2017), although the traditional qualitative and interpretive approach can produce effective results, it depends on the reviewer's personality and can be affected by the personal biases, limitations, and can be somehow error-prone. This can result in missing some critical references in the process.

This can be, to a great extent, solved by using the bibliometrics analysis approach, which provides some sort of rigorous quantitative approach that reduced the human-produced errors. However, the most important factor mentioned by Walsh & Renaud (2017) is that both the qualitative/interpretive approach and the bibliometrics analysis approach are not mutually exclusive and should not be mistakenly considered to be. They indicated that these two methodologies can be combined together and that this can produce the best results ever.

Hence, as the first stage of literature review, while preparing the research proposal for the DBA thesis, started by using the qualitative and interpretive methodology, it is logical to upgrade the approach and use this interpretive methodology combined with the bibliometrics in the DBA full research project and thesis.

The bibliometrics part of the logically organized thinking process helps the researchers to objectively, and systemically, navigate through the huge amount of published references, while the traditional interpretive part of the thinking process enables the research to utilize his higher thinking abilities to drive valuable conclusions.

Of course, it is expected the early-injected objectivity and systematicity will improve these logically derived conclusions. One of the most important benefits in this case is their ability to discover the usually hidden patterns that may prove to be impossible to discover by the researcher when using the typical traditional approaches. Usually these hidden patterns are discovered by being able to use the statistical clustering techniques to emphasize these patterns.

Walsh & Renaud (2017) mentioned that whatever the type of the used bibliometrics analysis approach, the typically expected benefits, and edges of these techniques over the other traditional techniques came from the ability to use many well-known valid statistical approaches. This of course, as indicated by Walsh & Renaud (2017) too, leads to the need for some support from specialized software tools such as the VOSviewer (Van Eck & Waltman, 2019) that is going to be used in this DBA thesis.

Walsh & Renaud (2017) mentioned that despite a large number of bibliometrics analysis techniques that were explained by Zupic & Cater (2015) two techniques are the most used, which are the “Co-citation Analysis-CCA” and the “Bibliographic Coupling Analysis-BCA”. The CCA is the typical technique that is usually used to discover the historical schools of thought as it has the ability to find the somehow related references that are usually referenced together as logical clusters. Understanding the past is the focus of the CCA. On the other hand, the BCA is the typical technique that is usually used to discover the potential research themes as it has the ability to find the somehow related references that are usually taken as a basis for the future directions. Understanding the future is the focus of the BCA.

For a more in-depth explanation about the nature of both techniques, Walsh & Renaud (2017) can be consulted for details. Both CCA and BCA are related to the bibliometrics analysis concept of science mapping described in Klavans & Boyack (2006) and Cobo et. al. (2011).

Besides these two widely used techniques, there is one logical and imported technique, which is the “Citation Analysis” that enables the researcher to find and understand which references are usually referenced most of the time (Waltman & Van Eck, 2014). This particular bibliometrics analysis technique is the one that has a great ability to reduce the amount of time required to carry out the literature review because it highlights the most important references in the history of the investigated research field. Citation analysis is the typical approach to measure the publications performance as explained by Thelwall (2008).

However, it is worth mentioning that the usage of these bibliometrics techniques and their existing support software tools was not going to take off without overcoming a critical roadblock, which is the ability to obtain the raw data in the suitable required formats. Currently, this roadblock had been overcome with different degrees through the support of the different available online databases such as Web of Science (WoS) and Scopus. These online sources usually provide an export function, which enables the researcher to export the search results in different standard formats. This enables the software tool to understand and import this data for further analysis. However, some online sources provide a better-exported data than others, which, of course, enables the higher complex analysis to derive better insight.

Typically, all exported formats include the basic references data that supports the VOSviewer to carry out the “Co-authoring and Keywords Co-occurrence analysis” (Waltman & Van Eck, 2014). However, and on the other hand, as an example, the Web of Science enables the researchers to export the full list of the cited references at the end of the found references with this basic data. This, for example, enables the three additional higher-order bibliometrics analysis techniques, which are “Citation Analysis, Co-citation Analysis-CCA, and Bibliographic Coupling Analysis-BCA” as explained by Waltman & Van Eck (2014).

These three advanced techniques are the ones that will be used in this literature review chapter of the DBA thesis especially that they represent a considerable amount of the collected references from all online resources. It is worth mentioning that it is impossible to include references from other online sources due to the technical limitation of the export function that does not provide the full list of the cited references in each found reference.

Finally, there is a critical issue that should be discussed before being able to use the results of these bibliometrics analysis techniques. As is usually known, you should have high-quality input data to be able to obtain high-quality output results. The typical proverb garbage in garbage out applies. As an example, searching for illogically related search keywords will produce irrelevant results from the analysis.

Furthermore, using more words either with the AND and/or OR logical operators may result in obtaining more irrelevant references or overlooking some important ones. These previously mentioned cases seem somehow obvious. However, from the practical experience in this DBA thesis, there was one additional non-obvious and tricky issue that is related to the synonyms that fadeout, appear, or dominate a certain research field due to the branding trends. For example, the term “Digital” before the word “Platform” started to appear a few years ago and started to dominate this research field in recent years. Before the branding age of the digital transformation wave, other terms were the dominating synonyms such as online or electronic platforms. Similarly, the term “Services”, which indicates the added value of the platform itself.

According to the background of the researcher, the publication outlet preferences, and the attractiveness of the keyword that changes with time due to this branding waves, this term may appear in the title or mentioned internally. A clear example is when the platform is providing a service that is built above a core product, which is the typical augmented product concept. If the background of the researcher, the journal preferences, and/or the time of publication do not prefer the word “Service”, it is so easy to find a valuable reference that mentioning services internally without any notice in the title. This was taken into consideration while selecting the search keywords.

All these factors increase the complexity of selecting the relevant search keywords. Of course, there are no typical rules to solve this issue and usually, some different heuristic trial and error techniques are being tested before reaching a valid one, which of course is going to be affected by the research field itself and the amount of available reference. Hence, the researcher needs to design, carefully, a practical screening protocol with solid search keywords set and criteria to be used across the different available online databases.

Finally, and before explaining the related analysis done in this DBA thesis, there is a point that is worth mentioning. After learning the bibliometrics analysis techniques for the purpose of improving the literature review part of this thesis and after a great time spent on learning the VOSviewer tool itself, and in the middle of producing some meaningful results, a so recent publication was discovered. This paper (Ding & Yang, 2020) has been published near the end of the year 2020 and made a respectful attempt to apply the bibliometrics analysis techniques to the research filed of the “Platform” in general. Although this publication had inspired some fine tuning to the remaining of the bibliometrics analysis work done in this thesis in a way or another, their work has many differences when compared to the work done in this DBA thesis as follows:

- First, they were studying all research related to the topic of Platforms in General without trying to focus either on the strategy and/or the ecosystems side similar to this DBA thesis.
- Second, they used two tools, which are VOSviewer that is used along this DBA thesis in addition to another tool called CiteSpace (Chen C. , 2014). In this DBA thesis, the use of VOSviewer produced more than enough insight, which made it impractical to add another tool. May be in upcoming future work.
- Third, they used the Web of Science as the only single online source in their study. The reason is so clear, which is that this online source provides the data in the best format ever in comparison to other online sources. However, of course, does not contains all research done so far. In this DBA thesis, the Web of Science was used in the literature review chapter, while other online sources were combined with the Web of Science in later analysis stages.
- Fourth, their approach to use the descriptive statistics before the usage of the bibliometrics analysis techniques is somehow shallow and not so informative in the same time. Although this can be acceptable in papers format due to the number of pages limitation, it may not be the best approach to do in a full thesis context. In this DBA, the descriptive statistic was employed to give the maximum insight to the reader before going to the bibliometrics analysis.
- Fifth, many times across this paper (Ding & Yang, 2020), when discussing the results, the authors mentioned that they took certain values as analysis thresholds. In VOSviewer, during the steps needed to produce the required bibliometrics map, the tool asks the researcher to adjust the sensitivity of the algorithms by selecting certain threshold values. As an example, it may ask about the minimum number of published papers per author to be considered within the co-authorship map. Another example is when the tool asks for the minimum number of citations per reference to be considered within the citation map. A third example can be found when the tool asks for the minimum number of keyword occurrences to be considered in the keyword co-occurrence map and so on. Hence, there are several thresholds that can be adjusted for many several parameters in each algorithm. Hence, the researchers face the dilemma for a huge number of permutations and combinations that can be taken for each produced map without any supporting criteria that may indicate which values are better than others. Even in the mentioned paper, the authors did not provide any rationale for the selected threshold value, except that raising the threshold

value reduced the number of the included items in the map, which makes it more readable. As an example, when they used a threshold of 15 citation times per single reference to be included in the co-citation analysis map, they got a reasonable size sample that contains 75 references to be included. Again, there was no rationale for why this 75 size is good or why threshold values of 14 or 16 were not used, or why the 15 gave better values than the 14 or 16. This approach was totally avoided in this DBA as well be immediately explained in detail and with the necessary rationale.

In this DBA thesis, the decision was taken to select an easy option that can simplify the production and reproduction of the resulted maps. In all produced maps with the many different algorithms used during the research journey, either in the literature review chapter or later chapters, the decision was to build upon the built-in power of the VOSviewer tool. When the tool examines the input dataset, it calculates and suggests a default value for each parameter, which differs only, based on the nature of datasets. As an example, when using the co-citation analysis, the tool will employ its algorithms and their sensitivity analysis power to select and suggest a certain minimum number of citations per reference to be considered within the analysis. These suggested and selected default values can be 5 with a dataset, 10 with another dataset, or any other value depending on the number of references and their citations in the input dataset. Hence, these suggested and the selected default values are a direct representation of the nature of the input datasets.

This makes the decision to use these automatically set values so appealing for two reasons. The first reason is related to the production of the analysis result for the first time, while the second reason is related to the reproduction of the same results later on as follows. By avoiding manipulating these threshold values, the obtained results in the first place are going to be a true reflection of the nature of the dataset each time and will prevent intended manipulations by the researchers to include or exclude certain authors, papers, or journals in the obtained results. Raising the threshold excludes some elements that are included by default while lowering the threshold includes some elements that are excluded by default. Furthermore, it excludes the huge time required to make a large number of trials and errors and then face a large number of all valid maps. This is the first reason. The second reason for avoiding the manipulation of these threshold values is the simple reproduction of the obtained maps later on. Anyone who has the same dataset will be able to quickly produce the same map without going into any hassles. Taking into consideration that this DBA thesis is going to provide a detailed and comprehensive description of the approach used to obtain the different datasets as well as the datasets themselves, it will be so easy to reproduce the obtained results from the start to the end.

The upcoming sections are going to explain in detail the nature of this designed practical screening protocol and search criteria as well as the descriptive statistics of the obtained search results from the online research databases. This of course is going to be followed by the discussion of the obtained results and insights from the many used bibliometrics analysis techniques.

## 8.6 The General Data Analysis Journey beyond Description

The ultimate goal of any research project is to be able to provide a new knowledge and to scientifically be able to argue and defend this new knowledge by providing a concrete rationale behind this knowledge. This should be done by telling a coherent appealing story that this supported by well-presented information. Although reaching this goal starts with the primitive descriptive data analysis, it cannot ends with this primitive descriptive data analysis only. Further in-depth analysis is usually being done to discover more hidden patterns within that data. This usually remains the same whatever the data types, data collection methods, and the data analysis methods.

Hence, this applies to the data that will be collected and analyzed in relation to the literature review part of the thesis. In spite of being mentioned in this section for the first time according to the order of writing this thesis, however, what is mentioned here is going to apply to any data that is going to be collected and analyzed to serve other purposes during the research journey and the DBA thesis. Before being able to transform the raw data into knowledge, the first basic data description task should be completed. This is what is called “Descriptive Data Analysis”, which includes describing and discovering the following in the raw data per each variable:

- Understand how each variable behaves and being able to discover the nearest theoretical distribution that can represent this variable (*if any*). This of course following the basic rule that the collected raw data may have noise combined with the signal and with the assumption that if the noise was filtered, the resulting distribution is going to be so much similar to this theoretical distribution. Usually, the data cleaning and data cleansing are the mandatory steps as explain by Han et.al (2011).
- This is followed by a trial to understand what this single variable reveals. This means that if there is a hidden pattern (Han, Kamber, & Pei, 2011). As an example, if there is an established fact, a tendency or trend or if it is difficult to discover a signal and there is an uncertainty represented with a uniform distribution.
- Even outliers may have a meaning and sometimes needs investigation (Han, Kamber, & Pei, 2011). Outliers do not directly mean wrong-recorded observation or wrong sampling. In some cases, the outliers may lead to discovering something about the system that behaves in abnormal approach under some circumstances. This may lead to the decision to change the sampling criteria to include new data records or observation that may lead to the discovering of a new cluster within the data that wasn't clear under the first sampling criteria.
- Explain how one variable is affecting the other, which is called the cross checking. This may lead to understanding how variables are related to each other in the system. Furthermore, this may lead to reducing the number of variable in the system later one if there are two variables that are so close to each other.

After completing the initial descriptive data analysis, the focus shifts to the more advanced data analysis techniques, which include quantitative data analysis and may include qualitative data analysis too. Of course, this data loss should be insignificant to avoid negatively distorting the data set. Then, this can be followed by adding the qualitative analysis on the modified data set.

This data simplification is usually being done through “Cluster Analysis” and the “Factor Analysis” (Han, Kamber, & Pei, 2011). Cluster Analysis is used to reduce the data set size or number of observations, which helps to find the identical or so similar data records. The result is a smaller set of grouped variables. Example algorithms include the “Ascendant Hierarchical Classification”, “Dynamic Clustering”, “Descendent Hierarchical Classification”, and “Visualization of Similarity”. Factor Analysis is used to reduce the number of variables in the data set, which leads to finding the true dimensions of the data set. Example algorithms include “Principal Component Analysis” and “Multiple Factor Analysis”. Finally, in some cases adding some new variable that has been calculated from another variable may help and facilitate the upcoming steps. For example, “Visualization of Similarity Clustering Algorithm” is going to be used heavily in this DBA thesis.

By completing the quantitative structured data analysis, the qualitative one can be started. Adding interpretation to the modified data set can help to discover insight from the data. This interpretation may lead to defining new labels to the discovered clusters and factors. For example, adding labels to the discovered clusters will be used to add meaning to the found schools of thoughts and research themes.

Visualizing the discovered information represents the final step after completing the qualitative and quantitative structured data analysis. Visualization works as an information radiator and prepares the reader for the full argumentative story that the researcher is going to tell to explain the newly discovered knowledge (Han, Kamber, & Pei, 2011). Story telling about the visualized information is the way to achieve the initially mentioned ultimate goal, which is scientifically defending the newly discovered knowledge. Actually, many creative visualization techniques will be used in this DBA thesis and will be followed by telling relevant informative stories.

## 8.7 The Updated Systematic Screening Protocol

After completing the initial stage of the research, which was preparing the detailed research proposal with the initial version of the discovered thin theory, and to support the further planned research steps explained in this proposal, the systematic screening protocol was updated. This is going to be explained in detailed in this section. First of all, the following six online literature databases were used during the search:

- Web of Science.
- Scopus.
- Science Direct.
- Emerald Insight.
- SAGE Journals.
- Springer Link.

The above-mentioned databases were used in the search that utilized strict search criteria, which are going to be explained shortly. In addition to these databases, the following sources were used during the earlier stages of the research before designing this updated systematic screening protocol.

- Google Scholar.
- Google Typical Search Engine.

Hence, although the references that were found through Google Scholar and Google typical search engine may be referred to across the thesis as these articles were collected during the previous years as part of my professional and academic work; only the results of the systematic search according to the systematic screening protocol are going to be used during the basic bibliographic analytics and the bibliometrics analytics. The reason behind this decision, which is exploding references that were found by ad-hoc manner from Google, is to guarantee the repeatability of the obtained analysis results.

To ensure that most accurate and repeatable results and to have a unified view; the search was conducted with the objective to minimize the gap between searches on the different databases to the minimum. Exactly, searching all the previously mentioned databases and online libraries was conducted on the same day, which is “December 25, 2020” according to the following previously designed search criteria. Simply, the reference should include the following keywords in title of the reference, which are:

- Platform Strategy.
- Platform Ecosystem.
- Platform Ecosystem Strategy.
- Platform Critical Mass.
- Platform Network Effect.

However, to be more precise, this means that the title should include all these mentioned keywords with the “AND” operator. As an example, the “Platform Strategy” keywords mean “Platform AND Strategy”. Of course, the order does not matter. It worth mentioning that this is the default setting in all used online databases and it seems logical to keep and use as there is no need to change it.



The rationale behind the selection of these keywords is simple. The topic of this thesis is the platform strategy that support and full ecosystem. Hence, the previous first three choices represent the possible initiative three variations that keep the keyword platform in each one.

Furthermore, during the first stage of the research, which was the full research proposal, the first discovered thin version of the ground theory had the “Critical Mass” and “Network Effect” as the success qualitative and quantitative key performance indicators from the practical point of view. From the classical ground theory point of view, the critical mass and network effect were the discovered main category. Hence, it seems logical to understand the research that was preformed earlier about this main concern, this makes the previous fourth, and fifth choices represent the additional possible initiative two variations that keep the keyword platform in each one.

However, although the word “Digital” is a critical keyword in the title of the thesis and the topic itself, it was not used a search keyword on any online source or database. The rationale behind this decision is that this key word started to be used mainly with the beginning of the digital transformation wave around the year of 2014. Before this year, other synonymous were used such as “Information Technology”, “Electronic”, and “Online”...etc. This makes forcing the usage of the word “Digital” as a keyword in the search results in many valuable references being excluded from the search just because its publication date was before the trend of using the word “Digital”.

Of course, the total found matching number of references was different on each database as well as the types of the reference itself. For example, some databases contain only journal articles and conference papers, while others contain additional types such as the book section type.

Regarding the quality appraisals for the found articles, no quality appraisals of any type were used to drop any piece of work. The reasons behind this decision are simple and intuitive too as follows:

- Simply, to match the original screening protocol and make the updated systematic screening protocol seems as a logical extension for the logical extension of the research project. The thesis is simply the logical extension of the research proposal and the full theory to be discovered is going to be a logical extension to the original thin version of the discovered theory.
- Due to the high quality of the chosen databases themselves, it is expected to found only high quality references that went through an acceptable level of the quality appraisals before being published and further appraisals may simply waste time and drop valuable references.

## 8.8 Literature Data Collection and Preparation Steps Details

The following section is going to explain the details of the data collection steps as well as the steps for filtering and exporting the found records within and from each data source. Furthermore, the basic information about the found references will be presented too. All figures in this part are snapshots from the WoS basic analytics.

**Web of Science:** this is the first database and online source that was used to search for references using the previously explained search criteria. For the first keywords option (i.e. “Platform Strategy”), a total of 914 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using a filter to be limited to only five categories of the references out of 100+ categories, which are “Business, Economic, Management, Operation Research Management Science, and Social Science Interdisciplinary”. This reduced the found number of references to 178 references only. The full information records of these found references were exported using different file formats such as “RIS” and “BibTex”. Figure 21 and Figure 22 show the basic analytics for these keywords related search result as well as the sum of times cited per year, which indicates how much these found references were cited per each year.

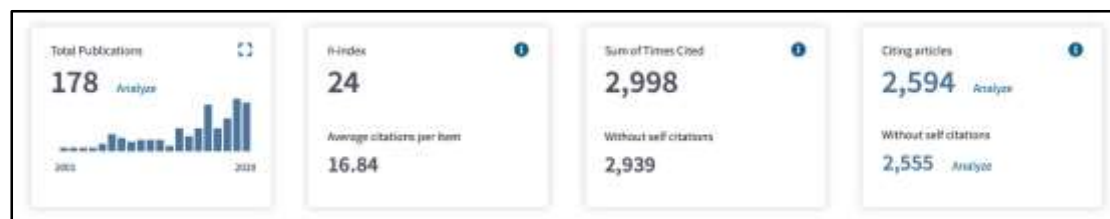


Figure 21: The Basic Analytics for the "Platform Strategy" Keywords Search Result

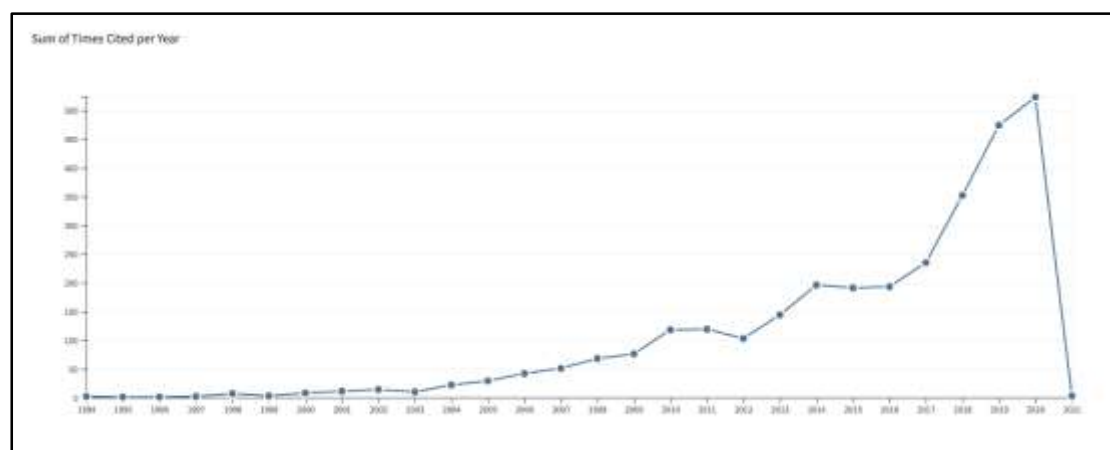


Figure 22: The Sum of Times the "Platform Strategy" Keywords Related References Were Cited per Year

Figure 21 shows that the sum of times cited is 2,998, which is reduced to 2,939 without self-citation. This means 98% original actual citation times. However, the number of the citing articles was 2,594, which is reduced to 2,555 without self-citation.

This means 98.5% original actual citing articles. The average citation per item is 16.84 with an h-index of 24. On the other hand, Figure 22 shows an almost monotonic increase for the sum of times cited per year during the past 20 years up to the year 2020. All these basic indicators give an impression about the increased importance of, and focus on, the topic of the platform strategy during the past two decades as well as how this importance and focus increase almost steadily.

For the second keywords option (i.e. “Platform Ecosystem”), a total of 286 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using the same filter explained with the first keywords option. This reduced the found number of references to 90 references only. The full information records of these found references were exported using the same file formats. Figure 23 and Figure 24 show the basic analytics for these keywords related search result as well as the sum of times cited per year, which indicates how much these found references were cited per each year.



Figure 23: The Basic Analytics for the "Platform Ecosystem" Keywords Search Result

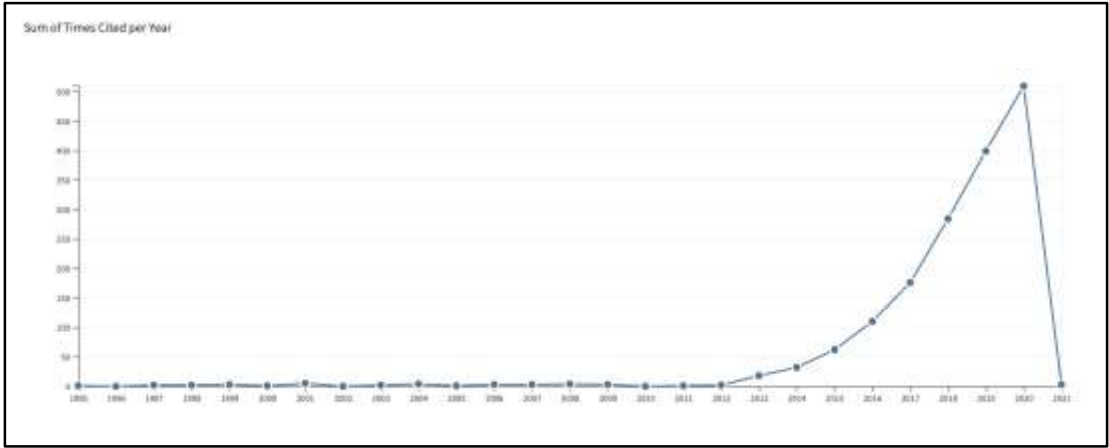


Figure 24: The Sum of Times the "Platform Ecosystem" Keywords Related References Were Cited per Year

Figure 23 shows that the sum of times cited is 1,630, which is reduced to 1,558 without self-citation. This means 95.6% original actual citation times. However, the number of the citing articles was 1,239, which is reduced to 1,206 without self-citation. This means 97.3% original actual citing articles. The average citation per item is 18.11 with an h-index of 19. On the other hand, Figure 24 shows an almost monotonic increase for the sum of times cited per year during the past 10 years up to the year 2020. All these basic indicators give an impression about the increased importance of, and focus on, the topic of the platform ecosystem during the past decade as well as how this importance and focus increased steadily.

For the third keywords option (i.e. “Platform Ecosystem Strategy”), a total of 11 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using the same filter explained with the first keywords option. This reduced the found number of references to 3 references only. The full information records of these found references were exported using the same file formats. Figure 25 and Figure 26 show the basic analytics for these keywords related search result as well as the sum of times cited per year, which indicates how much these found references were cited per each year.



*Figure 25: The Basic Analytics for the "Platform Ecosystem Strategy" Keywords Search Result*

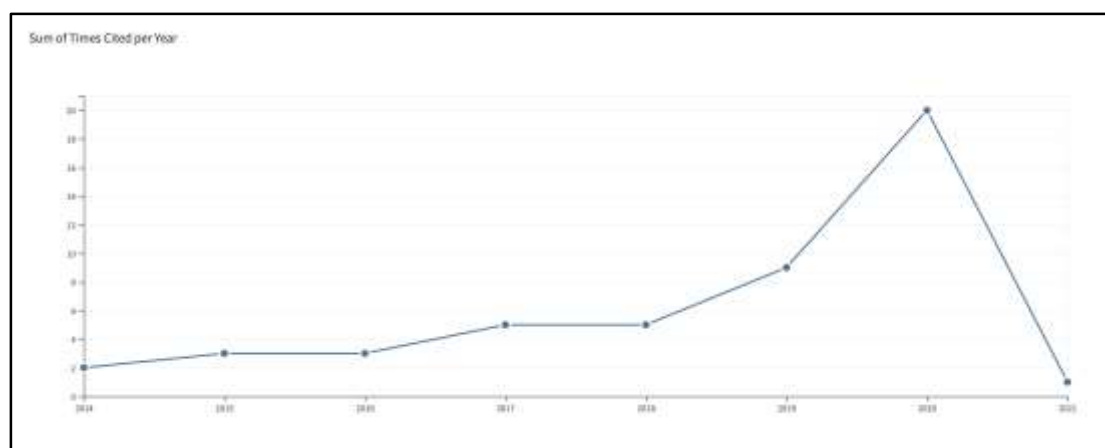


*Figure 26: The Sum of Times the "Platform Ecosystem" Keywords Related References Were Cited per Year*

Figure 25 that the sum of times cited is 48 without any self-citation. This means 100% original actual citation times. However, the number of the citing articles was 48 without self-citation too. This means 100% original actual citing articles too. The average citation per item is 16 with an h-index of 2. On the other hand, Figure 26 shows an almost monotonic increase for the sum of times cited per Year during the past 7 years up to the year 2020.

All these basic indicators give an impression about the increased importance of, and focus on, the topic of the platform ecosystem strategy during the past decade as well as how this importance and focus increased slightly steadily. Of course, all indicators are affected by the very small number of found references under these three combined keywords, which were only 3 references.

For the fourth keywords option (i.e. “Platform Critical Mass”), a total of 3 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using the same filter explained with the first keywords option. This reduced the found number of references to 1 reference only.

The full information records of these found references were exported using the same file formats. Figure 27 and Figure 28 show the basic analytics for these keywords related search result as well as the sum of times cited per year, which indicates how much these found references were cited per each year.



Figure 27: The Basic Analytics for the "Platform Critical Mass" Keywords Search Result

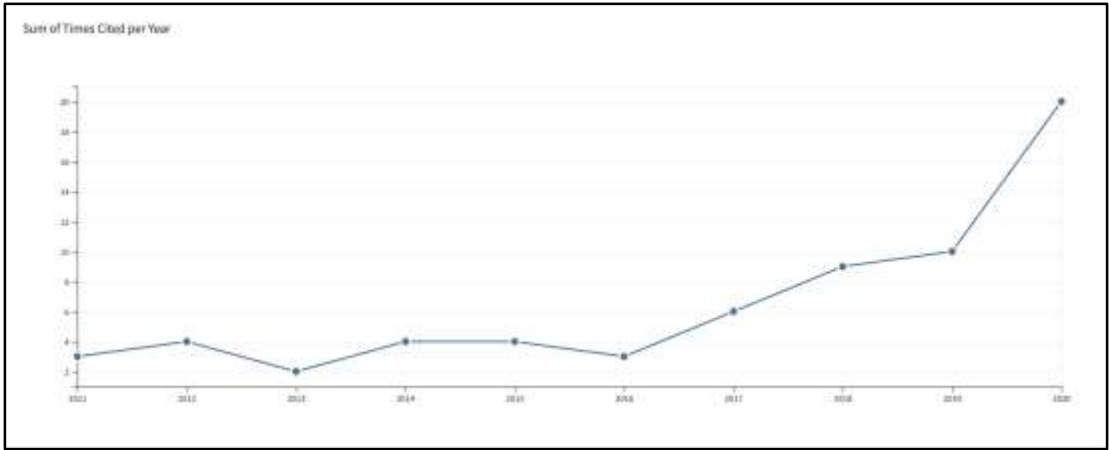


Figure 28: The Sum of Times the "Platform Critical Mass" Keywords Related References Were Cited per Year

Figure 27 shows that the sum of times cited is 65 without any self-citation. This means 100% original actual citation times. However, the number of the citing articles was 65 without self-citation too. This means 100% original actual citing articles too. Hence, the average citation per item is 65 with an h-index of 1. On the other hand, Figure 28 shows an almost monotonic increase for the sum of times cited per year during the past 10 years up to the year 2020. All these basic indicators give an impression about the little importance of, and focus on, the topic of the platform critical mass during the past decade as well as how this importance and focus increase slightly steadily. Of course, all indicators are affected by the very small number of found references under these three combined keywords, which was only 1 reference.

For the fifth and final keywords option (i.e. “Platform Network Effect”), a total of 40 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using the same filter explained with the first keywords option. This reduced the found number of references to 25 reference only. The full information records of these found references were exported using the same file formats. Figure 29 and Figure 30 show the basic analytics for these keywords related search result as well as the sum of times cited per year, which indicates how much these found references were cited per each year.



Figure 29: The Basic Analytics for the "Platform Network Effect" Keywords Search Result

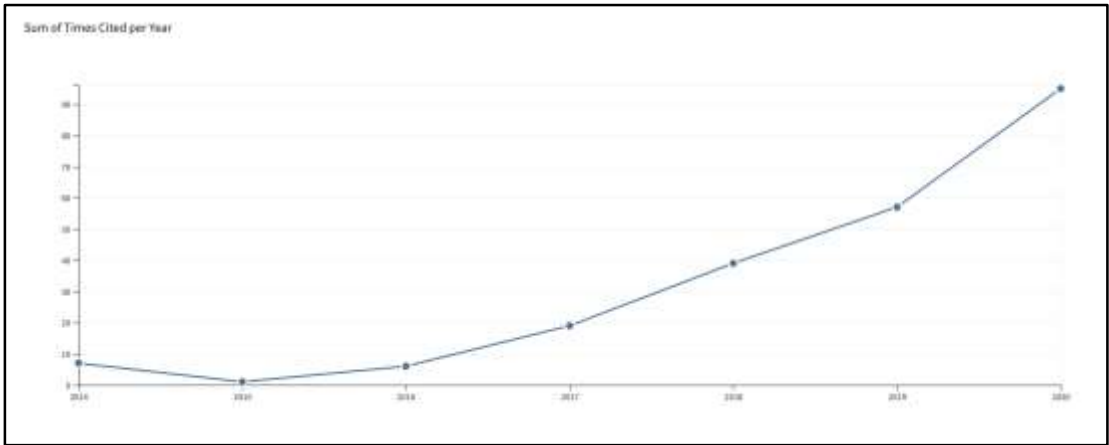


Figure 30: The Sum of Times the "Platform Network Effect" Keywords Related References Were Cited per Year

Figure 29 shows that the sum of times cited is 224, which is reduced to 214 without self-citation. This means 95.6% original actual citation times. However, the number of the citing articles was 198, which is reduced to 191 without self-citation. This means 96.5% original actual citing articles. The average citation per item is 8.96 with an h-index of 7. On the other hand, Figure 30 shows an almost monotonic increase for the sum of times cited per year during the past 6 years up to the year 2020. All these basic indicators give an impression about the increased importance of, and focus on, the topic of the platform network effect during the past decade as well as how this importance and focus increased steadily. As a conclusion, and finally, these previously mentioned found search results can be summarized in the following tabular form (Table 9):

| No | Keywords                    | Original Found Number | Final Filtered Number |
|----|-----------------------------|-----------------------|-----------------------|
| 1  | Platform Strategy           | 914                   | 178                   |
| 2  | Platform Ecosystem          | 286                   | 90                    |
| 3  | Platform Ecosystem Strategy | 11                    | 3                     |
| 4  | Platform Critical Mass      | 3                     | 1                     |
| 5  | Platform Network Effect     | 40                    | 25                    |

*Table 9: The found Number of References for All Keywords in “Web of Science” Online Database*

The previously found search results for all keyword-pairs were exported from the Web of Science using its default file format. However, it is logical to assume the data never came in analysis-ready formats. Usually, an explicit data preparation step is needed. Usually, this includes the simplest data cleaning and cleansing.

Of course, the obtained bibliographic data was no exception. The evident issue was that most probably, some references may appear in the search result of many keyword-pairs, and of course, these references duplications should be removed before importing the data in the bibliometrics analysis software tools. Unfortunately, there is no known automatic software tool support to remove these duplications.

Hence, the task is going to be carried out manually as follows:

- The first step in this manual process was to understand the format of the exported data files. Web of Science exports the data in the typical text file formats that can be opened with any text editor.
- The second step was to understand the parts of the file such as the identifiers, starters, terminators, and how each reference is being presented in the file to include all details including the full list of the cited references as well.
- The third step was to merge all the files into a single file that is suitable to be imported into the bibliometrics analysis software tool.
- Finally, the fourth step was to remove the duplicates carefully while maintaining the correctness of the kept records. Fortunately, the percentage of duplicates was around 3%, which made the process somehow doable.

## 8.9 Research Impact Based on Cited References Analysis

To understand the extent of the published research impact, the challenge includes investigating the retrieved references from many different perspectives. First of all, the most intuitive step is to find the references that were absolutely referenced or cited more than the others. Usually, the researcher needs to discover the top-tier of references that usually contains the top ten or twenty references within the research field. Of course, this can be carried out using the VOSviewer (Van Eck & Waltman, 2019). However, due to the functional limitations of the software tool, the data can be exported from the VOSviewer and then imported in Microsoft Excel to draw a better visual representation in case a bar graph is needed. Figure 31 shows the top twenty references by the absolute number of citation times.

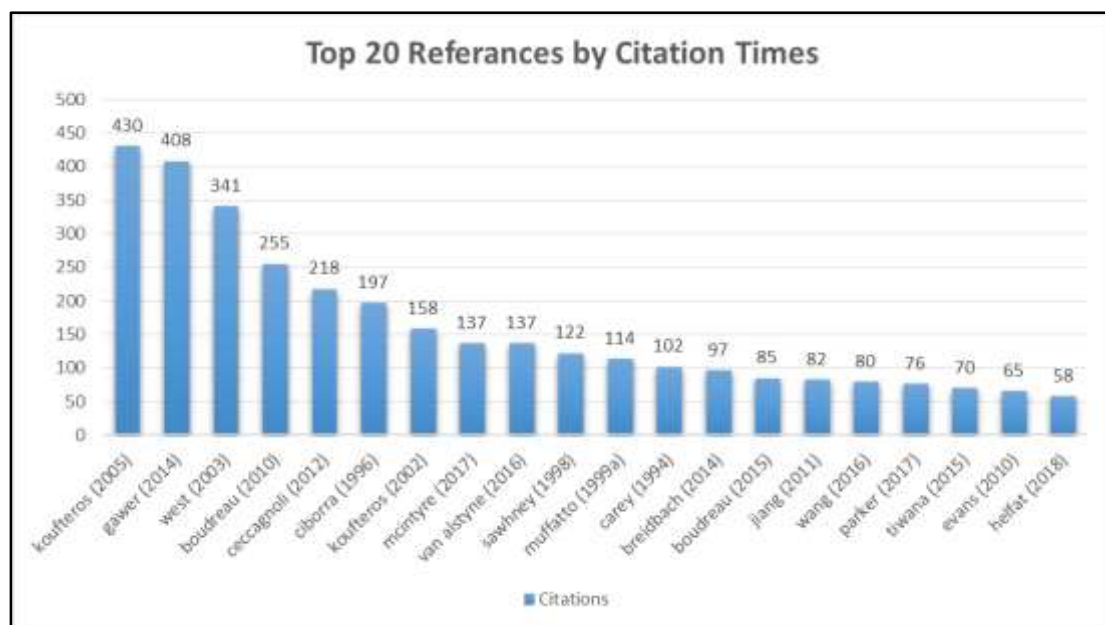


Figure 31: The Top 20 References by Citation Times

The second task takes the analysis a step further by understanding an additional insight about this absolute number of citations. If two references have an approximately equal number of absolute citations that happened in two different time spans, this may give an impression about the relative importance and impact of these two references. Hence, it seems logical to calibrate the initial absolute numbers to obtain the average citations per year or, shortly, the average yearly citations.

For example, Koufteros et. al. (2005) was absolutely cited 430 times in around 15 years since its publication and up to the year 2020. However, Gawer & Cusumano (2014) was absolutely cited 408 times in around 6 years since its publication and up to the year 2020. This means that the average yearly citation times are 28.7 times for Koufteros et. al. (2005) and 68 times for Gawer & Cusumano (2014). This immediately changes the relative importance and perceived impact of the both references and brings Gawer & Cusumano (2014) to the first place over Koufteros et. al. (2005). Figure 32 shows these calibrated average yearly citations.



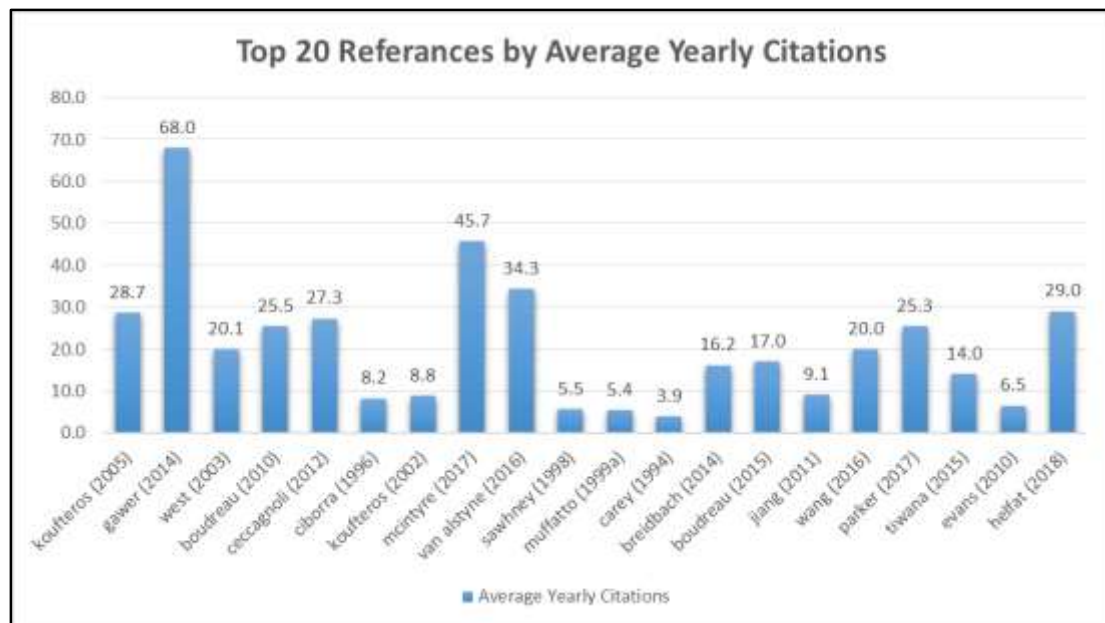


Figure 32: The Top 20 References by Average Yearly Citations

The third task may be to understand the typical time span that contains the majority of the published references. The VOSviewer provides excellent support in this domain by providing a time span view of the normalized Gaussian curve within the typically produced “Citation Map” (Van Eck & Waltman, 2019). Usually, the time span between the maximum and minimum presented years includes a plus and minus two sigma to the average publication year of the collected published references. Figure 33 shows this time span bar in the right-down corner of the citation map for the research field of this DBA thesis, which is from 2010 to 2020.

The fourth task is to understand the relative newness of the references to the overall found set of references. Using more simple terms, it may help to understand if the references were published before the previously mentioned average publication year or after it. The VOSviewer provides excellent support in this domain by providing a cold-hot automatic coloring option over the time span view within the typically produced citation map (Van Eck & Waltman, 2019). This heated citation map helps the researcher to identify quickly the more recent references. Figure 33 shows this heated citation map for the research field of this DBA thesis, which spans from 2010 up to 2020. The blue or cold colored references represent the early-published references before the average publication year, which is 2015. On the other hand, the red or hot colored references represent the late published references after the average publication year, which is 2015.

The VOSviewer can combine three of the previously related tasks in a single map, which is the typical citation map. In a single map, the researcher can find the most cited references that have the biggest diameter of the circle with the newness factor in the cold-hot colors of these circles. Finally, the time span explicitly appears in the right-down corner of the map. Figure 33 shows these combined features for the research field of this DBA thesis.

For example, the first reference Koufteros et. al. (2005) that was absolutely cited 430 times and the second reference Gawer & Cusumano (2014) that was absolutely cited 408 times have the biggest circles, relatively cold colors according to their publication year and both are before the average citation year of the appeared publications time span in Figure 33.

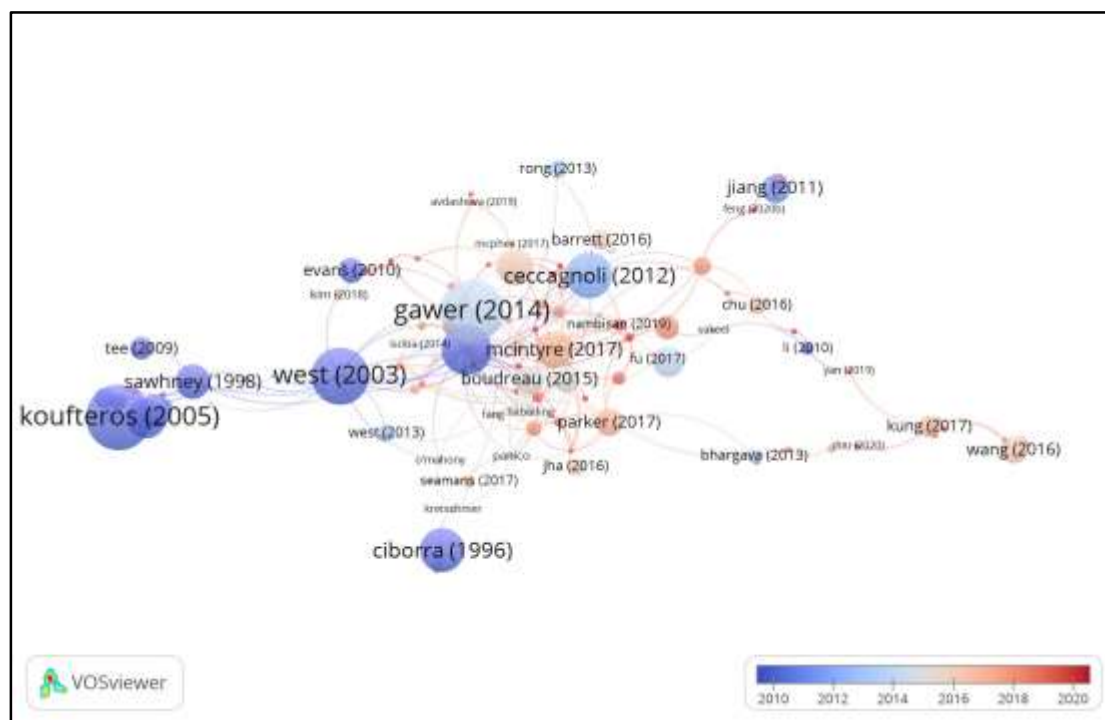


*Figure 33: The Research Impact with Number of Cited Reference Map*

The fifth task is trying to understand the relative relatedness” of the references to the other references within the research field (Waltman & Van Eck, 2014). The more the references are related to other references within the field, the more connections to have with others in the citation map. Simply, it may be found near the center of the citation map. Of course, the less connected references can be found at the edges of the citation map. For example, the first reference Koufteros et. al. (2005) that was absolutely cited 430 times appears in the left edge of the citation map, while the second reference Gawer & Cusumano (2014) that was absolutely cited 408 times appears at the center of the citation map. This means that Gawer & Cusumano (2014) is more related to the field of the DBA thesis and has a greater impact.

Finally, in some cases, and for the sake of visual representation clarity, the VOSviewer visualization adjustment features can be used to produces a citation map that included a more emphasized reference names by drawing a rectangle around each reference in the citation map. This map with the empathized visualization provides no additional insight. Just, it is a more clear representation of the same information as shown in Figure 34.



However, from the most absolutely cited references perspective that reflects how these references were able to attract researchers' attention as shown in Figure 31 such as Koufteros et. al. (2005), Gawer & Cusumano (2014), West (2003), Boudreau (2010), and Ceccagnoli et. al. (2012) are the most important references. These references discuss many important topics as follows. Koufteros et. al. (2005) and West (2003) were mentioned before, while Boudreau (2010) published a paper that discussed the dilemma and tradeoff between relaxing controls and opening the platform to foster open innovation or to increase the control and focused on controlled close innovation. On the other hand, Gawer & Cusumano (2014) discussed the ecosystem innovation in industry platforms. Finally, Ceccagnoli et. al. (2012) discussed the value co-creation in platforms ecosystems.

Furthermore, some references were able to attract the attention of researchers faster than the others, which appears in the highest average yearly citation as shown in Figure 32 such as Gawer & Cusumano (2014), McIntyre & Srinivasan (2017), Van Alstyne et.al (2016), Helfat & Raubitschek (2018), and Koufteros et. al. (2005). These references discuss many important topics as follows. Gawer & Cusumano (2014) was mentioned before. While McIntyre & Srinivasan (2017) discussed the relation between the networks, platforms and strategy. On the other hand, Van Alstyne et.al (2016) showed the new rules of business strategy, which include pipelines and platforms. Furthermore, Helfat & Raubitschek (2018) explained how to gain profit from innovation in digital platform-based ecosystems. Finally, the will know contribution of Koufteros et. al. (2005).

Finally, some references represent the heart of the research field as they are mostly connected and related to other references as shown in Figure 33 and Figure 34 such as Boudreau (2010), Gawer & Cusumano (2014), McIntyre & Srinivasan (2017), and Boudreau & Jeppesen (2015). These references discuss many important topics. All of them were mentioned before. The only new one is Boudreau & Jeppesen (2015) that explained the impact of the unpaid crowd complementary on achieving the network effects.

## 8.10 Research Impact Based on Cited Journals Analysis

To understand the extent of the publishing journals impact, the challenge includes investigating the retrieved references from many different perspectives. First of all, the most intuitive step is to find the journals that published the most cited references than the others. Usually, the researcher needs to discover the top-tier of journals that usually contains the top ten cited journals within the research field. Of course, this can be carried out using the VOSviewer (Van Eck & Waltman, 2019). However, due to the functional limitations of the software tool, the data can be exported from the VOSviewer and then imported in Microsoft Excel to draw a better visual representation in case a bar graph is needed. Figure 35 shows the top ten journals by the absolute number of citations of their published references.

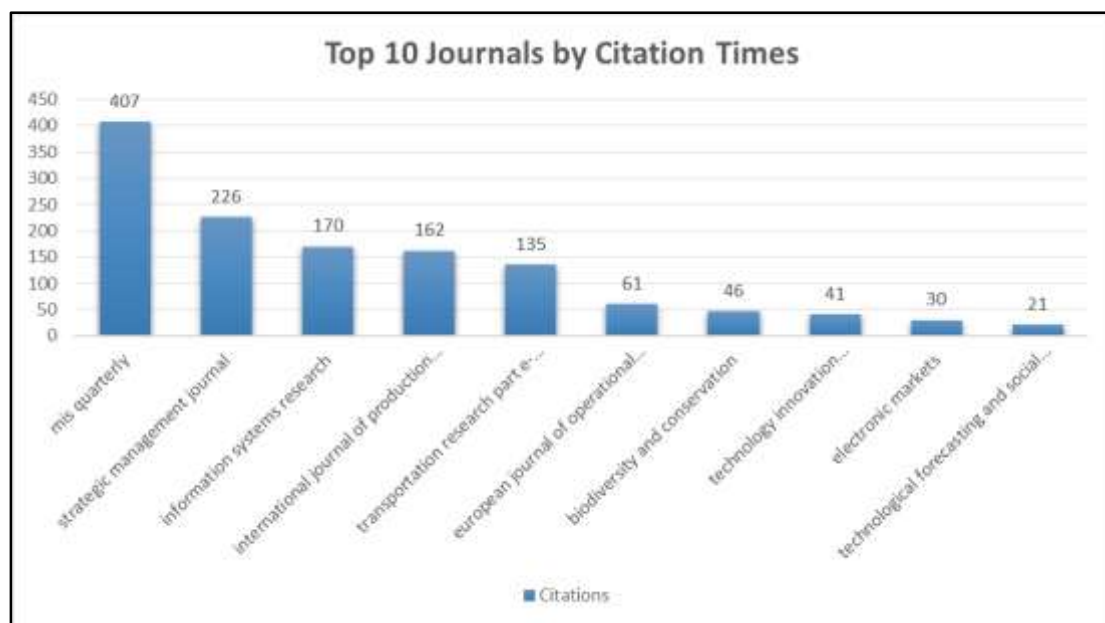


Figure 35: The Top 10 Journals by Citation Times

The MIS Quarterly published references were cited 407 references and the strategic management journal came in the second place with 226 citations. This conclusion can be used with the typical quality ranking of the journals to identify the references with the best quality to be included in the literature review in case this quality is a critical needed factor according to the design practical screening protocol.

The second task may be to understand the typical time span of the contents of these journals. The VOSviewer provides excellent support in this domain by providing a time span view of the normalized Gaussian curve within the typically produced citation map (Van Eck & Waltman, 2019). The third task is to understand the relative newness of the contents of these journals. The VOSviewer provides excellent support in this domain by providing a cold-hot automatic coloring option over the time span view within the typically produced citation map (Van Eck & Waltman, 2019). This heated citation map helps the researcher to identify quickly the journals with more recent contents. Figure 36 shows these combined features for the research field of this DBA thesis.

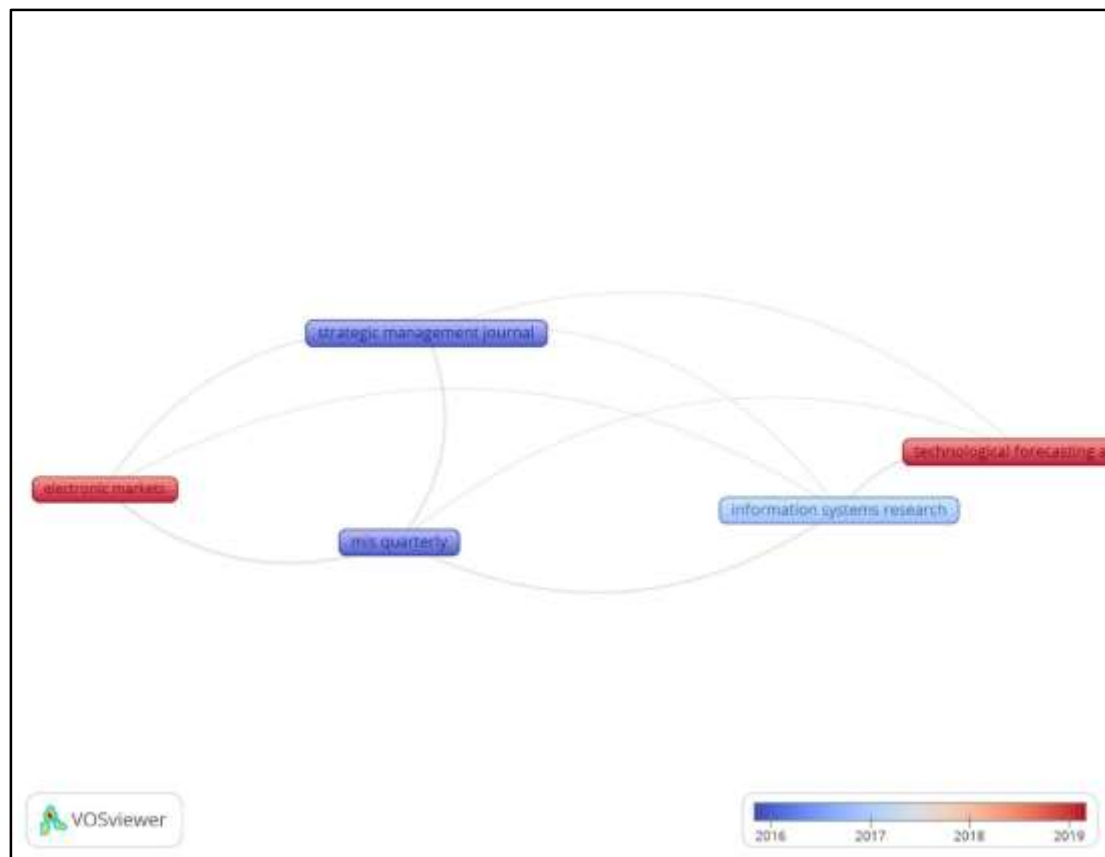


*Figure 36: The Research Impact with Cited Journals Map (Emphasized Journals)*

For example, the MIS Quarterly references that were cited 407 times and the Strategic Management Journal that came in the second place with 226 citation are clearly within the cold early group of journals. This means that their published references are not only have the biggest number of citations, but also the early ones, which may seem logical as shown in the above Figure 36.

After all the previously mentioned bibliometrics analysis techniques, the researcher will be easily able to identify objectively the most important journals according to their research impact. Hence, the role of the typical qualitative interpretive literature review (Walsh & Renaud, 2017) came to the forefront by using the previously mentioned higher logic to understand the added value of these most important journals.

In any scientific field, some journals represent the most respected publication outlets that focus on publishing papers around this specific field. According to Figure 35, MIS Quarterly, Strategic Management Journal, and Information Systems Research are the journals that their publications were cited the most, which reflect the ability of their publication to attract researchers' attention. This result somehow seems logical as these were the journals that started early to publish in the research field of the DBA thesis. This appears in Figure 36 with the cold blue color. Other journals such as Electronic Markets and Technology Forecasting and Social Change started to attract researchers' attention during the most recent years as appears in Figure 36 with the hot red color. However, still do not have so many citations yet, which seems logical too.

Furthermore, there is still an aspect that worth mentioning, which is the other journals that appear in the top ten source in Figure 35 and do not appear in Figure 36. This is a matter of relatedness, which means that the research published in and cited from the above mentioned five journals that appears in Figure 36 are so related to each other, while the others cited reference in journals such as International Journal of Production Economics (162 Publications) are not much related the publications of the five core journals.

## 8.11 Research Impact Based on Cited Authors Analysis

To understand the extent of the authors' impact, the challenge includes investigating the retrieved references from many different perspectives. First of all, the most intuitive step is to find the authors that published the most cited references than the others. Usually, the researcher needs to discover the top-tier of authors that usually contains the top ten cited authors within the research field. Of course, this can be carried out using the VOSviewer (Van Eck & Waltman, 2019). However, due to the functional limitations of the software tool, the data can be exported from the VOSviewer and then imported in Microsoft Excel to draw a better visual representation in case a bar graph is needed. Figure 37 shows the top ten authors by the absolute number of published references.

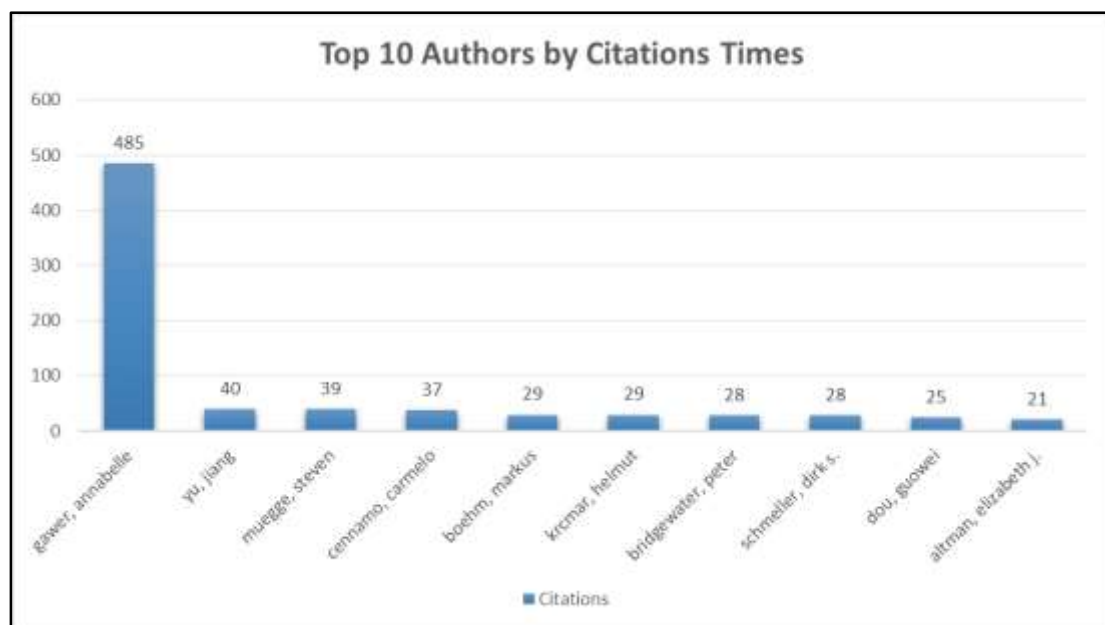


*Figure 37: The Top 10 Authors by Citation Times*

For example, Annabelle Gawer's published references were the most cited references by 485 citations and Jiang Yu came in the second place with 40 citations of his published references. This conclusion can be used to find the best authors in the research field of this DBA thesis as shown in Figure 37.

The second task may be to understand the typical time span of the references of these authors. The VOSviewer provides excellent support in this domain by providing a time span view of the normalized Gaussian curve within the typically produced citation map (Van Eck & Waltman, 2019). The third task is to understand the relative newness of the references of these authors. The VOSviewer provides excellent support in this domain by providing a cold-hot automatic coloring option over the time span view within the typically produced citation map (Van Eck & Waltman, 2019). This heated citation map helps the researcher to identify quickly the authors with more recent contents. Figure 38 shows these combined features for the research field of this DBA thesis.



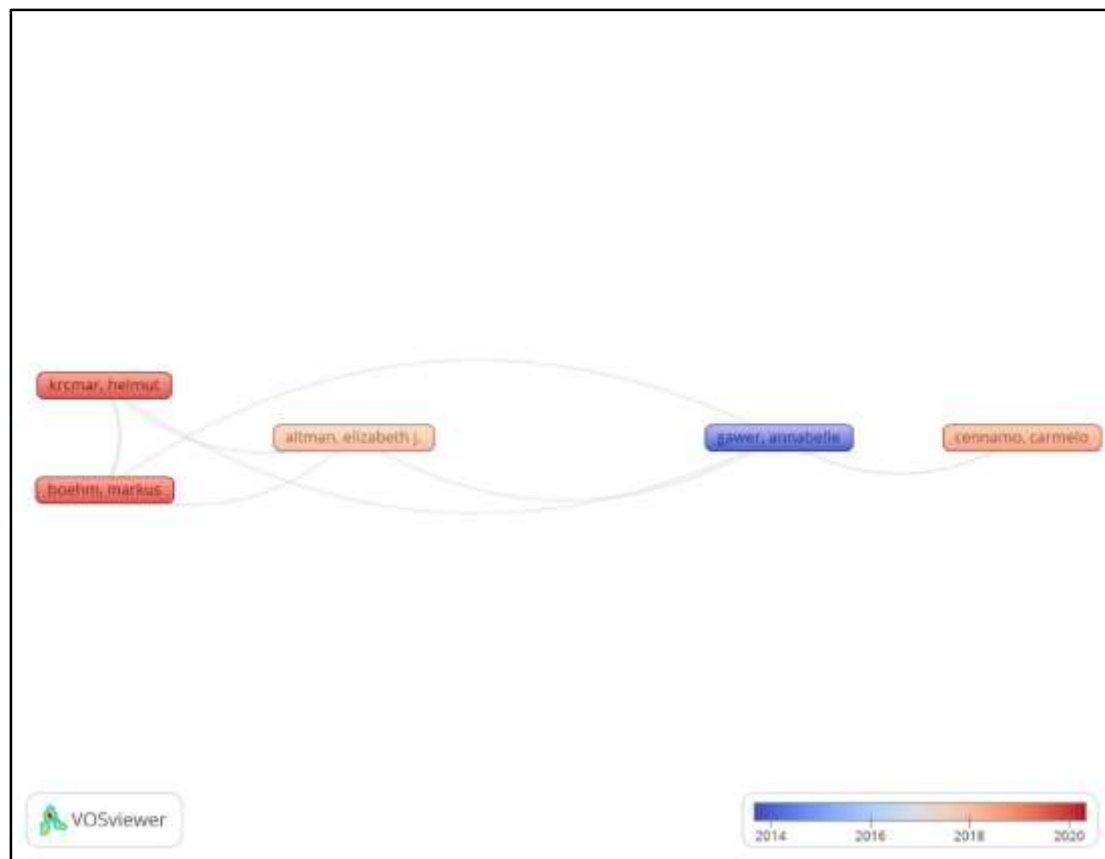


*Figure 38: The Research Impact with Cited Authors Map (Emphasized Authors)*

For example, Annabelle Gawer with the most cited author by 485 citations has the earliest publications too. This conclusion can be used to find the best authors in the research field of this DBA thesis too.

After all the previously mentioned bibliometrics analysis techniques, the researcher will be easily able to identify objectively the most important authors according to their research impact. Hence, the role of the typical qualitative interpretive literature review (Walsh & Renaud, 2017) came to the forefront by using the previously mentioned higher logic to understand the added value of these most important author.

In any scientific field, some authors represent the most respected thinkers that focus on publishing papers around this specific field. According to Figure 37, Annabelle Gawer and Jiang Yu are the authors that their publications were cited the most, which reflect the ability of their publication to attract researchers' attention.

This result somehow seems logical for Annabelle Gawer as she started early to publish in the research field of the DBA thesis. This appears in Figure 38 with the cold blue color.

Other authors such as Helmut Krcmar and Markus Boehm started to attract researchers' attention during the most recent years as appears in Figure 38 with the hot red color. However, still do not have so many citations yet, which seems logical too.

Furthermore, there is still an aspect that worth mentioning, which is the other authors that appear in the top ten source in Figure 37 and do not appear in Figure 38. This is a matter of relatedness, which means that the research published by and cited from the above mentioned five authors that appears in Figure 38 are so related to each other, while the others cited reference from other authors such as Yu Jiang (40 Publications) are not much related the publications of the five core authors.

## 8.12 Research Impact Based on Origin of the Cited References Analysis

To understand the extent of the countries impact, the challenge includes investigating the retrieved references from many different perspectives. First of all, the most intuitive step is to find the countries that published the largest number of references and the most cited references than the others. Usually, the researcher needs to discover the top-tier of countries that usually contains the top ten within the research field. Of course, this can be carried out using the VOSviewer (Van Eck & Waltman, 2019). However, due to the functional limitations of the software tool, the data can be exported from the VOSviewer and then imported in Microsoft Excel to draw a better visual representation in case a bar graph is needed. Figure 39 shows the top 18 countries by the absolute number of published references. On the other hand, Figure 40 shows the top 18 countries by the absolute number of citations of the published references.

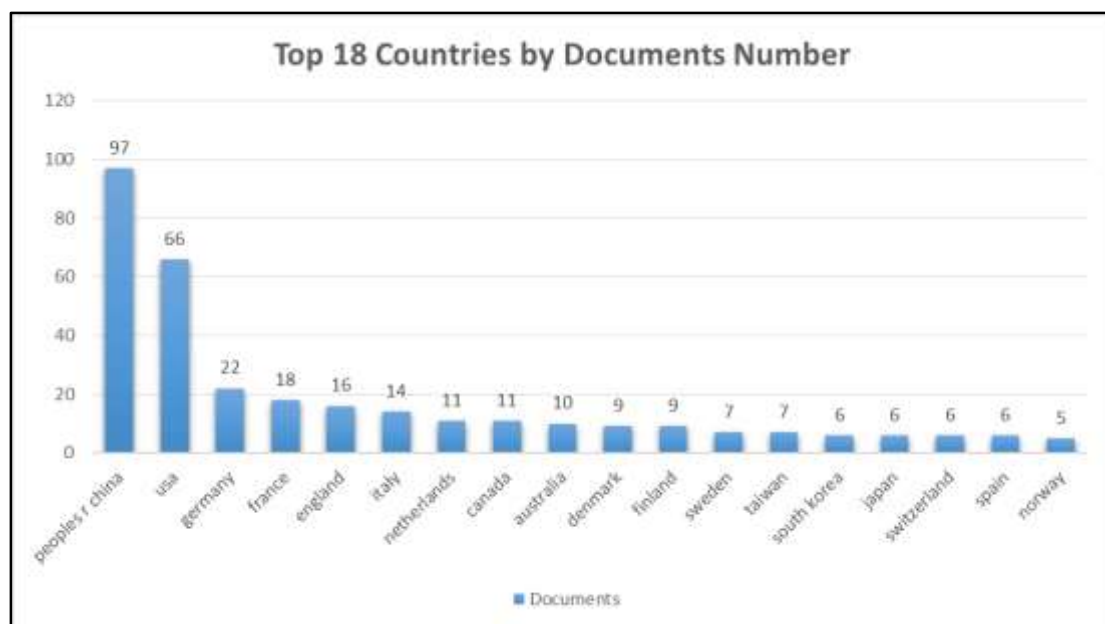


*Figure 39: The Top 18 Countries by Documents Number*

For example, China published 97 references and USA came in the second place with 66 references. Furthermore, USA published references were cited 2693 times, while England published references were cited 978 times and came in the second place as shown in Figure 40. These two conclusions can give additional insight about the top origins in the research field of this DBA thesis.

The second task may be to understand the typical time span of the references of these countries. The VOSviewer provides excellent support in this domain by providing a time span view of the normalized Gaussian curve within the typically produced citation map (Van Eck & Waltman, 2019). The third task is to understand the relative newness of the references of these countries. The VOSviewer provides excellent support in this domain by providing a cold-hot automatic coloring option over the time span view within the typically produced citation map (Van Eck & Waltman, 2019).

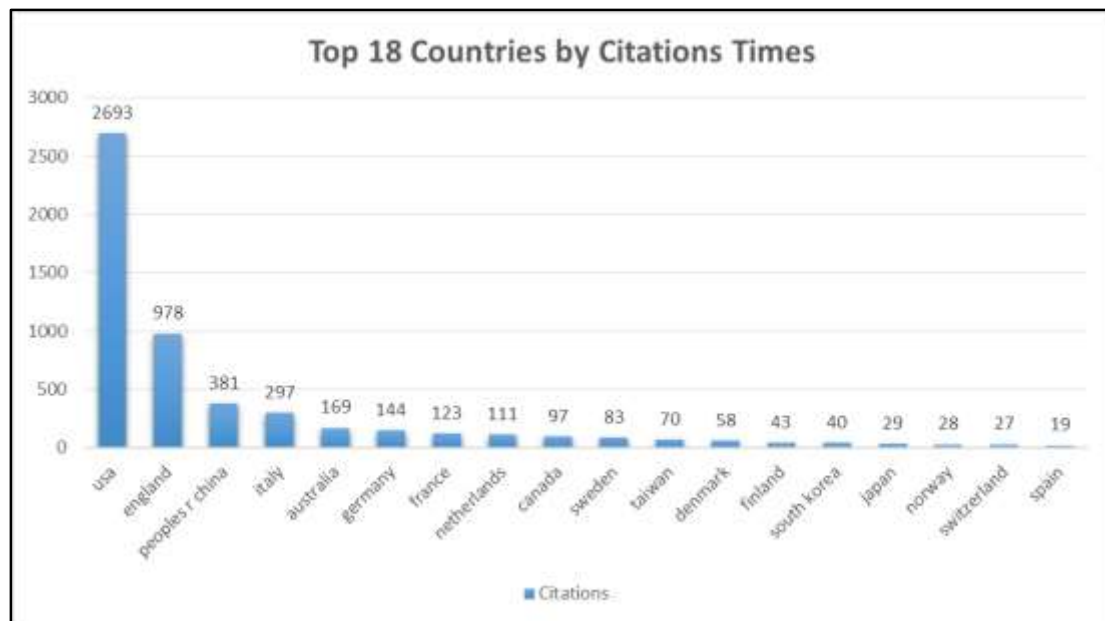


*Figure 40: The Top 18 Countries by Citations Times*

This heated citation map helps the researcher to identify quickly the countries with more recent contents. Figure 41 shows these combined features for the research field of this DBA thesis. For example, Norway, Sweden, and Taiwan have the earliest cold blue publications, while Netherland, Spain and Switzerland have the newest hot red publications. This clearly indicates the migration of the focus within the research field. This conclusion can be used to understand the timely dynamics within the research field of this DBA thesis too.

After all the previously mentioned bibliometrics analysis techniques, the researcher will be easily able to identify objectively the most important countries according to their research impact. Hence, the role of the typical qualitative interpretive literature review (Walsh & Renaud, 2017) came to the forefront by using the previously mentioned higher logic to understand the added value of these most important references.

In any scientific field, some countries represent the most respected incubators for the thinkers that focus on producing papers around this specific field. According to Figure 39, China and USA are the countries that produced the largest number of publications, which reflect the interest in incubating thinkers of the topic of this DBA thesis. While according to Figure 40, USA and England are the countries that their publications were cited the most, which reflect the ability of their publication to attract researchers' attention.

Furthermore, there is still an aspect that worth mentioning, which is dynamics of how this interest shifts with time. According to Figure 41, Norway, Sweden, and Taiwan are no longer the most interested countries in this field of research, while Netherland, Spain and Switzerland are good example of the new comers in this field.

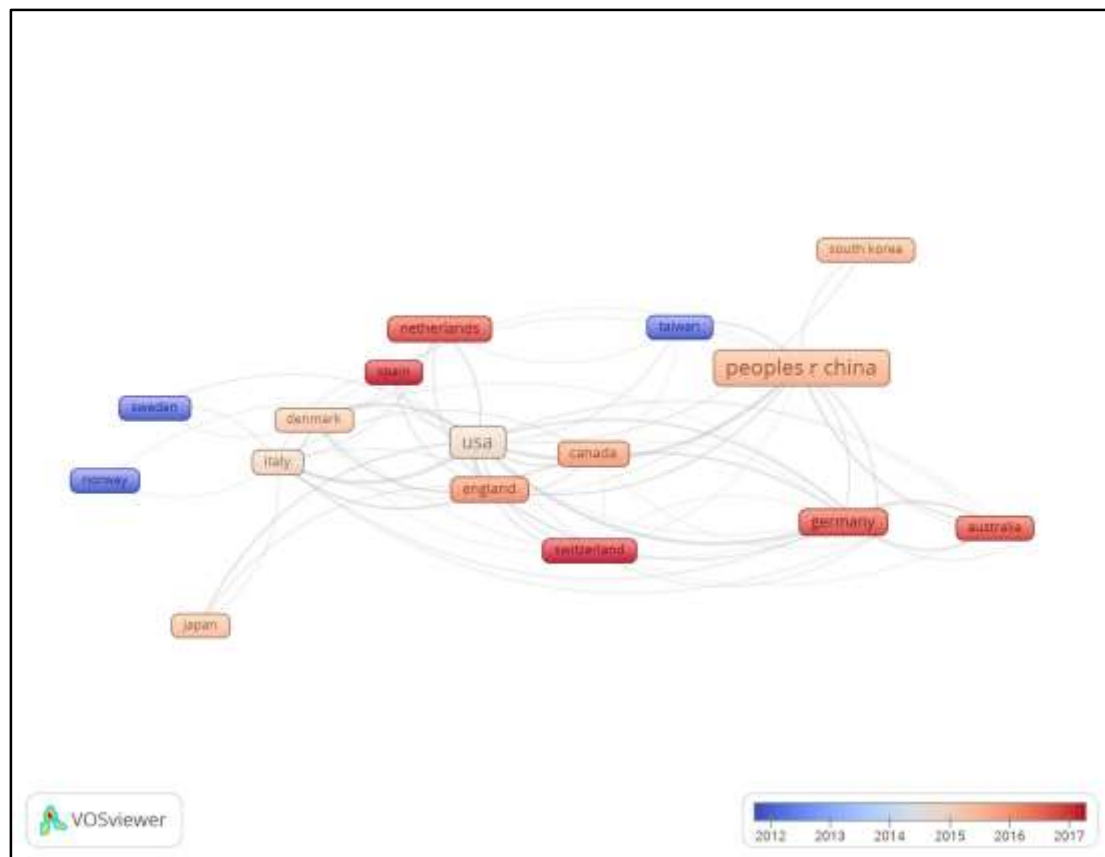


*Figure 41: The Research Impact with Origin of Cited References Map (Emphasized Authors)*

### 8.13 Research Schools of Thought Based on Co-cited References Analysis

To understand the existing schools of thought, the challenge includes investigating the retrieved references from many different perspectives. First of all, the most intuitive step is to find the references that are usually cited together than the others. Usually, the researcher needs to discover the top-tier of references clusters that usually contains the top three to six clusters within the research field. Of course, this can be carried out using the VOSviewer (Van Eck & Waltman, 2019). Figure 42 shows the existing three clusters of references within the research field of this DBA thesis.

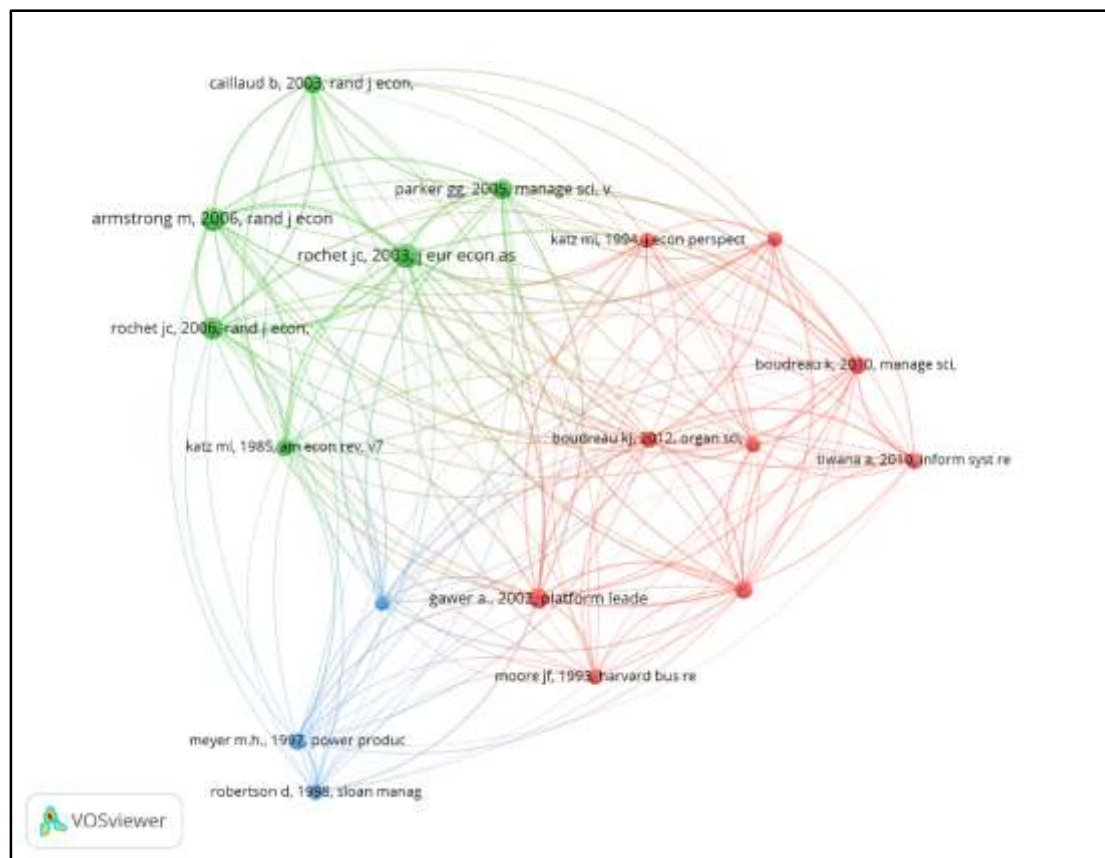


*Figure 42: The Research Schools of Thought with Co-cited References Map*

For example, Tiwana (2015) publication appears at the edge of the red cluster that contains this reference with many others such as Boudreau (2010). Finally, and as mentioned before, and for the sake of visual representation clarity, the VOSviewer visualization adjustment features was used to produces a co-citation map that included a more emphasized reference names by drawing a rectangle around each reference. This map provides no additional insight. Just, a more clear representation of the same information is shown in Figure 43.

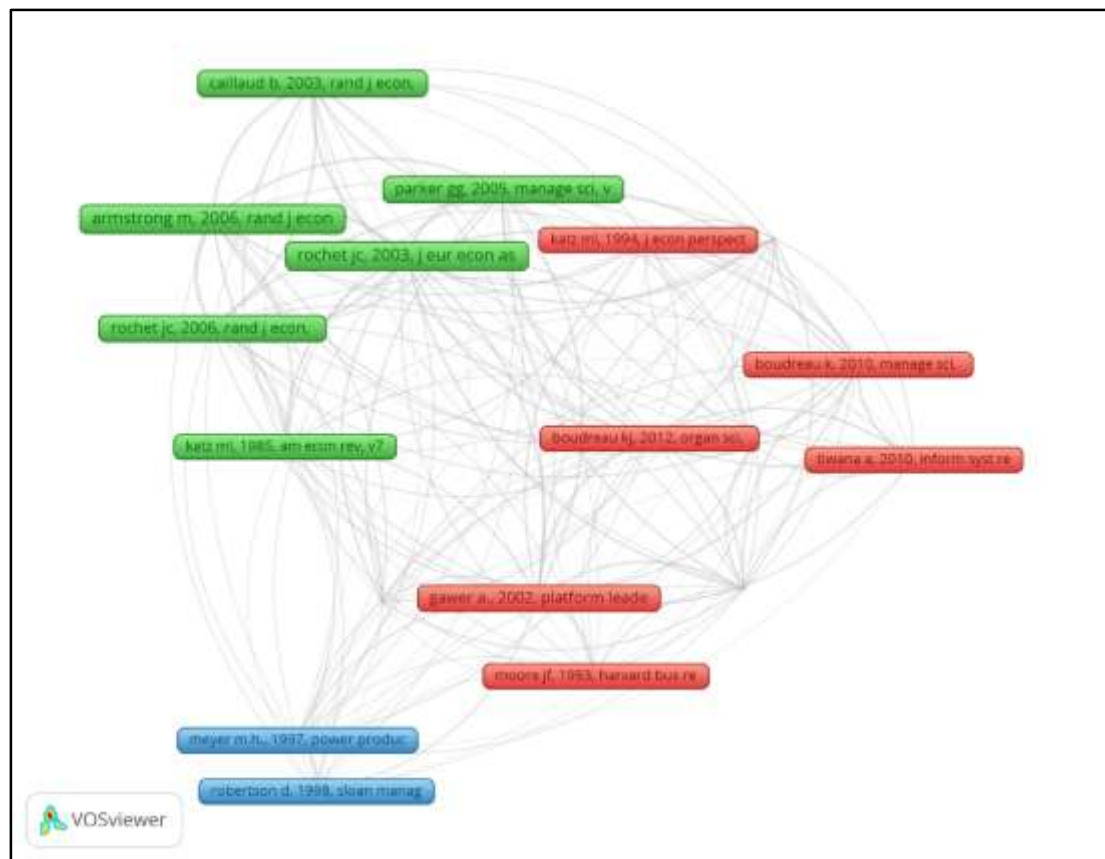


*Figure 43: The Research Schools of Thought with Co-cited References Map (Emphasized References)*

Before going further in the analysis, it is worth re-mentioning a hint about the decision taken in this DBA thesis when using VOSviewer to generate bibliometric maps as discussed before. This decision was to use the automatic default thresholds suggested by the tool itself, which usually suggested based on its own embedded sensitivity of the used algorithm and the nature of the input data itself. As discussed before, this helps avoiding both undesired result manipulations and the dilemma of facing infinite number of possible results without clear prioritization mechanisms. Although the previous impact analysis part of this literature review chapter was suitable to demonstrate both the original dilemma and the impact of the decision, it was preferred to delay this demonstration to this section of schools of thought because it is more appealing and insightful. For example, keeping these automatic default thresholds, which was 20 co-citations, produced a co-citation map that shows three basic clusters or three basic schools of thought as shown in Figure 43. Selecting only two alternatives from the infinite available options and manipulating this threshold by adding or subtracting 5 to make it either 15 or 25 co-citations produced two different co-citation maps that show either a different three schools of thought or only two schools of thought as shown in Figure 44.

This gives two different images to the history of the research field and going further into this manipulation gives infinite number of images to the same data. Hence, afterwards, all other produced maps will follow the same default thresholds strategy.



*Figure 44: The Research Schools of Thought with Co-cited References Maps (Adjust Threshold by -5 & + 5)*

After the previously mentioned bibliometrics analysis, the researcher will be easily able to identify objectively the existing schools of thought that may consume the valuable time to be read. Hence, the role of the typical qualitative interpretive literature review (Walsh & Renaud, 2017) came to the forefront by using the previously mentioned higher logic to understand the added value of these schools most.

**The First School of Thought:** This school of thoughts is represented by the red cluster of references in the co-citation map shown in Figure 43, which contains the following produced knowledge. In the early years of the field of platforms-enabled businesses, Moore (1993) discussed the issue of the typical challenges that arise when organizations try to build complex business communities and networks, or ecosystems with the new terminologies that focuses on bringing innovation to the markets. While, Katz & Shaprio (1994) discussed the relation between corporate strategy, innovation in high-technology markets, and the platform network effects. Then several years later, Cusumano & Gawer (2002) explained in detail the different elements in the platform leadership such as maximizing the platform's technological innovation and how to achieve this.

In less than a decade, Tiwana et. al. (2010) published research commentary on the evaluation of the platforms-based ecosystems business and its related broad research questions with focusing on the technological platform architectures and information technology-centric innovative contributions to platforms strategy and economic disciplines. In the same year, Boudreau (2010) published a paper to discuss the dilemma and tradeoff between relaxing controls and opening the platform to foster open innovation or to increase the control and focused on controlled close innovation. In addition, Eisenmann (2011) discussed the platform envelopment as an attacking strategy to gain market share for new entrant platforms without depending heavily on the innovation and revolutionary functionalities. On the other hand, in his succeeded paper two years later, Boudreau (2012) discussed the patterns of open innovation software app development platforms due to this relaxed control and openness. One year later, Cennamo & Santalo (2013) investigated the different competition strategies between the different platforms in the same market such as differentiation strategies as well as the winner-takes-all phenomena.



Furthermore, Gawer (2014) proposed an integrative framework to advance the management research on the field of technological two-sided platforms, which aims to link the innovation in the platform technologies and technological architecture to the economic side of the equation that focuses on the strategic compilation within the market.

Hence, it is so clear that this cluster of the published references, which has the largest number of references and an around two-decade time span, revolves around the innovation strategies in technology-centric platforms-based ecosystems business or simply, the research conducted around the innovation-centric strategies in (two-sided) digital platform ecosystems research and its effect on achieving the platform success and achieved the network effects.

**The Second School of Thought:** This school of thoughts is represented by the green cluster of references in the co-citation map shown in Figure 43, which contains the following produced knowledge. In the early years of the field of platforms-enabled businesses, Katz & Shaprio (1985) discussed the relation between the network effects with market competitions between the different competing platforms as well as the effect of compatibilities in two-sided markets.

In less than two decades period, which is somehow a long period, Caillaud & Jullien (2003) investigated the chicken-egg problem related to the business of the platform. Especially, when the competitions in pricing strategies help to shape the economic equilibrium in the platform's market as well as the effect of these competitions on externalities and network effects. In the same year, Rochet & Tirole (2003) examined the same issue, which is the platforms competitions, pricing strategies help to shape the economic equilibrium, and the relation with achieving the network effects especially in the two-sided market. Three years later, they published another paper (Rochet & Tirole, 2006) around the same theme that provides an additional integrative model that helps to understand and dealing with this challenge.

In 2005, Parker & Van Alstyne (2005) presented a model to understand the network effect in two-sided markets based on the design of information products in general and even in the absence of severe market competitions. Finally, Armstrong (2006) discussed the competitions in two-sided platforms and the factors that affect these competitions, and how these competitions affect the network effects.

Hence, it is so clear that this cluster of the published references, which has a medium number of references and an around two-decade time span, revolves around the competitions strategies in two-sided platforms-based ecosystems business or simply, the research conducted around the competitions-centric strategies in (two-sided) digital platform ecosystems research and its effect on achieving the platform success and achieved the network effects.

**The Third School of Thought:** This school of thoughts is represented by the blue cluster of references in the co-citation map shown in Figure 43, which contains the following produced knowledge. In 1997, Meyer & Lehnerd (1997) explained the strategic advantage and the market power that can be gained from focusing strategically on building product platforms as a strategic option.

One year later, Robertson & Ulrich (1998) published a paper to add the how dimension to this issue, which is how to plan for taking this strategic step and build these product platforms. In less than a decade, the third and final paper in this cluster was published by Eisenmann, Parker & Van Alstyne in 2006. Eisenmann et. al. (2006) investigated the different strategies that can be employed to deal with the typical challenges in the two-side product platforms such as Microsoft gaming platform or the X-Box.

Hence, it is so clear that this cluster of the published references, which has the fewest number of references and an around a decade, revolves around the strategic advantages and challenges related to product-centric platforms in the two-sided platforms-based ecosystems business or simply, the research conducted around the product-centric strategies in (two-sided) digital platform ecosystems and its effect on achieving the platform success and achieved the network effects.

Hence, and as a conclusion, the three schools of thought revolve around three families of strategies, which are “Innovation-Centric”, “Competition-Centric” and “Product-Centric” in the field of digital platform-based ecosystems with the two-sided market structure as a dominate market structure over the single-sided and multi-sided as shown in Figure 45.

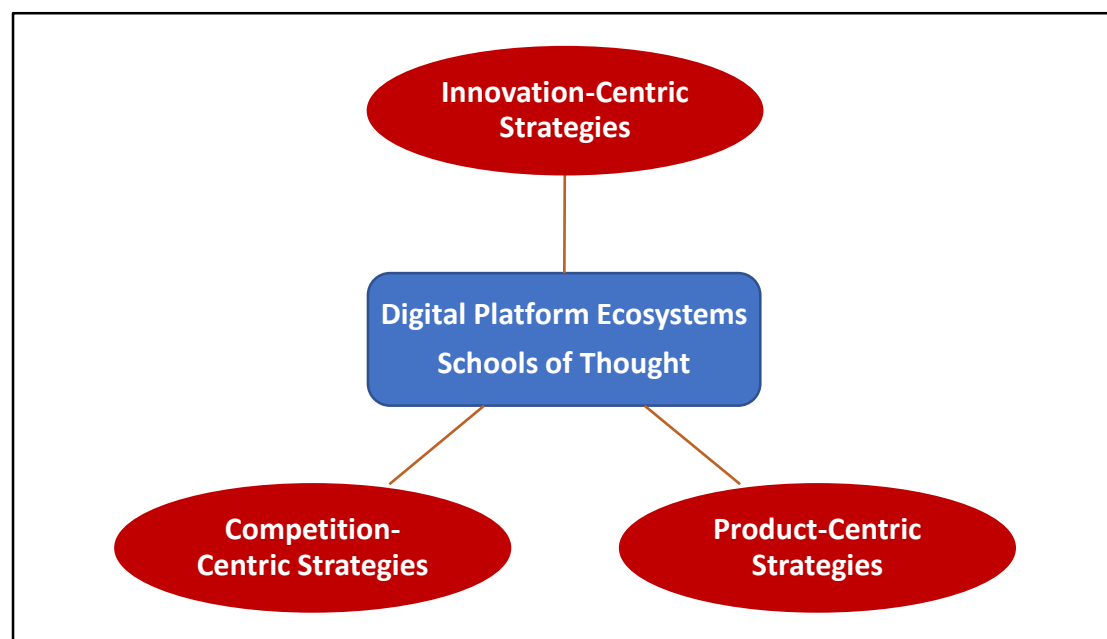


*Figure 45: The Three Schools of Thought or Families of Strategies in the Digital Platform Ecosystems*

## 8.14 Research Themes Based on Bibliographic Coupling of the Cited References Analysis

To understand the potential research themes, the challenge includes investigating the retrieved references from many different perspectives. First of all, the most intuitive step is to find the references that are usually appear together in the full citation list than the others. Usually, the researcher needs to discover the top-tier of references clusters that usually contains the top three to six clusters within the research field. Of course, this can be carried out using the VOSviewer (Van Eck & Waltman, 2019). Figure 46 shows the existing clusters of coupled references within the research field of this DBA thesis.

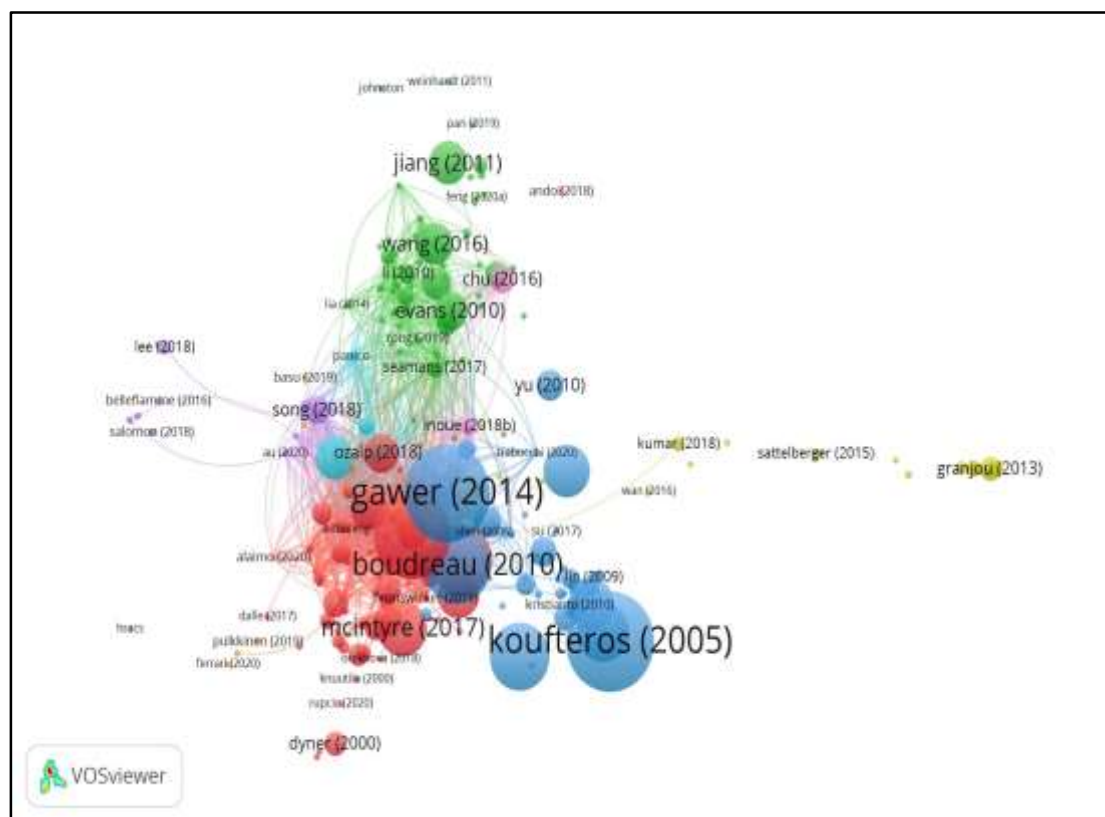


*Figure 46: The Research Themes with Coupled Cited References Map*

For example, Gawer (2014) appears at the heart of the blue cluster that contains this reference with many others such as Koufteros et. al. (2005).

Finally, and as mentioned before, and for the sake of visual representation clarity, the VOSviewer visualization adjustment features were used to produce a co-citation map that included a more emphasized reference names by drawing a rectangle around each reference. This map provides no additional insight. Just, a more clear representation of the same information as shown in Figure 47.

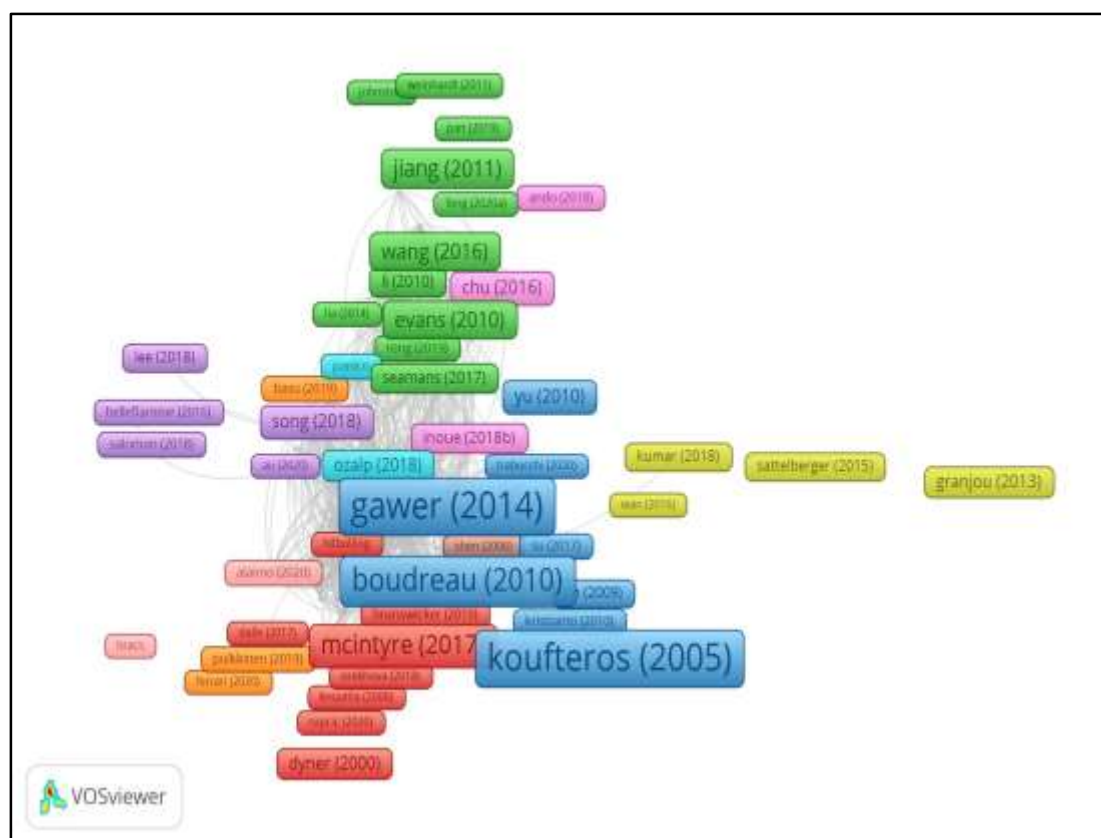


*Figure 47: The Research Themes with Coupled Cited References Map (Emphasized References)*

After the previously mentioned bibliometrics analysis, the researcher will be easily able to identify objectively the potential research themes that may consume the valuable time to be read. Hence, the role of the typical qualitative interpretive literature review (Walsh & Renaud, 2017) came to the forefront by using the previously mentioned higher logic to understand the added value of these schools most.

In contrast to the previously conducted and presented bibliometrics analysis for the historical schools of thought that produced only three meaningful schools from 18 interrelated published references using the default thresholds strategy, the conducted initial bibliometrics analysis for the emergent research themes using the same default thresholds strategy produced ten research themes that include 219 interrelated published references. These 219 references represent an impractical number to be investigated and presented in this DBA thoroughly as the previously 18 published references for the in the three schools of thought.

Hence, the decision was taken to use both a simplified and reduced strategy to manage the complexity of the research themes analysis to a realistic limit. The VOSviewer adjustable parameters were used to shift the focus of the produced bibliographic coupling map to the final three previous years from 2018 and up to 2020. The rationale is so simple. By understanding the contributions of recently published references in each cluster, it will give a good approximate impression about the most up-to-date directions of each research theme, while being able to achieve this mission by investigating less than 20 published references.

This is a manageable and comparable number at the same time and the analysis was conducted using the bibliographic coupling map shown in Figure 48.

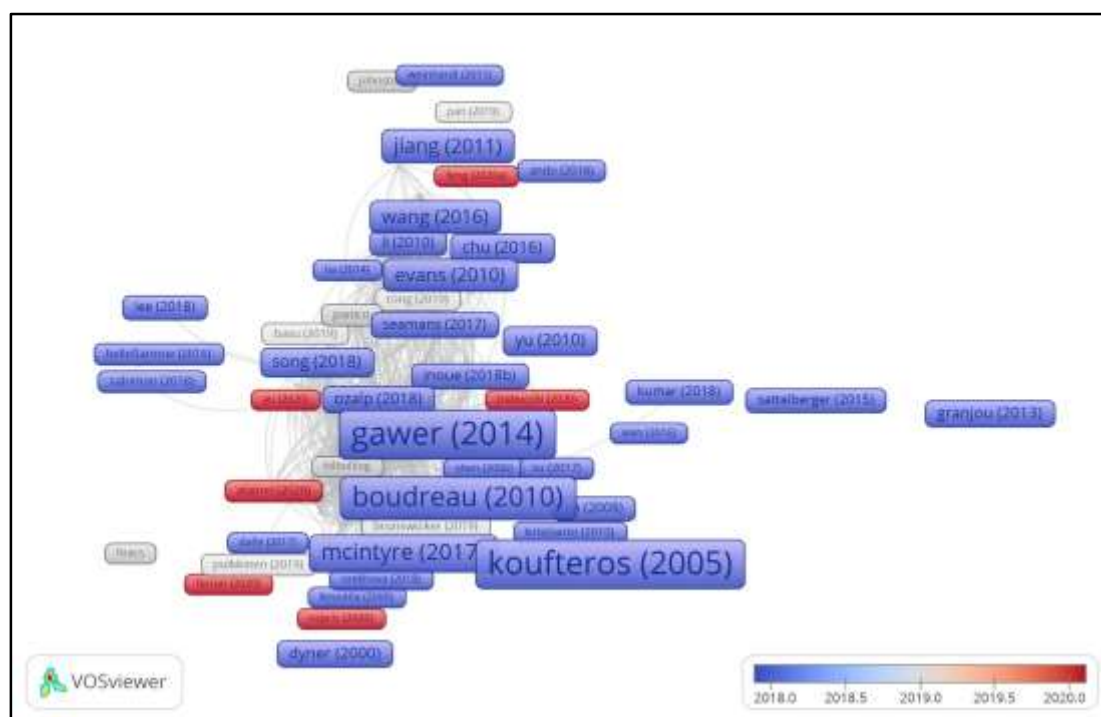


Figure 48: The Research Themes with Coupled Cited References Map (Limited to 2018-2020)

**The First Research Theme:** This research theme is represented by some of the red references or references in the bibliographic coupling map shown in Figure 48 and the “Cluster-2” of the original clusters shown in Figure 47. However, due to the large number of clusters and references, these references and its cluster color may be not so visible. Hence, this analysis will not focus on their visual identification. This research theme contains the following produced knowledge.

Chen et. al. (2020) examined the different dynamic optimization strategies around the financial values for the digital platform users such as the prices, commission rates, and incentives. They took the on-demand ride services platform as a case study. On the other hand, Dou et. al. (2020) explained the pricing strategy only in the two-sided platforms and their relations to the categories of customers. Furthermore, Li et. al. (2020) explained the implications of the different matching as well as pricing strategies in digital services platforms with focusing on Q2O platform as a case study. In addition, Lin et. al. (2020) explained how competition between the e-commerce platforms is affected by different pricing strategies and product bundling strategies.

Then, Feng et. al. (2020a) analyzed the different pricing strategies in the platform sharing economy by focusing on luxury fashion rental as a case study. While Feng et. al. (2020b) examined the primal approach for product selection and pricing strategies in the two-sided platform ecosystems. Furthermore, Sun et. al. (2020a) discussed the best investment strategies for the sharing platforms, while Sun et. al. (2020b) examined the pricing strategies for 3D printing products-based platforms.

Finally, Wang & Lyn (2020) focused on discussing the sequential product position for platforms in the presence of the network effects.

Hence, it is so clear that this cluster of the recently published references, which has the first-largest number of references, revolves around the financial strategies either explicitly or implicitly in platforms-based ecosystems business or simply, the research conducted around the financial-centric strategies in digital platform ecosystems and its effect on achieving the platform success and achieved the network effects with pricing strategies as a dominate theme over investment and positioning strategies.

**The Second Research Theme:** This research theme is represented by some of the red references or references in the bibliographic coupling map shown in Figure 48 and the “Cluster-1” of the original clusters shown in Figure 47. However, due to the large number of clusters and references, these references and its cluster color may be not so visible. Hence, this analysis will not focus on their visual identification. This research theme contains the following produced knowledge.

Hein et.al. (2019) published a fundamentals article that gives an overview of the research in the digital platform ecosystems field and builds on this part by explaining the variation points between different types of these digital platform ecosystems. While Curchod et. al. (2020) examined the nonmarket strategy called self-categorization that can enable multi-national enterprises to expand their online or digital platforms internationally. They used the eBay expansion with its subsidiary in France as a case study for this type of platform strategy.

On the other hand, Foerderer (2020) studied the opportunities for inter-firm exchange and complementary innovation in platform ecosystems using evidence from Apple Developers Conference help in 2016. Furthermore, Giovanini et. al. (2019) explained the nature of the innovation ecosystem in platforms that support software application development. Again, this paper focused on Apple application platforms such as the previous Foerderer (2020) paper. In addition, Isckia et. al. (2020) discussed how to orchestrate the platform-based ecosystems through the interplay between innovation and business development subsystems.

However, away from the interplay and the orchestration sides of the equation, Lee et. al. (2020) focused on studying the innovation process and its cooperation processes in media platforms. Then, Rietveld et.al. (2020) examined the relationship between the used governance strategies and the ability to achieve the platform dominance in the market either before or after achieving this dominance, which means examining the governance strategies dynamics before and after achieving the platform network effects. Finally, Rupcic et. al. (2020), discussed how the platform-based ecosystems emerge through the process of organizational learning.

Hence, it is so clear that this cluster of the recently published references, which has the second-largest number of references, revolves around the innovation strategies either explicitly or implicitly in platforms-based ecosystems business or simply, the research conducted around the innovation-centric strategies in digital platform ecosystems and its effect on achieving the platform success and achieved the network effects.

**The Third Research Theme:** This research theme is represented by some of the red references or references in the bibliographic coupling map shown in Figure 48 and the “Cluster-4” of the original clusters shown in Figure 47. However, due to the large number of clusters and references, these references and its cluster color may be not so visible. Hence, this analysis will not focus on their visual identification. This research theme contains the following produced knowledge.

Omulo & Kumeh (2020) discussed how digital platforms could enhance agriculture performance by focusing on orchestration between agriculture players. They focused on platform of a whole agriculture services ecosystem in Kenya. On the other hand, Fraccascia (2020) examined the direct network effects for digital or online platforms that support the orchestration within a whole industrial ecosystem that revolve around waste production and consumption or recycling.

Hence, it is so clear that this cluster of the recently published references, which has only two recent references, revolves around the orchestration strategies in platforms-based ecosystems business or simply, the research conducted around the orchestration-centric strategies in digital platform ecosystems and its effect on achieving the platform success and achieved the network effects.

**The Fourth Research Theme:** This research theme is represented by some of the red references or references in the bibliographic coupling map shown in Figure 48 and the “Cluster-7” of the original clusters shown in Figure 47. However, due to the large number of clusters and references, these references and its cluster color may be not so visible. Hence, this analysis will not focus on their visual identification. This research theme contains the following produced knowledge.

Ferrari et. al. (2020) examined the potential of using the digital platforms to solve national chronic problems with new innovative approaches and examined the issues related to refugees’ reception in Italy as a case study. However, the underlying examined model was the use of a working model for getting benefits from mixing the qualitative and quantitative data collected by the platform. On the other hand, Bhargava et. al. (2020) explained the impact of having an explicit data strategy for the digital platform that deals with data as a very important strategic asset.

Hence, it is so clear that this cluster of the recently published references, which has only two recent references, revolves around the data management strategies as an asset in platforms-based ecosystems business or simply, the research conducted around the data-centric strategies in digital platform ecosystems and its effect on achieving the platform success and achieved the network effects.

**The Fifth, Sixth and Seventh Research Themes:** These research themes are represented by some of the red references or references in the bibliographic coupling map shown in Figure 48 and the “Clusters 3, 5, and 10 Respectively” of the original clusters shown in Figure 47. However, due to the large number of clusters and references, these references and its cluster color may be not so visible. Hence, this analysis will not focus on their visual identification. This research theme contains the following produced knowledge.

For the fifth theme that is related to cluster 3, Trabucchi & Magistretti (2020) discussed the importance of knowledge strategies for platforms with a focus on the movies industry as a case study. Hence, it is so clear that this cluster of the recently published references focus on the research conducted around the knowledge-centric management strategies in digital platform ecosystems without any noticeable focus on the topic of the network effects.

For the sixth theme that is related to cluster 5, Au et. al. (2020) discussed a practical approach for building a peer-to-peer lending platform including explaining the different stages, strategies, and configurations. This can be considered within the financial technology strategies or FinTech Strategies field. Hence, it is so clear that this cluster of the recently published references focus on the research conducted around the FinTech-Centric strategies in digital platform ecosystems without any noticeable focus on the topic of the network effects.

For the seventh theme that is related to cluster 10, Alaimo et. al. (2020) discussed some useful lessons learned for social media platforms as a case study for the services platform-based ecosystems. Especially, the impact of users developed content sharing strategies such as the shared contents that can be found on TripAdvisor. Hence, it is so clear that this cluster of the recently published references focus on the research conducted around the content sharing-centric strategies in digital platform ecosystems without any noticeable focus on the topic of the network effects.



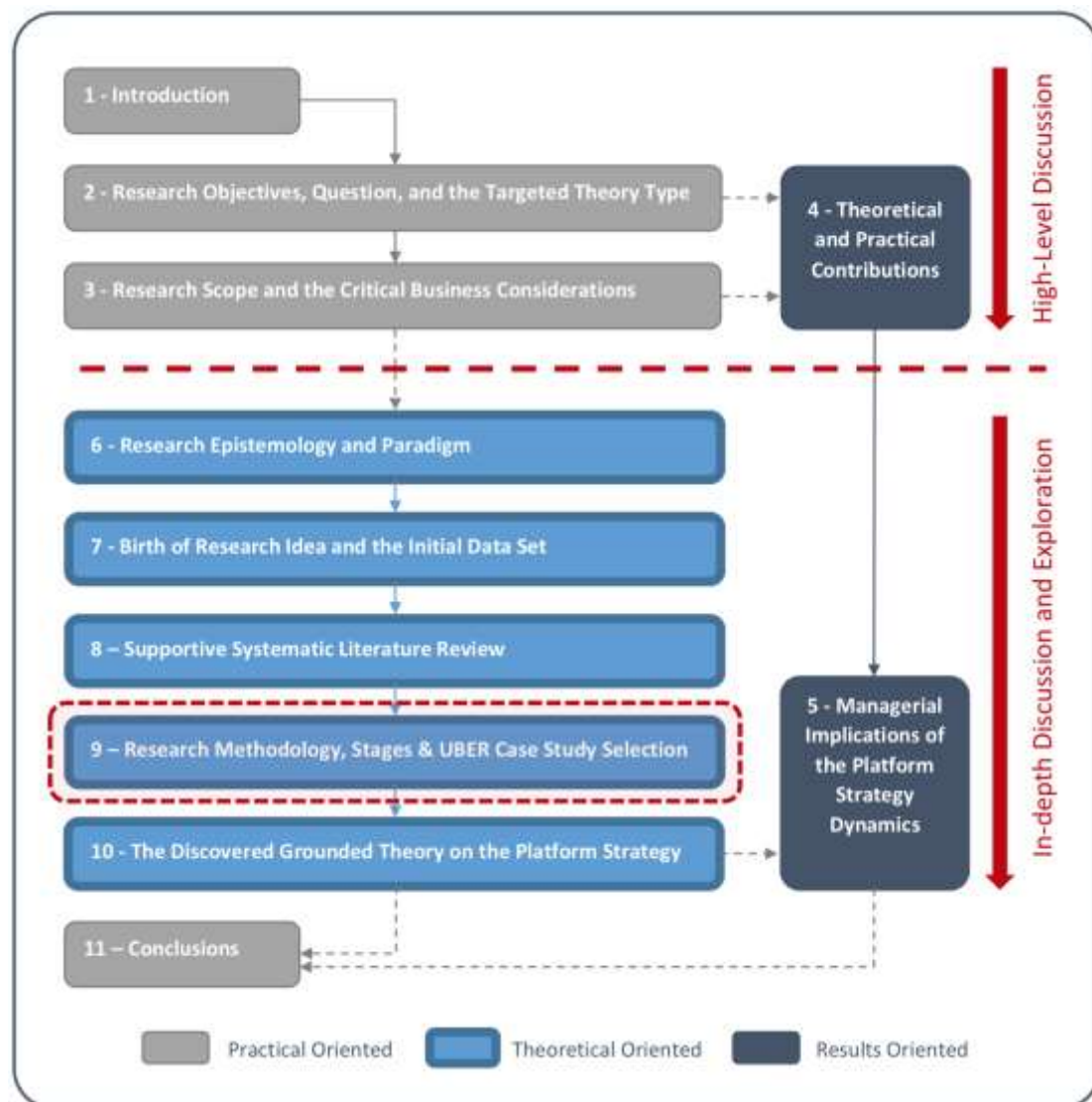
*Figure 49: The Seven Research Themes or Families of Strategies in the Digital Platform Ecosystems*



Hence, and as a conclusion, the found seven research themes revolve around seven families of strategies, which are “Financial-Centric”, “Innovation-Centric”, “Orchestration-Centric”, “Data-Centric”, “Knowledge-Centric”, “FinTech-Centric” and finally the “Content Sharing-Centric” in the field of digital platform ecosystems with the network effects as a dominate key performance indicator only for the first four families of strategies as shown in Figure 49. The dark red four research themes or families of strategies in Figure 49 are those themes and families that have the network effect appears as a dominate KPI in the research, while the other three light red themes and families are those with no relation so far with the network effects.

## CHAPTER-9

### RESEARCH METHODOLOGY, STAGES, AND UBER CASE STUDY SELECTION



## **9. RESEARCH METHODOLOGY, STAGES, AND UBER CASE STUDY SELECTION**

This chapter is going to explain and discuss the “**Research Methodology, Stages, and UBER Case Study Selection**”. The following subsections will present the major related aspects including the following:

- 9.1 The Classical Grounded Theory as the General Research Methodology**
- 9.2 Introductory Notes about the Classical Grounded Theory**
- 9.3 The First Stage in the Classical Grounded Theory Journey**
- 9.4 The Theoretical Coding Stage and the Benefits of System Dynamics**
- 9.5 Research Roadmap and Domains**
- 9.6 The Evaluation of Case Studies Selection during the Research journey**
- 9.7 Literature as Secondary Data Substantive Area Collection and Preparation Steps**
- 9.8 The Single Integrated Literature Dataset**
- 9.9 Data Analysis Techniques, Selective, and Theoretical Coding for the Literature Substantive Area**
- 9.10 UBER Case Study as Substantive Area Data Collection and Preparation Steps**
- 9.11 Summary of the Used Datasets and Their Interrelationships**
- 9.12 Quality Criteria: Transparency, Reflexivity, Transferability and Integrity**

## 9.1 The Classical Grounded Theory as the General Research Methodology

Although “The Discovery of the Grounded Theory” book (Glaser & Strauss, 1967) was published in 1967, to give an answer to the research community’s question about how the “Awareness of Dying Theory” was formulated, the roots of the grounded theory were being developed several years before this date starting the early 1960s.

As indicated by Holton & Walsh (2016), the classical grounded theory enables the researchers to discover theories from empirical data through a constant comparative analysis that enables the latent patterns discovery. Furthermore, it provides a considerable amount of flexibility by being able to support the researcher when dealing with any type of data from any epistemological position or theoretical perspective. Hence, it supports the logic of discovery over the logic of verification and can be seen as an integrative research paradigm for discovery (Holton J. A., 2008).

After being critiqued, the classical grounded theory, for lacking in scholarly rigor (Gioia, Corley, & Hamilton, 2013) by some academics either due to confusion or misunderstanding of its true nature (Holton & Walsh, 2016), there were some attempts to add some rigor to the grounded theory such as what was introduced by Gioia et. al. (2013) as the “Gioia Method”.

Later on, and to clarify the true nature of the classical grounded theory as well as removing these sources of confusion, Holton & Walsh (2016) provided a detailed description and guidance for the classical grounded theory, including its unique purpose of discovering new theories, its fundamental pillars, associated sources of confusion, suitable data types, the all is data concept, its data analysis techniques, how to shape the discovered theory, writing the discovered theory and how to prepare it for publishing. Additional literature provides more depth about these aspects such as (Walsh, et al., 2015) and (Walsh, 2015).

This research project aims to use the power of the classical grounded theory as a holistic research methodology as well as get benefits from the “Gioia Method” to add more rigor to the analyzed and discovered coding structure.

Holton & Walsh (2016) explained the journey, and its steps, towards discovering both substantive grounded theory and general substantive grounded theory, which include:

- First, the open coding, which includes in-vivo codes and analytic codes to identify concepts until the emergence of the core category.
- Second, the selective coding, which includes the coding around the core category to identify properties and dimensions of the core category.
- Third, the theoretical coding, which includes coding to identify the relationships between the core categories and the other concepts to finally shape and integrate the discovered emerged theory.

It is worth mentioning that the theoretical saturation of the core category, as indicated by Holton & Walsh (2016) mitigates the risk of discovered thin theory that shows weak explanatory power due to its loosely identified connected concepts. However, from the practical point of view and due to any research project empirical limitations, this theoretical saturation is usually limited by data availability, researcher's theoretical sensitivity, and the density and integration of the theory (Holton & Walsh, 2016).

## 9.2 Introductory Notes about the Classical Grounded Theory

When the classical grounded theory is discussed in the qualitative research community, the first question that came to the forefront is so legitimate, which is “why was the classical grounded theory received with such enthusiasm in the qualitative research community?”

To answer this legitimate question and as indicated by Holton & Walsh (2016), based on Glaser and Strauss’s original works, the classical grounded theory enables the researchers to discover theories from empirical data through the constant comparative analysis that enables latent patterns discovery. Furthermore, it provides a considerable amount of flexibility by being able to support the researcher to deal with any type of data from any epistemological perspective. Hence, it supports the logic of discovery over the logic of verification and can be seen as an integrative research paradigm for discovery (Holton & Walsh, 2016).

Although “The Discovery of the Grounded Theory” book (Glaser & Strauss, 1967) was published in 1967, to give an answer to the research community’s question about how the “Awareness of Dying Theory” was formulated, the roots of the grounded theory were being developed for several years before this date starting from the early 1960s. This was the period of time in which the research community was both ready as well as willing to accept a new research paradigm that enables them to use the logic of discovery and enables them to develop theories that are in rupture from the existing ones, especially after the challenges that faced the positivist and hypothetical-deductive school of thinking that depend solely on the logic of verification (Holton & Walsh, 2016).

Hence, the grounded theory, in that time, was opening a whole new direction to the researchers, which of course led to this enthusiasm. This actually matched what Glaser & Strauss, in the Discovery (Glaser & Strauss, 1967), called the urge to generate, when they explained that the sociologists and professors usually tend enthusiastically to generate if they are not hooked on verifying.

*“To be sure, the urge to generate is normal; and sociologists, students and professors alike, if they are not “hooked” on verifying, tend to give themselves enthusiastically to generating.” – page 28 in (Glaser & Strauss, 1967)*

However, one of the most critical and debatable aspects related to the classical grounded theory is that different researchers can collect data from the same substantive area and produce very different grounded theories that all of them are valid theories with different level of the added values.

There are many factors that affect the discovered theory, which are related to the researchers. According to Holton & Walsh (2016), the first factor is the researchers’ philosophical assumptions, then the selected data, and the previous training and background. This means that there are many grounded theories that can be discovered from the same substantive area. Starting with the philosophical assumptions of the researcher, Holton & Walsh (2016) explained that as long as the researcher keeps the exploratory, data-driven stance, the researcher has the freedom to select either the idiographic (*i.e., local*) or nomothetic (*i.e., universal*) perspective.

Whatever the choice, the resulted theory will make sense for a specific target audience. Hence, as long as the confirmatory and theory-derived stance is avoided, the grounded theory can be used. The upcoming section 10.16 “Upgrading the Conceptualized Outcome General Theory with Users’ Behavior Model”, in chapter 10 “The Discovered Grounded Theory on the Platform Strategy Dynamics” is going to explain how the final discovered theory in this DBA thesis makes sense for the specified target audience while maintaining a confirmatory and theory-derived stance as recommended by Holton & Walsh (2016).

The second factor, as explained by Holton & Walsh (2016), is the selected data that was considered suitable. Some researchers may select qualitative data, while others may select quantitative data, or select to mix both qualitative and quantitative data together, which is going to match the classical grounded theory point of view that “All is Data”. Furthermore, the data collection methods may be different and the data analysis techniques may differ too. Finally, data preparation after the collection and before the analysis may affect the quality of data. Furthermore, some researchers may use primary data, while others may use the available secondary data.

The upcoming section 9.7 “Literature as Secondary Data Substantive Area Collection and Preparation Steps”, in chapter 9 “Research Methodology, Stages, and Uber Case Study Selection” is going to explain how this Holton & Walsh (2016) recommendation about data collection and preparations had been translated and utilized in this DBA thesis. Furthermore, the upcoming sections in chapter 10 “The Discovered Grounded Theory on the Platform Strategy Dynamics” are going to explain how these Holton & Walsh (2016) recommendations about data analysis had been translated and utilized in this DBA thesis:

- Section 10.9 “Conceptualized Outcome of the Selective & Theoretical Coding for the Literature Substantive Area”.
- Section 10.10 “Software Tool Support for Semi-Automatic Selective and theoretical Coding”.
- Section 10.13 “Conceptualized Outcome of the Selective & Theoretical Coding for UBER Case Study Substantive Area”.

Finally, different researchers may face different data collection limitations or different levels of accessibility. All these data-related variations may result in different discovered theories. The upcoming section 11.1 “Research Constraints and the Empirical Limitations”, in chapter 11 “Conclusions” is going to explain how this Holton & Walsh (2016) hint about data collection limitations had been noticed and dealt with in this DBA thesis.

The third factor is the researcher’s previous training, learning, and experience. As an example, those who are trained to discover ideas underlining the surface within texts may have a better ability to conceptualize and abstract. A clear example is Merton’s approach impact on Glaser’s skills (Holton & Walsh, 2016). Furthermore, the researcher’s goals may affect the nature of the discovered theory. According to Holton & Walsh (2016), Gregor explained the four primary goals of any theory that lead to five theory types, which are the analytical, explanatory, predictive, explanatory and predictive, and prescriptive.

However, for grounded theory, at least, type two is required. Hence, even if the previous factors were similar to some extent, the targeted theory type may differ based on the goal. Although all these theories are valid, some are better than others. Theories are created by academics and used by consultants. Hence, some types add more value. For example, as indicated by Gregor (2006) in Holton & Walsh (2016), the prescriptive theory helps consultants design systems and take actions with how-to recommendations. This adds more value over the explanatory one. The previous chapter 2 “Research Objectives, Question, and the Targeted Theory Type” explained how this Holton & Walsh (2016) recommendation about the researcher’s goals and selected theory type had been translated and utilized in this DBA thesis.

However, what seems surprising in despite of this great value and flexibility of the classical grounded theory is the confusion about the nature of grounded theory and its methodological process, which negatively affect the ability of the novice researchers to be confident that they are doing grounded theory correctly.

Holton & Walsh (2016) discussed a group of common misconceptions that had been written about the nature of the classical grounded theory by many academics, which include difficult subject, worryingly messy, problematic, methodological confusion, lack of systematic procedure, and has no clear research question nor theoretical upfront framework. They mentioned that the rationale behind these misconceptions is conflating the classical grounded theory with other transitional qualitative research approaches.

Furthermore, they mentioned a clear example of Suddaby, the editorial in the academy of management journal, who went further in the confusion to be confused between how the research is actually being done and how it is written to fit within the academic publishing standards (Holton & Walsh, 2016).

One of the mentioned Suddaby’s most mistaken concepts was that to develop a grounded theory, the researcher must start from an existing theory, which of course is misunderstood from the original Glaser and Strauss’s suggestion to produce formal grounded theory based on a previously discovered substantive grounded theory.

Hence, for the novice researcher to be confident of doing the grounded theory correctly, a good understanding of the foundational pillars of the grounded theory is essential. More importantly, following these pillars in the actual research project is what this researcher needs to do. The researchers should exactly be able to distinguish and stick to the emergence of concepts and relationship from the data over preconception, the conceptualization through the constant comparative analysis technique for the new data over the plain description and, finally, the theoretical sampling directed by the emerging theory and theoretical coding until theoretical saturation over simple substantive sampling. Furthermore, it is necessary and essential for the researcher to move beyond description in a classic grounded theory study. Holton & Walsh (2016) indicated that the grounded theory researcher should be able to distinguish and stick to the emergence of concepts and relationship from the data over preconception, the conceptualization through the constant comparative analysis technique for the new data over the plain description and, finally, the theoretical sampling directed by the emerging theory and theoretical coding until theoretical saturation over simple substantive sampling.



The upcoming section 10.2 “The Original Conceptualized Outcome Theory”, in chapter 10 “The Discovered Grounded Theory on the Platform Strategy Dynamics” is going to explain how this Holton & Walsh (2016) recommendation about the emergence of concepts and relationship from the data and the conceptualization had been translated and utilized in this DBA thesis. Furthermore, the upcoming sections from section 10.3 and up to 10.16 “Upgrading the Conceptualized Outcome General Theory with Users’ Behavior Model”, in the same chapter 10 “The Discovered Grounded Theory on the Platform Strategy Dynamics” are going to explain how this Holton & Walsh (2016) recommendation about the constant comparative analysis technique had been translated and utilized in this DBA thesis to improve the level of the conceptualization.

Focusing on going beyond description and into the core pillar of the grounded theory, which is the conceptualization; Holton & Walsh (2016) indicated that it is usually challenging for those who are research-trained in evidence-based professional disciplines to go beyond the empirical details and fly over to find latent patterns in the substantive data and conceptualize. Failing to do makes they lose the explanatory power of a conceptual theory as explained by Holton & Walsh (2016).

Furthermore, Holton & Walsh (2016) indicated that even if the grounded theory researcher had to start with a description before conceptualizations, s/he needs to be able to both discover and conceptually explain the main concern of the substantive area of inquiry beyond the accurate describing of the findings. The target of the ground theory is to discover the latent structure in any social setting.

In addition, Holton & Walsh (2016) explained several logical reasons for conceptualizing over and beyond describing. First, the ability to conceptualize over describe is what may enable generalization in the future from a substantive theory and into higher levels such as a general substantive grounded theory or a formal grounded theory. Second, Holton & Walsh (2016) explicitly mentioned that description reduces the level of abstraction, which may make it impossible to see the relationships between the interrelated concepts of the theory. Hence, it is clear that it is so necessary to move beyond plain descriptions and into conceptualization in any classical grounded theory study to obtain the expected value from the methodology.

In addition, one of the most powerful aspects of the classical grounded theory is the “All is Data” concept. As indicated by Holton & Walsh (2016), good data is what enables the discovery of a good theory and the grounded theory researcher has the wonderful freedom to select and use any and all relevant data sources according to the main concern of the research topic. This is an explanatory and conceptual power in itself for the researcher. The upcoming section 9.11 “Summary of the Used Datasets and Their Interrelationships” in chapter 9 “Research Methodology, Stages, and Uber Case Study Selection” is going to explain how this Holton & Walsh (2016) recommendation about all is data concept had been translated and utilized in this DBA thesis.

However, it is not only for the benefits of the researchers to deal with all sources of data. May be the practitioners are those who gain true benefits from the richness of the collected and analyzed data because this usually produces a real actionable discovered grounded theory.

This theory provides a good reflection on what is actually happening in the real social situation as explained by Holton & Walsh (2016) based on Glaser's and Schön's original work.

In grounded theory, the previously mentioned freedom enables the researcher to deal with both primary and secondary data, whatever it is quantitative or qualitative. Furthermore, of course, it supports the researchers' needs to quantize qualitative data and/or qualitize quantitative data as well. Sometimes, the other type of data is used to achieve theoretical saturation when starting from one specific type as indicated by Holton & Walsh (2016) based on Sandelowski's et al (2009) and Creswell (2013) original work. The upcoming section 9.6 "The Evaluation of Case Studies Selection during the Research Journey" in chapter 9 "Research Methodology, Stages, and Uber Case Study Selection" as well as section 10.11 "Theoretical Saturation with the Empirical Case Studies" in chapter 10 "The Discovered Grounded Theory on the Platform Strategy Dynamics" are going to explain how this Holton & Walsh (2016) recommendation about achieving the theoretical saturation had been translated and utilized in this DBA thesis.

Holton & Walsh (2016) explained based on Glaser's work that for those who come from the traditional qualitative research school of thinking, the most evident required change for them is to stop overemphasizing the dependence on the interview data as well as considering other significant sources such as memoing. More importantly, all is data can prevent the typical mistake of overlooking the secondary data sources as valuable sources because analyzing secondary data can result in unexpected emergent of surprising main concerns and/or core categories that produce a new theory (Holton & Walsh, 2016). The upcoming section 9.11 "Summary of the Used Datasets and Their Interrelationships" in chapter 9 "Research Methodology, Stages, and Uber Case Study Selection" is going to explain how this Holton & Walsh (2016) recommendation about preventing the typical mistake of overlooking the secondary data sources as valuable sources been translated and utilized in this DBA thesis though several secondary data sets and sources.

Finally, the use of existing literature as a secondary data source can add great value too as long as the researcher is aware that s/he is not using this literature for finding researcher gaps for his own research project (Holton & Walsh, 2016). The upcoming section 9.7 "Literature as Secondary Data Substantive Area Collection and Preparation Steps", in chapter 9 "Research Methodology, Stages, and Uber Case Study Selection" is going to explain how this Holton & Walsh (2016) recommendation about the use of existing literature as a secondary data source had been translated and utilized in this DBA thesis.

On the other hand, sometimes, a decision may become critical. This decision is usually needed when more than one main concern emerge. The researcher should know on which one to focus on. Holton & Walsh (2016) indicated that during the analysis of the collected data, sometimes more than one main concern start to appear. The rationale behind this situation may be that the researcher has collected data from a heterogeneous sample within the substantive area. They gave a clear example of this situation such as collecting data from different levels or layers within the same organization, which may include senior managers, middle managers, and frontline employees.

However, in this situation, it may be impractical to continue and carry out the analysis with two or three main concerns concurrently at the same time. Holton & Walsh (2016) suggested that the researcher should take the decision to focus on a single main concern at a time to produce a single substantive theory. Later on, and one by one, the researcher can continue the analysis to discover further grounded theories within the same substantive area that focus on the other main concerns. The most important decision in this situation is knowing which main concern should be focused on. The typical selection criteria may be applied in this case such as which of these main concerns is related to the original target of the research study or which one of them is able to attract the attention and interest of the researcher.

From the practical point of view, some practical considerations may affect the choice. For example, the availability and access to further data is an evident critical issue. Sometimes, the previous training and professional experience of the researcher may make one main concern more appealing than the other. According to Holton & Walsh (2016), this sequence of discovered theories may help to produce a final comprehensive and/or all-embracing grounded theory for this substantive area, which provides good coverage for this area of course. The previous chapter 1 “Introduction” highlighted how this Holton & Walsh (2016) recommendation about selecting a single main concern had been translated and utilized in this DBA thesis. In this DBA thesis, the initially selected main concern is the ability of the digital service platform to survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy. No more main concerns were either identified or emerged during the research journey.

After the previously discussed aspects, the time came to focus on the techniques that are essential to give the discovered classical grounded theory its overall scope and shape, which are the theoretical sampling, theoretical saturation, and theoretical coding.

Holton & Walsh (2016) explained that theoretical sampling, theoretical saturation, and theoretical coding are the three essential techniques that give the discovered grounded theory its scope and shape. To explain how and why, the starting point is going to be the theoretical sampling. Holton & Walsh (2016), based on Glaser and Strauss’s work, explained that this technique enables what can be called the theory-driven sampling, which is controlled by the emergent theory to help its further development instead of pre-determined sampling that is designed in advance based on the preconceived theoretical framework. The former is what supporting the nature of the grounded theory with the emergence as a core pillar, while the latter is what can be found in the typical traditional qualitative research studies.

This theoretical sampling is usually guided by the logic of the emerging analytic framework, which shapes the content of the discovered theory as well as limits the scope of this theory around the discovered main concern as indicated in Glaser and Strauss’s work (Holton & Walsh, 2016). However, the exact applied sampling strategies may affect the scope of the discovered theory by limiting or extending the sampled population. The upcoming section 9.9 “Data Analysis Techniques, Selective, and Theoretical Coding for the Literature Substantive Area”, in chapter 9 “Research Methodology, Stages, and Uber Case Study Selection” is going to explain how this Holton & Walsh (2016) recommendation about the theoretical sampling had been translated and utilized in this DBA thesis by using it as theory-driven sampling through selecting two data subsets from the formulated single integrated database.

During the development of the discovered theory, the researcher may discover that some categories had become the most or least saturated. Hence, this theoretical saturation is a critical tool that can shape the final discovered grounded theory. Furthermore, the same tool can indicate that some concepts should be totally dropped, which is directly affecting the scope too. Of course, the empirical data limits are going to affect all the previously mentioned aspects as explained by Holton & Walsh (2016), based on Glaser and Strauss's work. The upcoming section 9.6 "The Evaluation of Case Studies Selection during the Research Journey" in chapter 9 "Research Methodology, Stages, and Uber Case Study Selection" as well as section 10.11 "Theoretical Saturation with the Empirical Case Studies" in chapter 10 "The Discovered Grounded Theory on the Platform Strategy Dynamics" are going to explain how this Holton & Walsh (2016) recommendation about achieving the theoretical saturation had been translated and utilized in this DBA thesis.

Finally, Holton & Walsh (2016) indicated that the theoretical coding is what helps to integrate the scope of the discovered theory as well as developing the overall picture of the final theory shape by emphasizing the discovered concepts and relationships. Hence, the three techniques, combined, are able to scope and shape the discovered grounded theory. The upcoming section 10.9 "Conceptualized Outcome of the Selective & Theoretical Coding for the Literature Substantive Area" as well as section 10.13 "Conceptualized Outcome of the Selective & Theoretical Coding for UBER Case Study Substantive Area" in chapter 10 "The Discovered Grounded Theory on the Platform Strategy Dynamics" are going to explain how this Holton & Walsh (2016) recommendation about achieving the theoretical coding had been translated and utilized in this DBA thesis.

After discovering the grounded theory, it is really important to know how to write and present the theory. Holton & Walsh (2016) explained how writing is an essential part of the grounded theory that starts so early with memos writing and continues iteratively during the whole process. From the classical grounded theory perspective, both thinking and writing are two embedded and intertwined parts of discovering and producing the resulted theory. Writing is a method of inquiry in itself that helps the researcher digs deeper into the social situation as well as the discovered theory and it is not something that can be delayed near the end of the research project as indicated by Holton & Walsh (2016) based on Richardson's work. The previous section "Thesis Structure, Sections, Logical Flow, and the Possible Navigation Paths" highlighted how this Holton & Walsh (2016) recommendation about writing and presenting the theory had been translated and utilized in this DBA thesis.

Different types of writing play critical roles during the grounded theory discovery as explained by Holton & Walsh (2016) based on Glaser's work. As an example, memo writing can accelerate the elaboration of the core and related concepts. These memos usually lead to what is called information overload, which calls for memos sorting and further memoing as needed that results in the readiness to write moment. The upcoming appendix-G "The "Memo" Created Along the Process of Conceptualization" is going to show how this Holton & Walsh (2016) recommendation about the memo writing had been translated and utilized in this DBA thesis.

Then, the first draft writing, as well as successive drafts, can be considered as work-in-progress or working paper, in which the perfection in terms of style, grammar, and spelling is not required. The main purpose is to put the theory on the paper as indicated by Holton & Walsh (2016). However, the writing process can be extended to reach beyond the research team itself. Holton & Walsh (2016) suggested that these drafts can be submitted to one of the international conferences to collect some useful feedback, which otherwise would be neglected. The several examination stages in this DBA, conducted by the supervisor, the scientific advisor, and the two examiners, along with the corresponding produced successive version of this DBA thesis showed how this Holton & Walsh (2016) recommendation about the draft writing, as well as successive drafts, had been translated and utilized in this DBA thesis.

Then, publishing the theory is going to be a major challenge too. It contains many practical challenges to publishing the theory in top tier research journals. Several creative strategies can be employed to try to address these challenges. There are so many challenges that usually face the researcher when writing the grounded theory as explained by Holton & Walsh (2016). The first evident one is that no written words can fully describe what had actually happened during the iterative cycling between the data and the conceptualized theory. Even if the researcher were able to do, no one is going to be willing to read and if read it may not be able to understand.

Hence, the most critical skill to deal with this challenge is to be able to present sufficient information about following the classical grounded theory correctly as well as being able to write the results within the conventional framework that is suitable for the readers. This section 9.2 “Introductory Notes about the Classical Grounded Theory” was used to explain how this Holton & Walsh (2016) recommendation about presenting sufficient information about following the classical grounded theory correctly had been translated and utilized in this DBA thesis.

This conventional framework can be the typical dissertation formats, and/or the typical research papers formats. In the second case, which is writing a research paper for a top-tier journal, the researcher should review and assess the nature of the journal and the guidelines for publishing in this journal and take the decision if it is a suitable journal or not. The reason is that each journal may emphasize some topics and/or methodologies as explained by Holton & Walsh (2016).

Furthermore, doing the classical grounded theory correctly usually results in discovering a rupture theory that is usually away from the previously published incremental theories. In this case, the researcher should rationalize as much as possible how s/he writes as well as try to maximize the fitting within the prescribed formats. The upcoming section 10.16 “Upgrading the Conceptualized Outcome General Theory with Users’ Behavior Model”, in chapter 10 “The Discovered Grounded Theory on the Platform Strategy Dynamics” is going to explain how the final discovered theory in this DBA thesis will be a rupture theory, for a universal and meta-strategy, as expected by Holton & Walsh (2016).

Finally, the writing style should not focus on satisfying the researcher’s ego, but focus on matching the reader’s expectations by asking how each sentence is making sense to that reader as explained by Holton & Walsh (2016). The previous section “Thesis Structure, Sections, Logical Flow, and the Possible Navigation Paths” highlighted how

this Holton & Walsh (2016) recommendation about matching the writing style with the reader's expectations had been translated and utilized in this DBA thesis.

In addition, the methodological issues should be carefully addressed. This section 9.2 "Introductory Notes about the Classical Grounded Theory" as well as chapter 9 "Research Methodology, Stages, and Uber Case Study Selection" were used to explain how this Holton & Walsh (2016) recommendation about carefully addressing the methodological issues had been translated and utilized in this DBA thesis.

As an example, writing the literature review section in the beginning should clearly state that it was done after discovering the main concern while doing the research (Holton & Walsh, 2016). The previous chapter 8 "Supportive Systematic Literature Review" highlighted how this Holton & Walsh (2016) recommendation about stating that literature review was done after discovering the main concern had been translated and utilized in this DBA thesis.

All the previously mentioned aspects may result in some ethical dilemmas such as writing about the sequence of data collection and analysis. The classical grounded theory does not force planning for data collection in advance, while journal templates may require this. Whatever the case, the researcher should avoid manipulating the facts to please the reviewer. The upcoming section 9.6 "The Evaluation of Case Studies Selection during the Research Journey" as well as section 9.11 "Summary of the Used Datasets and Their Interrelationships" in chapter 9 "Research Methodology, Stages, and Uber Case Study Selection" are going to explain how this Holton & Walsh (2016) recommendation about the ethical dilemma for writing about the sequence of data collection had been translated and utilized in this DBA thesis. Furthermore, the upcoming sections in chapter 10 "The Discovered Grounded Theory on the Platform Strategy Dynamics" are going to explain how these Holton & Walsh (2016) recommendations about the ethical dilemma for writing about the sequence of data analysis had been translated and utilized in this DBA thesis:

- Section 10.9 "Conceptualized Outcome of the Selective & Theoretical Coding for the Literature Substantive Area".
- Section 10.10 "Software Tool Support for Semi-Automatic Selective and theoretical Coding".
- Section 10.13 "Conceptualized Outcome of the Selective & Theoretical Coding for UBER Case Study Substantive Area".

In addition, being knowledgeable about the different criteria for evaluating grounded theories than those employed in hypothetical-deductive research or qualitative research can add great value to the research project. Holton & Walsh (2016) discussed many of the research quality evaluation criteria for both qualitative and quantitative research, especially from the perspective of the typical paradigm war. At the same time, they explained that these criteria are not suitable for evaluating the work related to the classical grounded theory. As an example, they mentioned an example from the work of Venkatesh, Brown, and Bala about the external validity criteria, which focus on the cause-effect relationships still being valid when there is a change or variation in the context of the study in relation to the persons or the social setting. Of course, it is not going to be the case if the discovered theory was a substantive grounded theory that mainly holds true within its substantive area.

To solve this issue, Holton & Walsh (2016) started to explain the suitable evaluation criteria that can match the nature of the classical grounded theory, whatever the type of the used data and whatever the philosophical stance of the researcher.

Holton & Walsh (2016) summarized these evaluation criteria explained by Glaser, which are fit, workability, relevance, and modifiability. The fit means, simply, that the conceptualized concepts express the used data, which supports the emergence core pillar of the grounded theory. The upcoming section 10.2 “The Original Conceptualized Outcome Theory”, in chapter 10 “The Discovered Grounded Theory on the Platform Strategy Dynamics” is going to explain how this Holton & Walsh (2016) recommendation about the fit of the discovered theory had been translated and utilized in this DBA thesis.

Workability means that the concepts and their relationships account for the main concern, which is inside the logic of discovery supported by the grounded theory. The upcoming section 10.2 “The Original Conceptualized Outcome Theory”, in chapter 10 “The Discovered Grounded Theory on the Platform Strategy Dynamics” and the upcoming sections up to 10.16 “Upgrading the Conceptualized Outcome General Theory with Users’ Behavior Model”, in the same chapter 10 “The Discovered Grounded Theory on the Platform Strategy Dynamics” are going to explain how this Holton & Walsh (2016) recommendation about the workability of the discovered theory had been translated and utilized in this DBA thesis.

Relevance focuses on the importance of the main concern to wide groups of academics and practitioners, which will produce actionable theory that makes sense. The previous chapter 4 “Theoretical and Practical Contributions” as well as chapter 5 “Managerial Implications of the Platform Strategy Dynamics” explained how this Holton & Walsh (2016) recommendation about the relevance of the discovered theory had been translated and utilized in this DBA thesis.

Finally, modifiability means that because there is no right or wrong theory, the theory can be enhanced or modified due to the access to new data and comparing it with the previously obtained data, which can support not only changing but also the generalization of the substantive grounded theory into a general substantive theory or, later on, to the formal grounded theory. The upcoming section 11.2 “Further Research Opportunities and the Possible Future Work”, in chapter 11 “Conclusions” is going to explain how this Holton & Walsh (2016) hint about the modifiability of the discovered theory had been noticed and dealt with in this DBA thesis through presenting the first and most intuitive possible idea for the future work.

From another perspective, Holton & Walsh (2016) highlighted Glaser and Strauss’s older evaluation criteria, which are logical consistency, clarity, parsimony, density, scope, and integration.

### **9.3 The First Stage in the Classical Grounded Theory Journey**

In the early stage, it is logical to say that the open coding stage has been completed on the initial data set until the core category was identified. This had happened and emerged naturally while doing the fifth knowledge core, doing literature review, and its theory mining review methodology in its theory landscaping review version. The initial data set contained only twelve references that were selected for review. Appendix-A explains the practical screening criteria for the designed protocol to select the peer-reviewed as well as gray literature as a secondary data source.

Later on and during the study of the remaining knowledge cores and elective courses in the DBA program, the discovered core category were stress-tested from many different perspectives in the selective coding stage to find more logical concepts and relationships that have not appeared yet due to the limited number of used references in the initial data set. So far, the selective coding is partially conducted and no theoretical saturation was reached. Just some indicators that more secondary and primary data is needed and that some other methods for data collection such as case studies can help in this area. Furthermore, and due to the previously mentioned stage of research journey and empirical time and data limitations, the shaped and integrated discovered theory so far is so thin theory.

However, it was essential to go for the theoretical sorting even before the saturation and draw the theory conceptual diagram that includes relationships to validate just the suitability of the idea for being considered for a full research study. The upcoming sub-sections are going to present the initial obtained results and the initial thin version of the discovered theory to show the validity of the idea.



## 9.4 The Theoretical Coding Stage and the Benefits of System Dynamics

After going through the theoretical sorting task to draw the theory conceptual diagram that includes relationships between the core category and the other concepts, another moment of emergence happened, which indicated that the relationships between the core category and some of the concepts are well-known patterns that were deeply understood in other domain of managerial studies and have some well-tested system archetypes. This is the system dynamics domain and casual loop diagrams (Braun, 2002). Hence, upgrading the theory conceptual diagram and migrating the discovered relationships to the other branch of management studies will produce more sound, reliable and rigorous conceptual diagram that has three additional and critical advantages as follows:

- It accounts for the complex nonlinear interrelationships between the concepts and their impact on the core category, which seems impossible to be obtained without the system dynamics approach.
- It adds, by definition, the effect of timing on these interrelationships, which is impossible too to be obtained without the system dynamics approach as well as makes the discovered theory a live object.
- Based on the used system dynamics archetypes, it is manageable to give detailed and precise prescriptive recommendations for practitioners and decision-makers, which upgrade the discovered theory to the “Prescriptive Type-V” of the theories.

Hence, up to the stage of doing the theoretical sorting and drawing the theory conceptual diagram that includes relationships between the core category and the other concepts, the targeted discovered theory type well be the “Type-IV: explanatory and predictive theory” according to (Holton & Walsh, 2016). This type of theories predicts what can happens in the future as well as provides and highlights testable casual explanations to how this is going to happen as shown in Figure 50.

|     | Theory type                | Answers the following questions...                                                       | Description                                                                                                 |
|-----|----------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| I   | Analytical                 | What is it? What is happening?                                                           | The theory analyzes and describes phenomena but no causal relations is highlighted                          |
| II  | Explanatory                | What is it? What is happening?<br>How? Why? When? Where?                                 | The theory explains but does not predict. It does not highlight propositions                                |
| III | Predictive                 | What is it? What is happening? What will be? What will happen?                           | The theory predicts and highlights testable propositions but does not develop justified causal explanations |
| IV  | Explanatory and predictive | What is it? What is happening?<br>How? Why? When? Where? What will be? What will happen? | The theory predicts and also highlights testable causal explanations                                        |
| V   | Prescriptive               | What should be done? How should it be done?                                              | The theory explicitly prescribes (methods, techniques, principles)                                          |

Figure 50: The Five Types of Theories - Source: Holton & Walsh's (2016)  
Lecture/Adapted from (Gregor, 2006)

It is worth mentioning that, as explained by Holton & Walsh (2016), for the theory to be considered as a ground theory it must be at least from “Type-II: Explanatory” or a higher type of course. However, due to the previously just mentioned upgrading the theory conceptual diagram and migrating the discovered relationships to the other branch of management studies, which use the system dynamics domain, the causal loop diagrams, and the well-tested system archetypes (Braun, 2002) to produce more sound, reliable and rigorous conceptual diagram, the targeted discovered theory type will be automatically upgraded to the “Type-V: Prescriptive Theory” according to (Holton & Walsh, 2016). The rationale behind this automatic theory upgrading process is that these used well-tested system archetypes explained by Braun (2002) provide a set of recommendations in the form of a set of daunting down-to-earth implementation action items that were both discovered and validated in several previous research studies related to the discipline of system dynamics and summarized in Braun (2002) reference.

Hence, to conclude, the resulted upgraded theory is going to be form “Type-V: Prescriptive Theory”, which in general, explicitly prescribes what should be done and how it should be done though set of methods, techniques and principles as shown in Figure 50 and, more specifically to this research proposal and project, with a set of well-proved implementation action items. The full research journey that starts from the substantive data will evolve to ends with the discovered ground theory (Type-V: Prescriptive Theory) as shown in

Figure 51. In between, there are two critical evolution steps as follows:

- The Discovered Ground Theory (Type-IV: Explanatory and Predictive Theory).
- System Dynamics (Upgrading the Theory Conceptual Diagram Using System Archetypes).

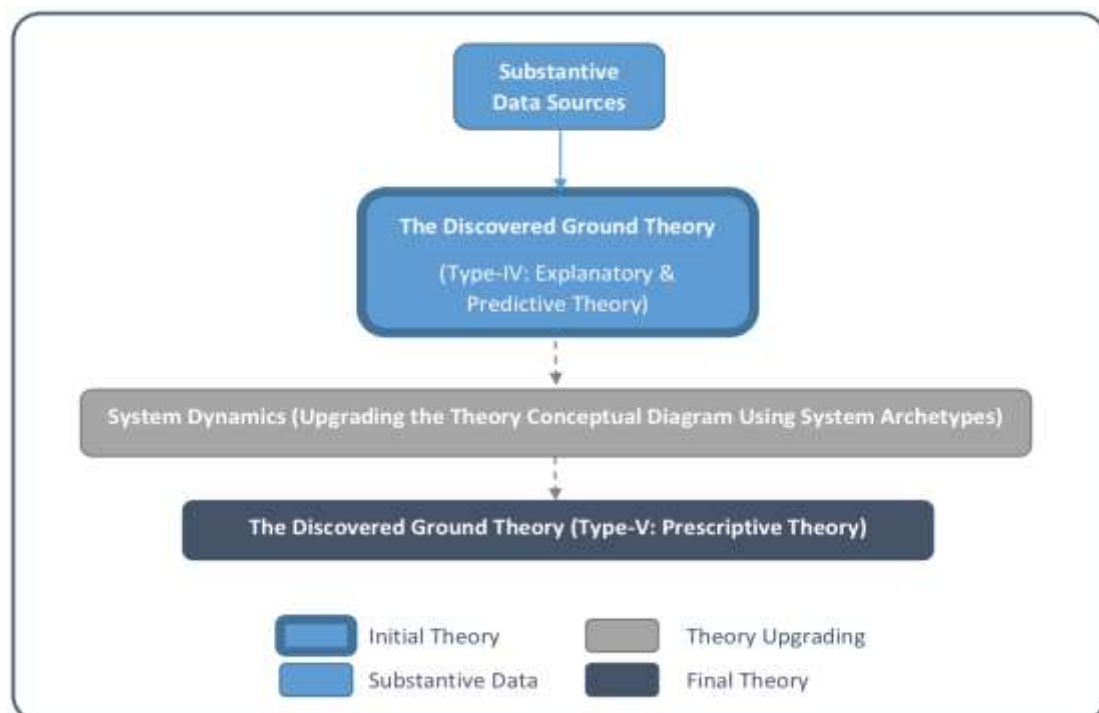


*Figure 51: The Research Evolution towards the Targeted Type-V Prescriptive Theory*

## 9.5 Research Roadmap and Domains

As in the previously discussed birth of the idea, the initial data set, and how it was obtained, and the current stage of the research, it seems logical to explain how the research is going to evolve. From the classical grounded theory point of view, the most important research decision is the research domains or by using the grounded theory terminology, the substantive areas that the researcher is going to collect their data from. Starting from the first thin version of the discovered grounded theory that was based on the initial data set (Figure 52), which is going to be explained in detail later on, the research is going to go through two parallel paths to collect and analyze data from two domains as follows:

- The first substantive area (*i.e. literature as secondary data*) is the peer-reviewed and gray literature as data source (Andrews, Higgins, Andrews, & Lalor, 2012).
- The second substantive area is a leading globally recognized case study, which is the UBER Technologies Inc. (UBER, 2021).

The target is that examining each substantive area should result in a substantive grounded theory (Holton & Walsh, 2016). Then, and as explained by Holton & Walsh (2016), another phase of research should come with the aim of ensuring of generalization, in which the previous two discovered substantive grounded theories are formalized into an intermediate theory or a general substantive grounded theory as shown in Figure 52. According to Holton & Walsh (2016), the typical last process of generalization/formalization is called the substantive formalization.

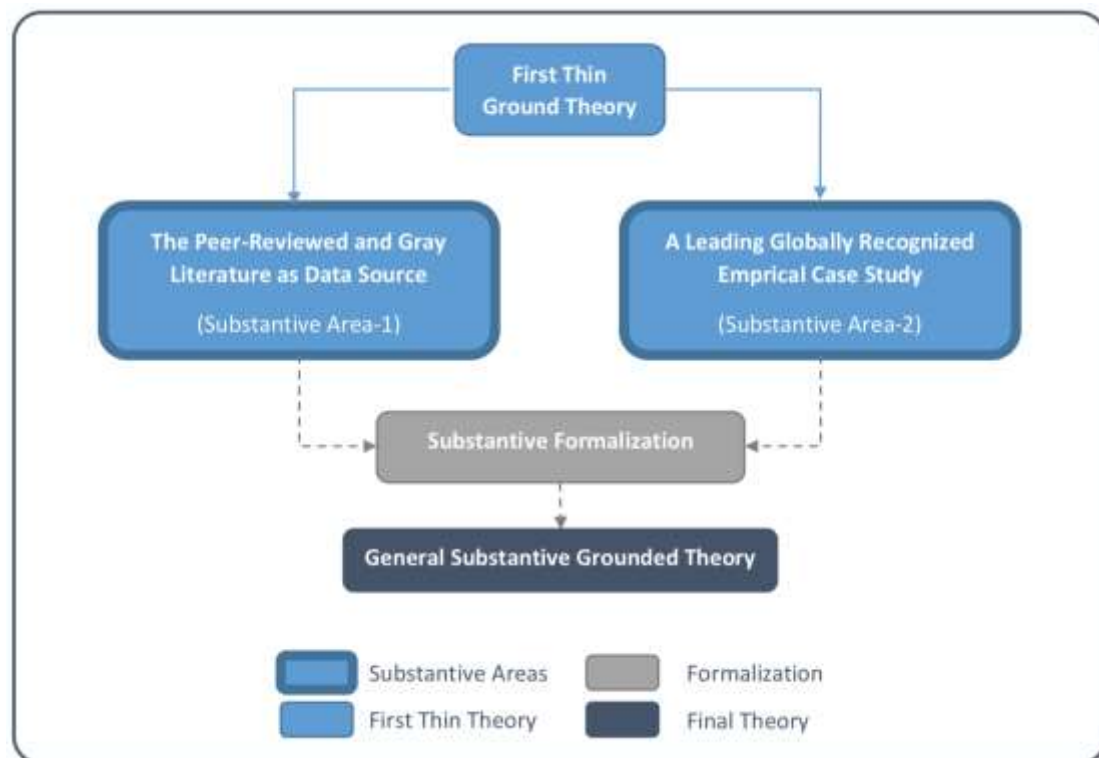


Figure 52: The Research Paths towards the Targeted General Substantive Theory

## 9.6 The Evaluation of Case Studies Selection during the Research Journey

The initial decision and selection of the case study for the second substantive area, which was made during the stage of preparing the research proposal, was to use the leading globally recognized case study (Tourism 4.0) (Tourism 4.0, 2020) only as a second substantive area. However, later on, and after going through the full cycle of the classical grounded theory including the selective coding, theoretical coding and sorting, and looking forward to achieving the saturation, a new insight was discovered. This new insight proved that some initial assumptions were invalid and are not going to fit within the overall research design and journey.

Initially, and to support the previously determined epistemological position, theoretical perspective, and research methodology; some data collection methods were selected and identified. As an example, the holistic single-case study design (Yin, 2009) that uses primary and secondary data sources was selected. Of course, and to improve the depth of the discovered theory, the concurrent triangulation mixed method for data collection (Creswell J. , 2009) was selected too. Both qualitative and quantitative data sets were planned to be collected concurrently to ensure the validity of the obtained results.

However, after completing the substantive area related to the using literature as secondary data, the scale of the discovered grounded theory appeared to be so huge, which can be called to have a universal coverage in the overall research field so far. The discovered concepts, categories, and incidents came from a large number of business verticals and industry sectors. For example, many incidents were found in the provided services related to and/or depend on mobile devices, mobile applications, hardware, software, telecom, e-commerce, tourism, and healthcare services.

Hence, as the conceptualized and discovered classical grounded theory in this DBA aggregated all these concepts, categories, and incidents into a single theory, this theory is too large in the scale when compared to any single case study. No single case study can provide a full real-life context and data that are comparable to all these concepts and/or categories. Simply, and in other words, this proves to be both practically and theoretically impossible to have any single case study with full real-life data that have a comparable universal coverage. However, the partial coverage is the more expected and logical option.

On the other hand, and after completing the substantive area related to the using literature as secondary data too, the size of the used and consumed sample size to discover this theory appeared to be so limited, which can be called a universal limited sample size in the overall research filed so far. As will be explained in detail, later on, there were three datasets that represented the core datasets analyzed in this first substantive area (*i.e. Literature as secondary data*) to help the discovered classical grounded theory to emerge around the platform network effects core concern. Two of them were 20+ cases and the third was 19 actually. These three datasets represent almost the majority of the conducted research around the platform network effect worldwide so far up to our knowledge and according to the data collection criteria explained in detail in this DBA thesis.

Each one of these case studies or published researcher results can be logically considered as a hypothesis test that proved to be true and links a concept, category, and/or incident to the network effects. This made it appear in the discovered grounded theory as a concept that is related to a certain decision that is being taken by the platform owner or operator to help him reach the ultimate success goal, which is achieving this network effect. Many of these elements or links appeared only once, and even those that appeared more than once appeared twice at most. This proves to be both practically and theoretically impossible to have any single case study with real-life data that have a comparable number of hypothesis tests even to this limited sample size due to the natural empirical difficulties to conduct research around the platform network effects. However, and again, the partial coverage is the more expected and logical option. Finally, all these studies took many years, or to be more practical, around three decades time span to be produced from the accumulated industry and academic experience.

Hence, the discovered theory has not only a large covered time span but also the overall produced knowledge related to the platform network effects so far worldwide. Hence, in other words, the discovered classical grounded theory has a universal and large covered time span. This proves to be both practically and theoretically impossible to have any single case study with real-life data that have a comparable full covered time span. However, and again, the partial coverage is the more expected and logical option.

However, on the positive side, these limited universal coverage, empirical limited sample size as well as empirical long covered time span are what give the discovered classical grounded theory in this DBA a considerable added value. This is both a truly practical and theoretical added value. Hence, the previously mentioned discoveries shifted the focus from the single holistic case study design towards the embedded multi-case study design as explained by (Yin, 2009) and appears in Figure 53. The embedded selection over the holistic one seems logical, as the cases will not be considered for analysis as whole units. Only the network effects phenomena will be considered as an embedded unit of analysis in each case study (Figure 53).

Furthermore, there were other significant aspects in the research design relate to the case study section that is worth mentioning as follows:

- First, the use of these case studies is not going to build a whole substantive classical grounded theory that is going to be used beside the first substantive grounded theory for generalization. However, more practically, these case studies can be used to examine the saturation of the first substantive classical grounded theory.
- Second, the selection of these cases focused on the platforms that had been proved empirically from actual market data that they were able to achieve the network effect. Hence, their success in achieving this network effect is not negotiable and proved by published results from so many independent industry bodies. This gives the discovered classical grounded theory in this DBA a considerable added value. This is both a truly practical and theoretical added value.

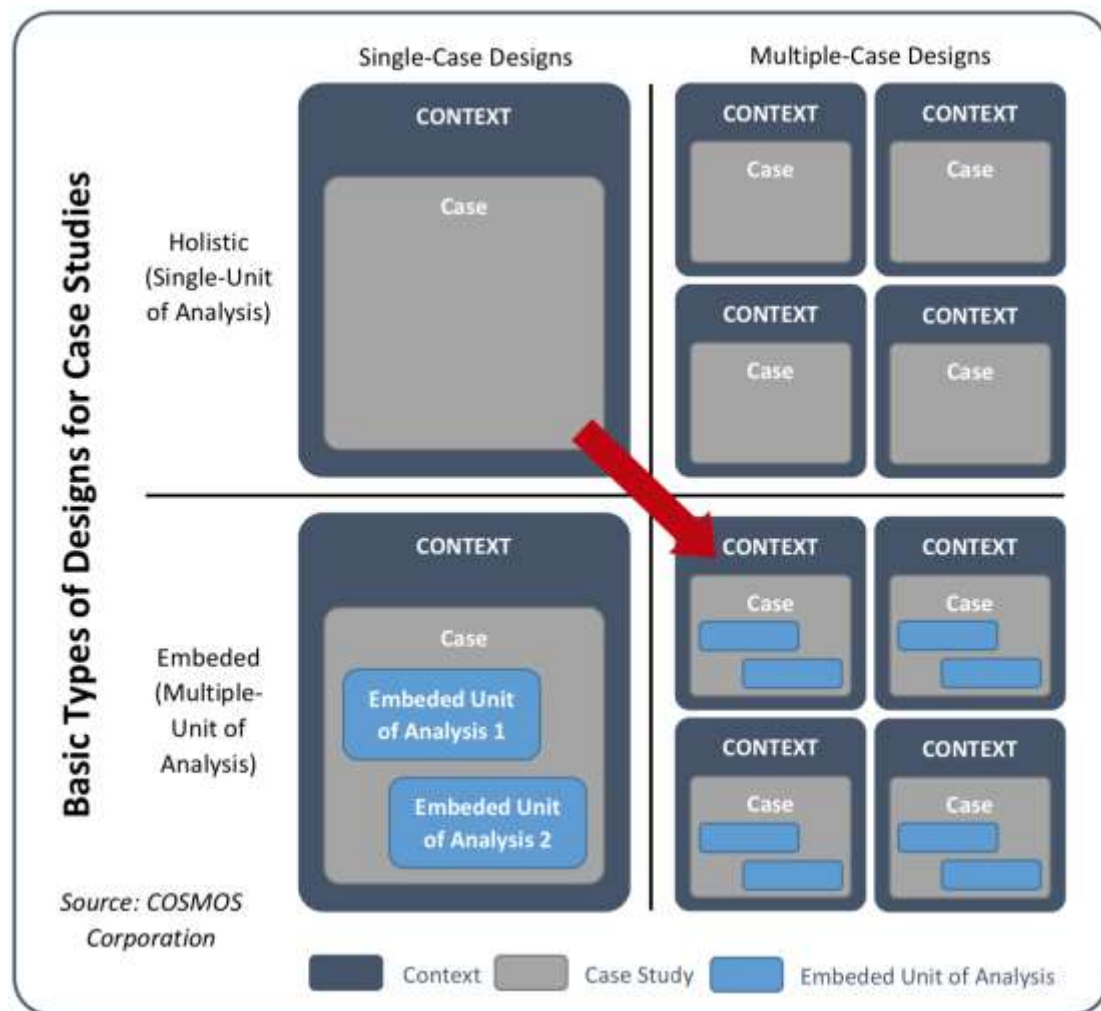


Figure 53: Design Evaluation from Single-Case to Embedded Multiple-Case Design – Adapted from (Yin, 2009)

This shifts the focus towards the actual selected new case studies. These case studies were firstly mentioned in the Appendix A1 of the Garcia-Swartz & Garcia-Vicente (2015) paper as carefully selected successful cases of the researches conducted to examine success-assured platforms that achieved the network effects. They cover a large number of business verticals and industry sectors as well as a so long time span. Both criteria fit with the nature of the discovered classical grounded theory in this DBA thesis.

The following table (Table 10) highlight brief information about these case studies as follows:

| No | Case Publication                     | Industry           | Approach                                                                                                                                                                                                                                                                                                                                                  |
|----|--------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | (Gandal, 1994)                       | Spreadsheets       | The author estimates hedonic price equations for spreadsheets to test whether Lotus compatibility commands a premium                                                                                                                                                                                                                                      |
| 2  | (Saloner & Shepard, 1992)            | ATMs               | The authors use standard duration models to test whether the speed of adoption of ATM technology by a bank is a function of the number of branches it has (interpreted as a proxy for expected network size)                                                                                                                                              |
| 3  | (Majumdar & Venkataraman, 1998)      | Telecommunications | The authors focus on the US telecommunications industry and rely on OLS cross-sectional regressions to study the impact on adoption of three different effects: (a) a conversion effect driven by operations-related increasing returns to scale, (b) a consumption effect driven by demand-side increasing returns to scale, and (c) an imitation effect |
| 4  | (Gandal, Greenstein, & Salant, 1999) | Microcomputers     | The authors estimate a vector autoregressive (VAR) model to explore the magnitude of the feedback effects between operating-system and application software in the early microcomputer industry (with a focus on the DOS and CP/M operating systems)                                                                                                      |
| 5  | (Gandal, Kende, & Rob, 2000)         | CD players         | The authors rely on a two-equation, time-series structural model to estimate the direct elasticity of CD-technology adoption relative to CD player prices and the cross elasticity with respect to the variety of CD titles available in the marketplace                                                                                                  |
| 6  | (Goolsbee & Klenow, 2002)            | Home computers     | The authors estimate cross-sectional regression models on a micro-data set to determine whether households are more likely to acquire their first computer in areas where a high fraction of households already own computers                                                                                                                             |



|    |                                   |                             |                                                                                                                                                                                                                                                                              |
|----|-----------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7  | (Dranove & Gandal, 2000)          | DVD standards               | The authors rely on time-series regressions to estimate the impact on the adoption of DVD players of (a) the availability of movies in DVD format (network effects), and (b) the preannouncement of DIVX technology                                                          |
| 8  | (Kim & Kwon, 2003)                | Mobile phones               | On the basis of a consumer survey for the Korean mobile telephony market, the authors estimate a conditional logit model to determine whether users prefer carriers with larger numbers of subscribers                                                                       |
| 9  | (Shankar & Bayus, 2003)           | Home video games            | The authors use monthly time-series data on sales of Sega and Nintendo home video game systems and a structural model of demand to quantify the strength of direct and indirect network effects                                                                              |
| 10 | (Gowrisankaran & Stavins, 2002)   | Electronic payments         | The authors use a panel dataset on bank adoption and usage of ACH services (and a static model of technology adoption) to determine the extent to which network externalities matter for the ACH electronic payments system                                                  |
| 11 | (Park, 2004)                      | VCRs                        | The author relies on a firm-level panel data set for the US home VCR market (for 1981–1988), and estimates a standard nested logit model with the goal of measuring the extent to which network externalities contributed to the standardization of the VHS format in the US |
| 12 | (Nair, Chintagunta, & Dubé, 2004) | Personal Digital Assistants | The authors use panel data on sales of Palm and Microsoft personal digital assistants to estimate a structural model that includes a nested-logit hardware demand equation and a software-provision equation                                                                 |
| 13 | (Rysman, 2004)                    | Yellow pages                | The author focuses on the market for Yellow Pages, and estimates three models: (a) consumer demand for directory usage, (b) advertiser demand for                                                                                                                            |



|    |                                                    |                     |                                                                                                                                                                                                                                                                                                     |
|----|----------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                    |                     | advertising, and (c) the publisher's first-order condition; the ultimate goals are to determine whether advertisers value consumer usage and whether consumers value advertising                                                                                                                    |
| 14 | (Clements & Ohashi, 2005)                          | Video games         | The authors use a panel dataset on videogame consoles and titles to estimate (a) a standard nested logit model on the console-demand side, and (b) a reduced-form model on the software-entry side; the objective is to determine the extent to which software variety matters for console adoption |
| 15 | (Doganoglu & Grzybowski, 2007)                     | Mobile phones       | The authors focus on the market for mobile telecommunications services in Germany; they use panel data to estimate a nested logit model with the goal of measuring the extent to which network effects played a role in encouraging the growth of mobile subscriptions                              |
| 16 | (Birke & Swann, 2007)                              | Mobile phones       | The authors estimate an OLS time-series regression to determine whether mobile users in the UK between 1999 and 2003 made more on-net calls than would be expected based on price differentials only                                                                                                |
| 17 | (Corts & Lederman, 2009)                           | Home video games    | The authors estimate two equations (hardware demand and software supply) with the goal of measuring the extent to which there are indirect network effects affecting users of competing and incompatible hardware platforms                                                                         |
| 18 | (Stremersch, Tellis, Hans Franses, & Binken, 2007) | Multiple industries | The authors estimate various time-series models to gauge the impact of indirect network effects in a variety of industries (black and white television, CD, CD-ROM, color television, DVD, Game Boy, i-mode, Internet, and laser disc)                                                              |
| 19 | (Lee R. S., 2013)                                  | Video games         | The author uses a panel dataset to estimate a dynamic structural                                                                                                                                                                                                                                    |

|  |  |  |                                                                                                                                                                                           |
|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  | model of consumer demand for both videogame hardware and software for the period 2000–2005; the model explicitly incorporates heterogeneity in consumer preferences and videogame quality |
|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

*Table 10: Selected Case Studies on Empirical Network Effects – Source: (Garcia-Swartz & Garcia-Vicente, 2015)*

The next step is to identify the sources of evidence within the selected embedded unit of analysis in each case study. Actually, Yin (2009) explained in detail the six possible sources of evidence in case study research. Figure 54 shows these six sources along with the strengths and weaknesses of each one. In this DBA thesis, and due to the nature of the research project and the selected case studies, the first two sources, which are documentation and archival records, will be used. The others seem impossible. According to Table 10, the cases and their data are from the year 1992 to the year 2013. Hence, it is impossible to travel back in time and use any other method such as direct observation or participant observation. Even interviews seem almost impossible due to the same timing dilemma. Yin (2009) mentioned that the previous published formal studies and evaluations are a typical type under the documentations source, while public use organizational records are a typical type under the archival records source. Both documentations and archival records have the same weakness as indicated by Yin (2009). The retrievability and accessibility are two typical weaknesses that are expected to be faced in this DBA thesis. Public records will be limited to that used in the references.

| Source of Evidence    | Strengths                                                                                                                                                                                                                                                                                                             | Weaknesses                                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Documentation</b>  | <ul style="list-style-type: none"> <li>• Stable – can be reviewed repeatedly</li> <li>• Unobtrusive – not created as a result of the case study</li> <li>• Exact – contains exact names, references, and details of an event</li> <li>• Broad coverage – long span of time, many events, and many settings</li> </ul> | <ul style="list-style-type: none"> <li>• Retrievability – can be difficult to find</li> <li>• Biased selectivity – if collection is incomplete</li> <li>• Reporting bias – reflects (unknown) bias of author</li> <li>• Access – may be deliberately withheld</li> </ul> |
| <b>Actual Records</b> | <ul style="list-style-type: none"> <li>• [Same as those for documentations]</li> <li>• Precise and usually quantitative</li> </ul>                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• [Same as those for documentations]</li> <li>• Accessibility due to privacy reasons</li> </ul>                                                                                                                                   |

|                                |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                        |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interviews</b>              | <ul style="list-style-type: none"> <li>• Targeted – focuses directly on case study topics</li> <li>• Insightful – provides perceived casual inferences and explanations</li> </ul> | <ul style="list-style-type: none"> <li>• Bias due to poorly articulated questions</li> <li>• Response bias</li> <li>• Inaccuracies due to poor recall</li> <li>• Reflexivity – interviewee gives what interviewer wants to hear</li> </ul>                                             |
| <b>Direct Observation</b>      | <ul style="list-style-type: none"> <li>• Reality - covers events in real time</li> <li>• Contextual – covers context of “case”</li> </ul>                                          | <ul style="list-style-type: none"> <li>• Time consuming</li> <li>• Selectivity – broad coverage difficult without a team of observers</li> <li>• Reflexivity – event may proceed differently because it is being observed</li> <li>• Cost – hours needed by human observers</li> </ul> |
| <b>Participant Observation</b> | <ul style="list-style-type: none"> <li>• <i>[Same as above for direct observations]</i></li> <li>• Insightful into interpersonal behavior and motives</li> </ul>                   | <ul style="list-style-type: none"> <li>• <i>[Same as above for direct observations]</i></li> <li>• Bias due to participant-observer’s manipulation of events</li> </ul>                                                                                                                |
| <b>Physical Artifacts</b>      | <ul style="list-style-type: none"> <li>• Insightful into cultural features</li> <li>• Insightful into technical operations</li> </ul>                                              | <ul style="list-style-type: none"> <li>• Selectivity</li> <li>• Availability</li> </ul>                                                                                                                                                                                                |

Figure 54: The Six Sources of Evidence in Case Study Research – Adapted from (Yin, 2009)

| No | Case Publication                                   | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|----|----------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1  | (Saloner & Shepard, 1992)                          | X    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 2  | (Gandal, 1994)                                     |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 3  | (Majumdar & Venkataraman, 1998)                    |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 4  | (Gandal, Greenstein, & Salant, 1999)               |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 5  | (Gandal, Kende, & Rob, 2000)                       |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 6  | (Dranove & Gandal, 2000)                           |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 7  | (Goolsbee & Klenow, 2002)                          |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |      |
| 8  | (Gowrisankaran & Stavins, 2002)                    |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |      |
| 9  | (Kim & Kwon, 2003)                                 |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |
| 10 | (Shankar & Bayus, 2003)                            |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |      |
| 11 | (Nair, Chintagunta, & Dubé, 2004)                  |      |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |
| 12 | (Park, 2004)                                       |      |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |
| 13 | (Rysman, 2004)                                     |      |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |      |
| 14 | (Clements & Ohashi, 2005)                          |      |      |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |      |      |
| 15 | (Birke & Swann, 2007)                              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |
| 16 | (Doganoglu & Grzybowski, 2007)                     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |
| 17 | (Stremersch, Tellis, Hans Franses, & Binken, 2007) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |
| 18 | (Corts & Lederman, 2009)                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |
| 19 | (Lee R. S., 2013)                                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | X    |

15 out of 19 Publications are in a Decade (1997 - 2007)

*Table 11: The Chronological Order of the Selected Case Studies on Empirical Network Effects*

Giving a closure look on these empirical case studies and through ordering them chronologically as shown in the previous table (Table 11), it is evident that the empirical research around the network effect gained a momentum and attracted the focus of the researchers within a certain period of time that represents almost a decade from the year of 1997 to the year of 2007. These dates that represent the start and end of this decade can be assumed to have a meaning. The start is few years before the internet or dot-com bubble when technology and internet based companies started to gain huge momentum from investors (Bhattacharya, Galpin, Ray, & Yu, 2009).

Furthermore, it coincident with the 1997 Asian financial crisis that triggered a worldwide recession in the same year (Deesomsak, Paudyal, & Pescetto, 2009). On the other hand, the end date is just before the next worldwide rescission that happened in the year 1998, which has been triggered by the 2007 American great recession (Rosenberg, 2012).

This represents a full economic cycle that happens regularly every several years (Pierce, 1967). Hence, as an evident conclusion, the empirical research on network effects gained the momentum and attracted the researchers focus during the economic cycle that followed the invention of the internet technology and concurrently with business strategies that capitalized on this technology. This seems so logical by the way. However, it should be carefully noted that these are the dates of publishing that are presented. The actual dates in which the case actually happened and the empirical data were related are usually few years earlier. This does not negatively affect the concept of gaining the momentum and/or attracting researchers' attention. Actual events usually being thoroughly studied several years after actually happening when the need to understand what had happened in the field become a critical driver to conduct a full stand-alone academic study.

Up to our knowledge an up to the time of writing this DBA, there is no published studies that examined the platforms that failed to achieve the network effects empirically. Hence, and as previously mentioned, although this DBA research is going to start with the aim to discover a theory and describe things as they are, and from all the best, good, bad and worst practices, which matches the typical inductive perspective of the classical grounded theory (Holton & Walsh, 2016); the nature and type of the available cases studies are limited by default to include the best and good practices only or those who were successful only as shown in Figure 55. However, this fact does not affect or alert the initially selected epistemological position. As a DBA researcher, the mindset was open to study any empirically proved failed case study if it was found. The absence of relevant data does not affect the researcher's stance (Figure 55). Of course, studying the digital platforms that failed to achieve the network effect empirically can be considered as a future research proposal. However, it is logical to assume that gaining access to field data of failure is much more difficult than the case of success. Usually, these platforms had gone out of business due to the previously mentioned winner-takes-all-syndrome.



*Figure 55: Limited Available Data vs. the Initial Epistemological-Based Data Collection Intention*

Later on the focus shifts towards trying to see how the discovered classical grounded theory, from the first substantive area (*i.e. literature as secondary data*), matches the empirical field. Hence, the idea was to provide a suitable stress test for the discovered theory through finding suitable case study, analyzing the relevant data and see what is common between the empirical case(s) study and the discovered theory as well as what is different. Hence, the previously mentioned empirical intention shifted the focus back again towards the single holistic case study design that appears in Figure 56. This added the holistic single case design to the previously mentioned embedded multi-case study design (Yin, 2009). This former one can add additional value by clarifying how the discovered classical grounded theory can be reflected in the real challenging world.

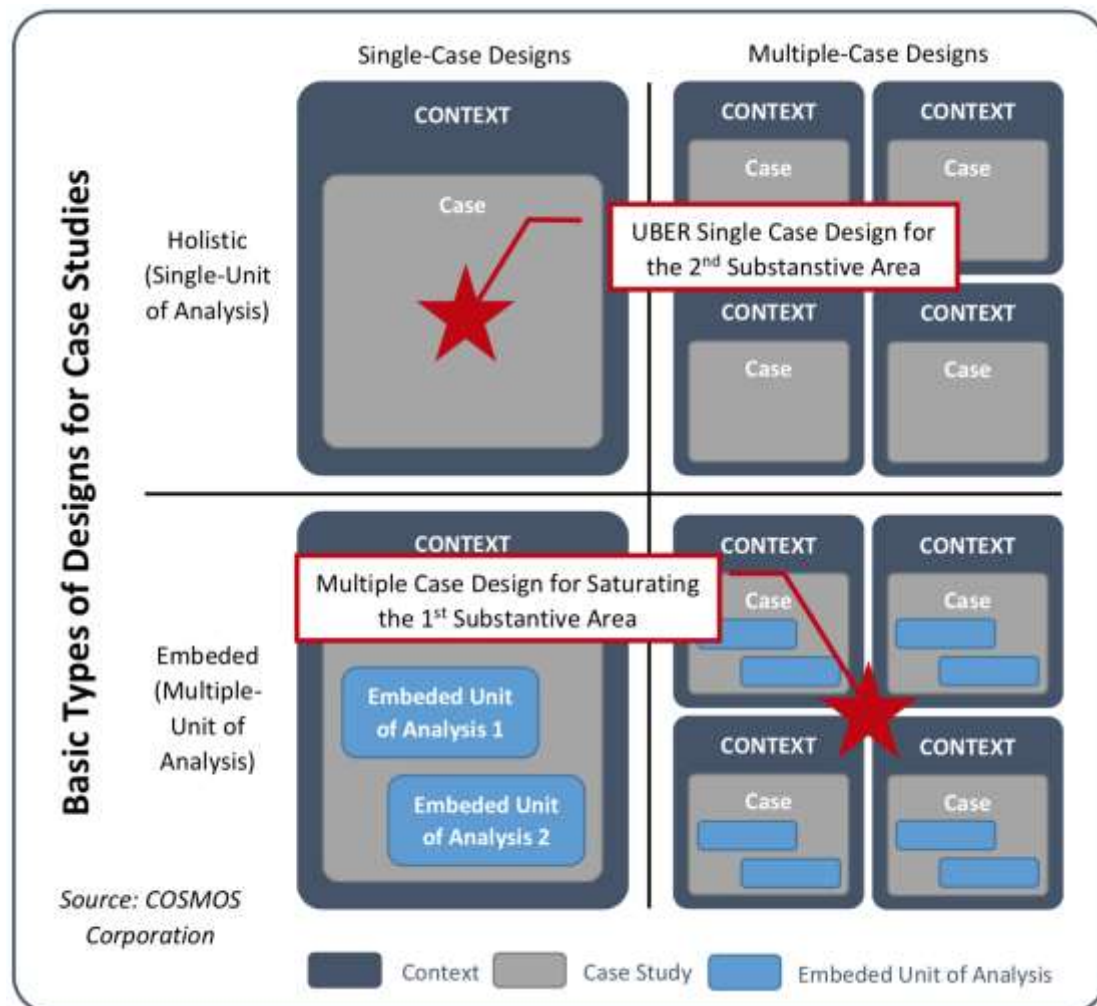


Figure 56: Balancing the Case Studies Design and Usage in the DBA Thesis – Adapted from (Yin, 2009)

Hence, the search journey for finding the suitable case study started and during the process, a valuable reference was found that helped by providing some vivid selection criteria, which is “The Rise of the Platform Enterprise: A Global Survey” (Evans & Gawer, 2016). According to these selection criteria, the "UBER Technologies Inc." (UBER, 2021) had been selected as a single case study.



UBER Technologies Inc. was established in March 2009 in San Francisco - USA after the idea was generated in the founders' minds in December 2008 while they were on a cold night in Paris and failed to find a good ride (UBER, 2021). However, the first ride had not taken place until July 2010. Three years after the initial idea was generated in Paris, Paris was the first international city to have the UBER services (UBER, 2021). According to the CNN MONEY magazine (CNN MONEY, 2021), a brief overview about UBER is shown in Figure 57 below.

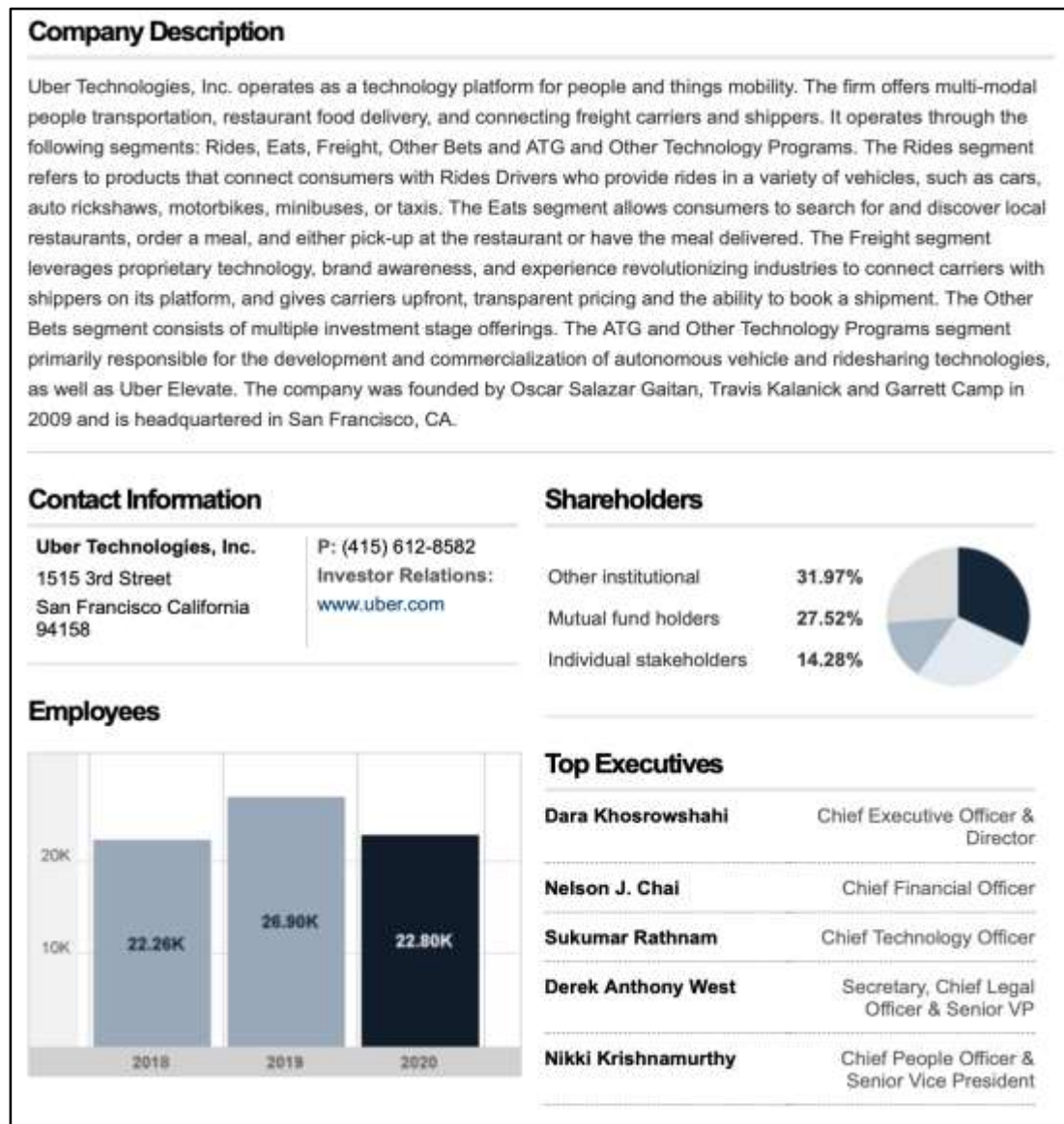


Figure 57: UBER Technologies Inc. Company Overview – Source: (CNN MONEY, 2021)

Actually, UBER Technologies Inc. was selected as a single case study design due to the following reasons. First, the UBER digital platform is a platform from the "Services/Transactions" type according to Evans & Gawer (2016) and as shown in Figure 58, which matches this DBA scoping and critical business considerations that have been discussed in Chapter-3.

Although innovation platforms (such as MICROSOFT, ORACLE, and SAP) and integration platforms (such as APPLE, FACEBOOK, and GOOGLE) platforms have bigger market capitalizations (Figure 58), the services/transactions type is the type examined in this DBBA thesis.

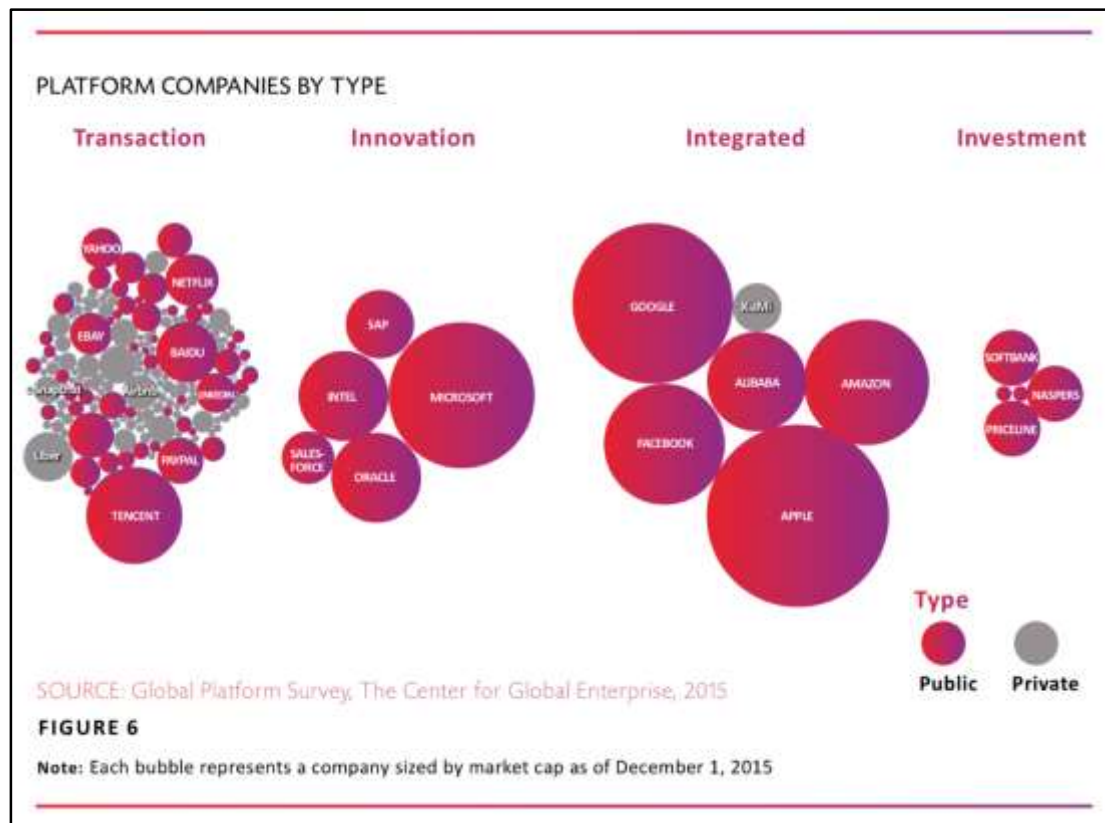


Figure 58: UBER Digital Platform as a Transactions or Services Platform – Source: (Evans & Gawer, 2016)

Second, the UBER digital platform orchestrates a digital services platform-based ecosystem that its size is huge in comparison to the original physical organization according to Evans & Gawer (2016) and as shown in the following figure (Figure 59). Furthermore, this platform-based ecosystem is totally separated from the original physical owning organization, which matches this DBA scoping and critical business considerations that have been discussed in Chapter-3 too. Therefore, when this physically independent ecosystem is compared with the owning physical assets organization, the ecosystem appears to be a relatively giant one (Figure 59). It is worth mentioning that In this context specifically, UBER can be considered the opposite to the other asset-heavy organizations that use the digital services platforms as a vehicle for the servitization of its business model. General Electric and Daimler companies are from this later servitization group as shown in Figure 59.



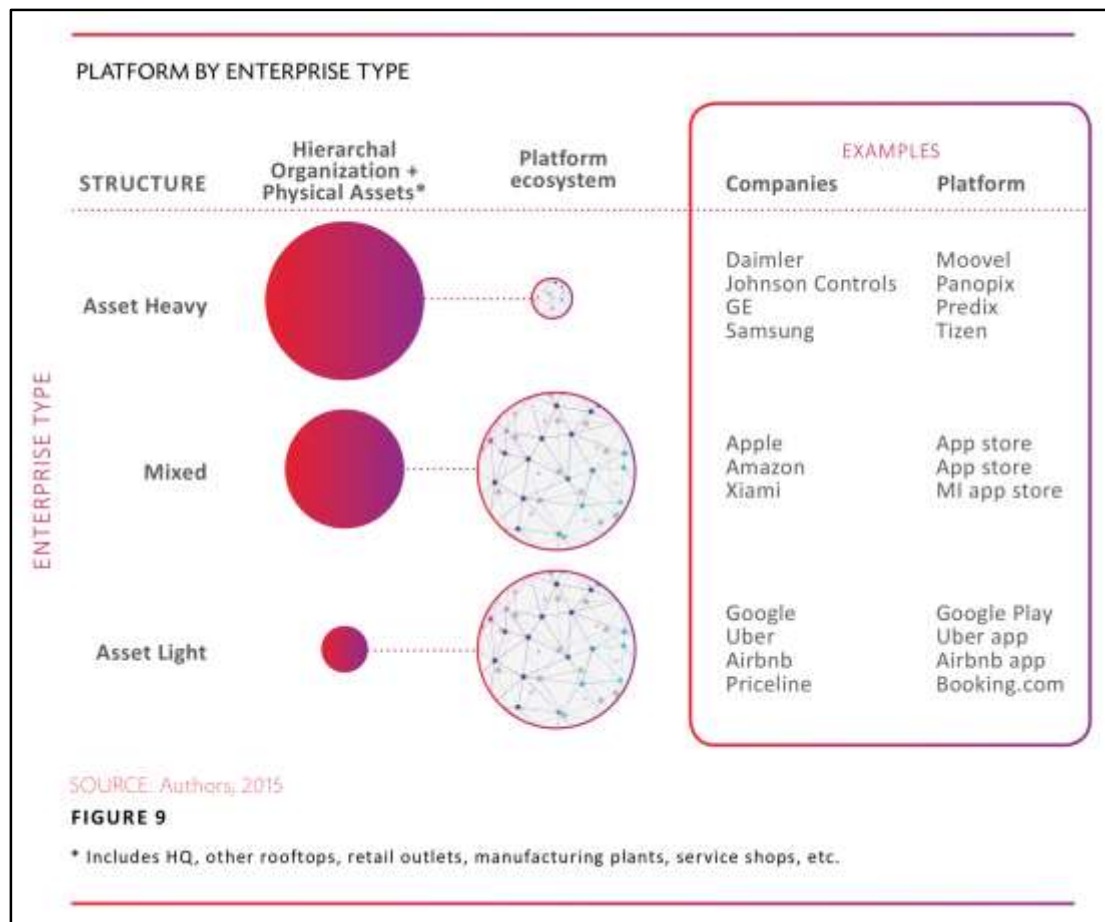


Figure 59: UBER Physically Independent & Relatively Giant Platform Ecosystem –  
Source: (Evans & Gawer, 2016)

Third, the UBER digital platform has the highest market cap between the privately owned platforms included in the report of the year 2016 according to Evans & Gawer (2016) and as shown in the following figure (Figure 60). This market capitalization value can be considered as a proxy for how successfully UBER has been able to achieve the desired network effect. As indicated by Evans & Gawer (2016), UBER is not only the platform with the highest market cap, it also the only privately owned platform in that time with a market value that exceeded the \$50 billion threshold as shown in Figure 60. With this value, it has a higher market value over many well-known transactions platforms such as AliPay, Airbnb, Snapchat, Pinterest, and Spotify. More importantly, Evans & Gawer (2016) report, either in general or specifically within the top 25 platforms, did not include any significant competitor for UBER within the transportation services industry. Hence, this is not only a proxy for achieving the desired network effect but also a proxy for reaching the long-term impact of this network effect, which is the “Winner-Takes-All Syndrome”.

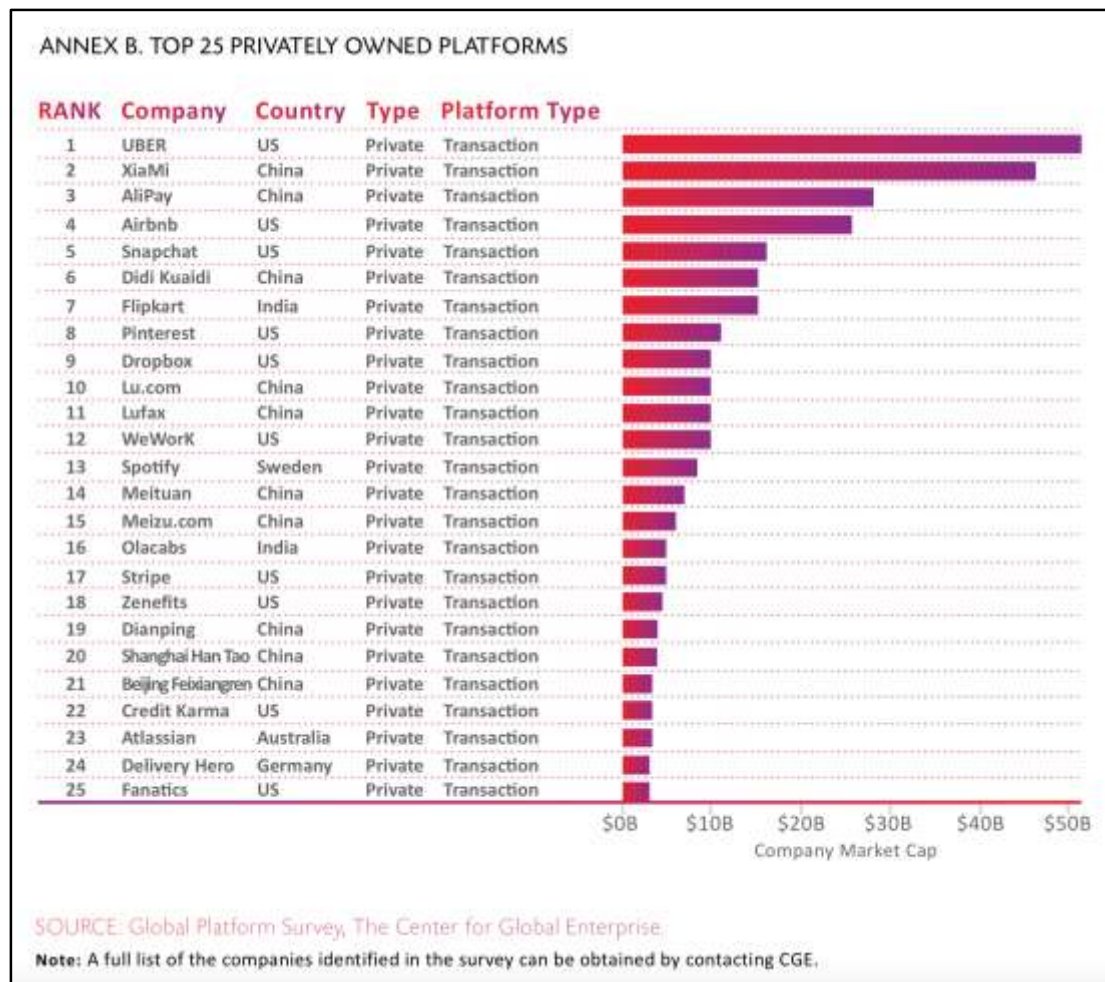


Figure 60: UBER Market Cap as the Highest Cap in the Top 25 Privet Platforms –  
Source: (Evans & Gawer, 2016)

Fourth, over and above, it is one of the most famous digital services platform-based ecosystems worldwide. Hence, and most likely, it is expected to have the highest and richest media presence, which if collected carefully, can be used as a proxy for its strategy.

Finally, being one of the most famous platforms, worldwide, will facilitate the discussion and the evaluation of the validity of the discovered classical grounded theory. Hence, and based on the previously mentioned reasons/criteria, the UBER Technologies Inc. case study can provide the required empirical stress test for the discovered classical grounded theory.

The next step is to identify the sources of evidence within the selected case study. The previously shown figure (Figure 54) shows six sources along with their strengths and weaknesses as explained in detail by Yin (2009). In this DBA thesis and due to the nature of the research project and UBER selected case study, the second source, which is the public archival records, will be used. News articles will be used as a proxy for these records.

Finally, some changes were necessary to match the change in the selection such as canceling the need to use the “Netnography” (2002) in this DBA thesis, which is a relatively new digital data collection method in comparison to the other well-known methods in qualitative research. Kozinets (2002) defined it as the ethnography research that is being conducted online on the internet. It adapts the well-known ethnographic research techniques to the study of the cultures and communities emerging through the online and computer-based communication tools.

It is faster, simpler, and less expensive if compared with the typical ethnography methods. According to these definitions, there are some special issues that the researcher should take into consideration during his study as follows:

- The researcher should be fully aware that he is collecting and analyzing a limited version of communities’ actions, which is the communicative side only instead of collecting and analyzing a complete set of communities’ actions in the typical ethnography research (Kozinets, 2002).
- The research ethics in this type of qualitative research is usually more critical than the typical ethnography research (Kozinets, 2002). The reason is so simple; the researcher can fully act as an invisible observer and may reveal some confidential information about the field. Hence, formal agreements should be obtained before dealing with any non-publicly published data.

To deal with these ethical issues and to avoid the potential risks, Kozinets (2002) recommended four save procedures that the researcher should master as basic skills and follow in the netnography research, which are:

- Fully disclose his identity and intentions.
- Fully ensure confidentiality and anonymity of the information.
- Incorporate feedback from the online members before publishing.
- Correctly distinguish between the public and private mediums.
- Furthermore, the discourse analysis as a skill may help to solve the issue of dealing with the limited version of communities’ actions.

Mastering these skills is going to make the netnography research more legitimate with a higher level of integrity. However, after completing the substantive area related to the using literature as secondary data, and the mentioned rationale above, “Netnography” (2002) is no longer a valid option.

## 9.7 Literature as Secondary Data Substantive Area Collection and Preparation Steps

This section will explain details of the date of collection steps and the steps for filtering and exporting the found records from each data source as well as the basic information about the found references.

**Web of Science:** this is the first online database that was used to search for references using the previously explained search criteria. However, after explaining the details related to this online source data collection and preparation in the previous literature review chapter, there is no need to repeat any of these details.

**Scopus:** this is the second database and online source that was used to search for references using the previously explained search criteria. For the first keywords option (i.e. “Platform Strategy”), a total of 1151 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using a filter to be limited to only four categories of the references out of 25+ categories, which are:

- Business, Management and Accounting.
- Economics, Econometrics and Finance.
- Decision Science.
- Social Science.

This reduced the found number of references to 288 references only. The full information records of these found references were exported using different file formats such as “RIS” and “BibTex”. Figure 61 shows the number of documents by year, which indicates how much references were produced per each year. The figure shows an almost monotonic increase for this number during the past 20 years up to the year 2020.

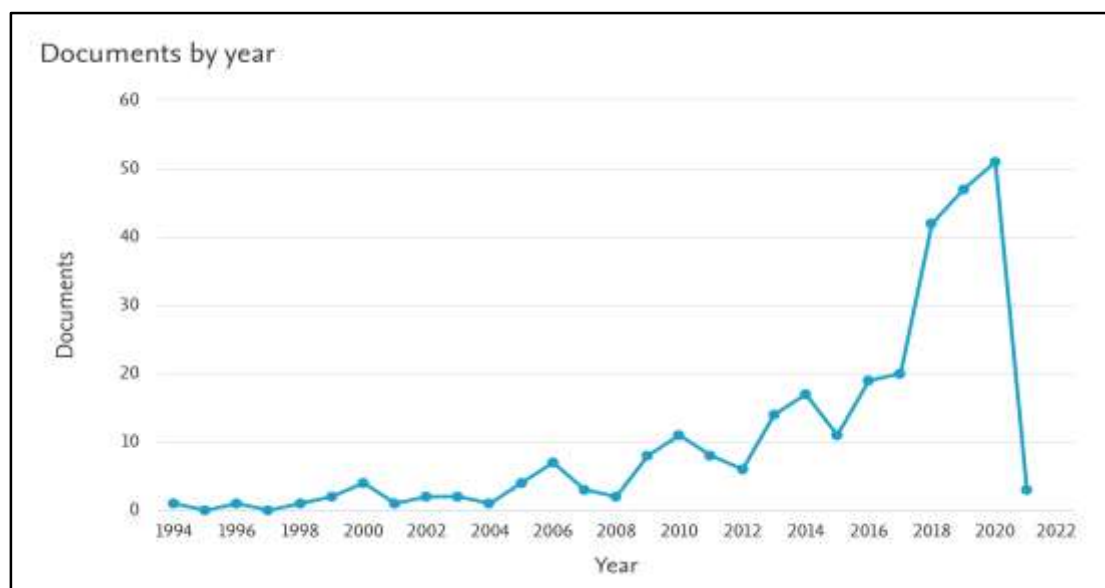


Figure 61: The Number of Documents by Year of the "Platform Strategy" Keywords Search Result

This basic indicator gives an impression about the increased importance of, and focus on, the topic of the platform strategy during the past two decades as well as how this importance and focus increased steadily.

For the second keywords option (i.e. “Platform Ecosystem”), a total of 407 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using the same filter explained with the first keywords option. This reduced the found number of references to 180 references only. The full information records of these found references were exported using the same file formats. Figure 62 shows the number of documents by year, which indicates how much references were produced per each year. The figure shows an almost monotonic increase for this number from 2009 to 2017 with slight reduction up to the year 2020. This basic indicator gives an impression about the variation happened in the importance of, and focus on, the topic of the platform ecosystem during the past two decades as well as how this importance and focus have been changed.

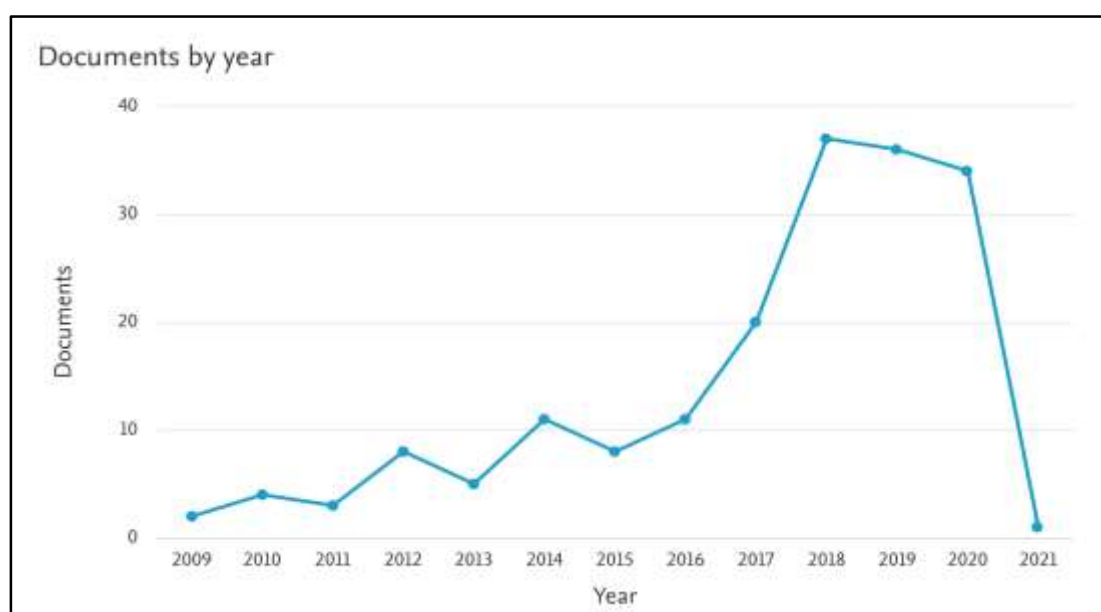


*Figure 62: The Number of Documents by Year of the "Platform Ecosystem" Keywords Search Result*

For the third keywords option (i.e. “Platform Ecosystem Strategy”), a total of 26 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using the same filter. This reduced the found number of references to 14 references only. The full information records of these found references were exported using the same file formats.

Figure 63 shows the number of documents by year. The figure shows an almost monotonic increase for this number from 2016 to 2019 with slight reduction in the year 2020. This basic indicator gives an impression about the variation happened in the importance of, and focus on, the topic of the platform ecosystem strategy during the past two decades as well as how this importance and focus have been changed.

For the fourth keywords option (i.e. “Platform Critical Mass”), a total of 2 references (Figure 64) were resulted from the search with no losses when the relevance filters applied. The full information records of these found references were exported using the same file formats.

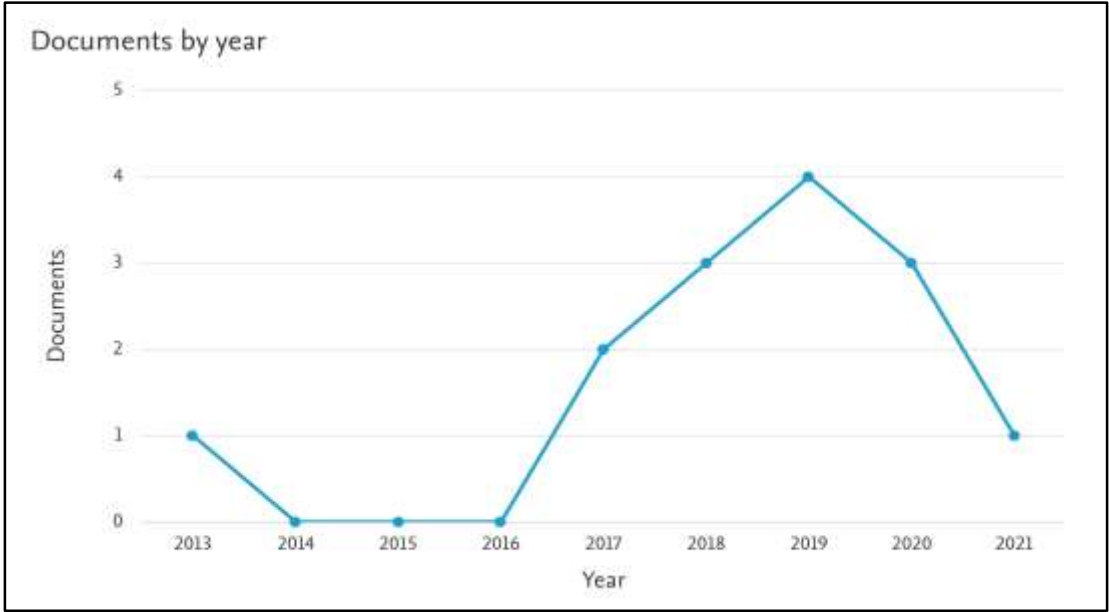


Figure 63: The Number of Documents by Year of the "Platform Ecosystem Strategy" Keywords Search Result

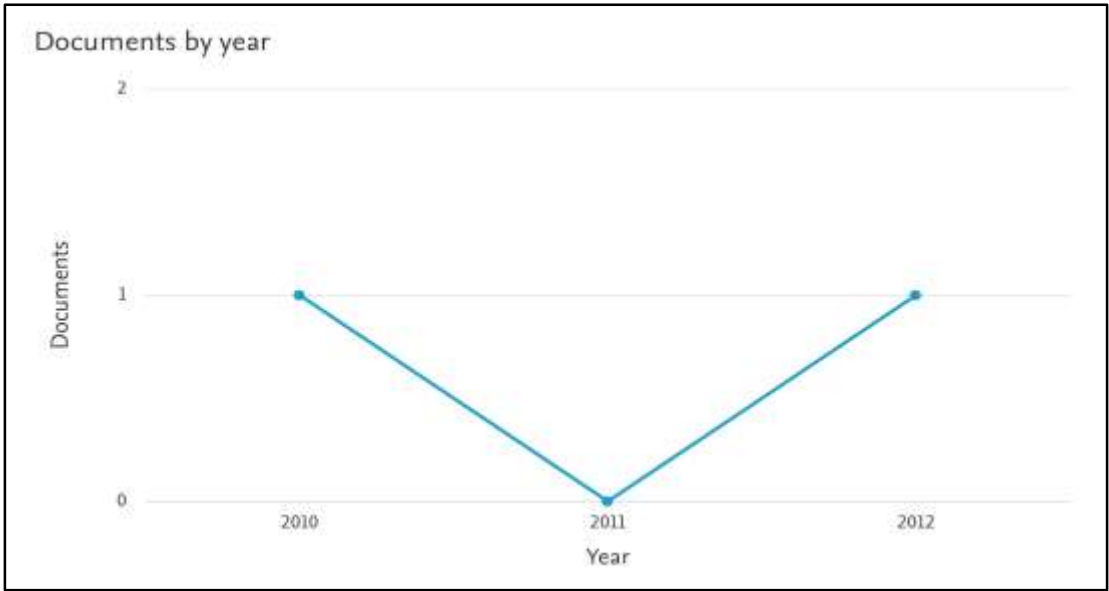


Figure 64: The Number of Documents by Year of the "Platform Critical Mass" Keywords Search Result

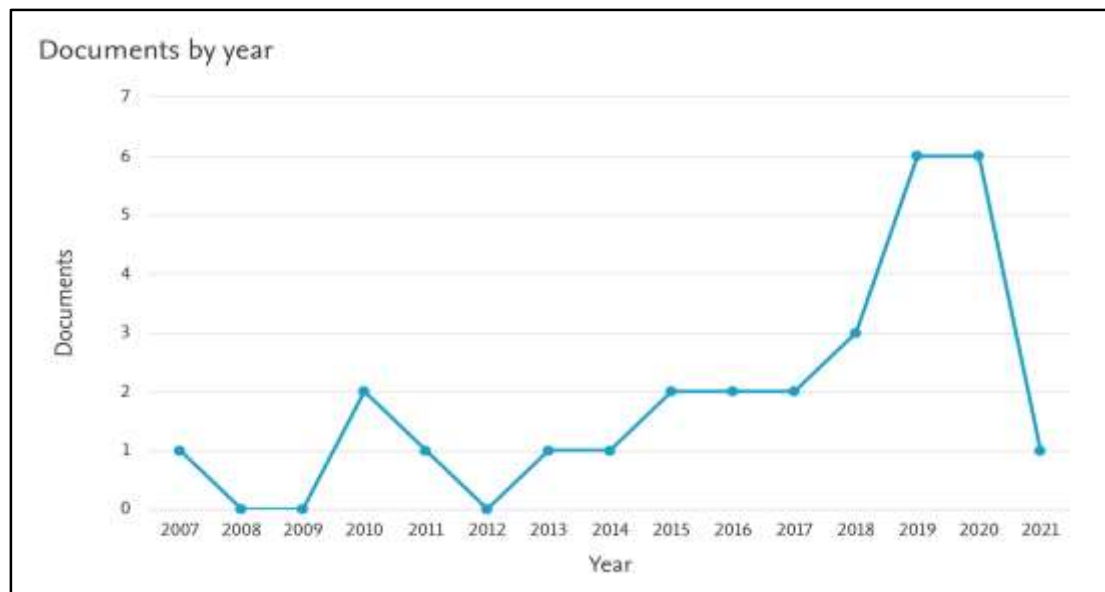


*Figure 65: The Number of Documents by Year of the "Platform Network Effect" Keywords Search Result*

For the fifth and final keywords option (i.e. “Platform Network Effect”), a total of 47 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using the same filter. This reduced the found number of references to 28 references only. The full information records of these found references were exported using the same file formats.

Figure 65 shows the number of documents by year. The figure shows an almost monotonic increase for this number from 2012 to 2019 with the same number in the year 2020. This basic indicator gives an impression about the variation happened in the importance of, and focus on, the topic of the platform network effect during the past decade as well as how this importance and focus have been changed.

Finally, these previously mentioned search results can be summarized in the following tabular form (Table 12):

| No | Keywords                    | Original Found Number | Final Filtered Number |
|----|-----------------------------|-----------------------|-----------------------|
| 1  | Platform Strategy           | 1151                  | 288                   |
| 2  | Platform Ecosystem          | 407                   | 180                   |
| 3  | Platform Ecosystem Strategy | 26                    | 14                    |
| 4  | Platform Critical Mass      | 2                     | 2                     |
| 5  | Platform Network Effect     | 47                    | 28                    |

*Table 12: The found Number of References for All Keywords in “Scopus” Online Database*



**Science Direct:** this is the third database and online source that was used to search for references using the previously explained search criteria. For the first keywords option (i.e. “Platform Strategy”), a total of 177 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using a filter to be limited to only four categories of the references out of 10+ categories, which are:

- Business, Management and Accounting.
- Economics, Econometrics and Finance.
- Decision Science.
- Social Science.

This reduced the found number of references to 44 references only. The full information records of these found references were exported using different file formats such as “RIS” and “BibTex”. As the Science Direct online database doesn’t provide any basic analytics about the found references, the remaining of the search results will be summarized in the following tabular form (Table 13):

| No | Keywords                    | Original Found Number | Final Filtered Number |
|----|-----------------------------|-----------------------|-----------------------|
| 1  | Platform Strategy           | 177                   | 44                    |
| 2  | Platform Ecosystem          | 45                    | 18                    |
| 3  | Platform Ecosystem Strategy | 3                     | 1                     |
| 4  | Platform Critical Mass      | 0                     | 0                     |
| 5  | Platform Network Effect     | 1                     | 1                     |

*Table 13: The found Number of References for All Keywords in “Science Direct” Online Database*

**Emerald Insight:** this is the fourth database and online source that was used to search for references using the previously explained search criteria. The full information records of these found references were exported using different the “RIS” file format only. As the Emerald Insight online database doesn’t provide any basic analytics about the found references, the search results will be shown in the following tabular form (Table 14):

| No | Keywords                    | Found Number |
|----|-----------------------------|--------------|
| 1  | Platform Strategy           | 28           |
| 2  | Platform Ecosystem          | 13           |
| 3  | Platform Ecosystem Strategy | 0            |
| 4  | Platform Critical Mass      | 0            |
| 5  | Platform Network Effect     | 3            |

*Table 14: The found Number of References for All Keywords in “Emerald Insight” Online Database*



**SAGE Journals:** this is the fifth database and online source that was used to search for references using the previously explained search criteria. For the first keywords option (i.e. “Platform Strategy”), a total of 22 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using a filter to be limited to only one category of the references which is:

- Social Science & Humanities.

This reduced the found number of references to 1 references only. The full information records of these found references were exported using different file formats such as “RIS” and “BibTex”. As the Science Direct online database doesn’t provide any basic analytics about the found references, the remaining of the search results will be summarized in the following tabular form (Table 15):

| No | Keywords                    | Original Found Number | Final Filtered Number |
|----|-----------------------------|-----------------------|-----------------------|
| 1  | Platform Strategy           | 22                    | 1                     |
| 2  | Platform Ecosystem          | 9                     | 9                     |
| 3  | Platform Ecosystem Strategy | 0                     | 0                     |
| 4  | Platform Critical Mass      | 0                     | 0                     |
| 5  | Platform Network Effect     | 0                     | 0                     |

*Table 15: The found Number of References for All Keywords in “SAGE Journals” Online Database*

**Springer Link:** this is the six database and online source that was used to search for references using the previously explained search criteria. For the first keywords option (i.e. “Platform Strategy”), a total of 4528 references were resulted from the search. However, to find the more relevant reference to the thesis field of study, the search was refined using a filter to be limited to only one category of the references in “English” language only, which is:

- Business and Management.

This reduced the found number of references to 270 references only. The full information records of these found references were exported using the “CSV” file format. As the Springer Link online database doesn’t provide any basic analytics about the found references, the remaining of the search results will be summarized in the following tabular form (Table 16):

| No | Keywords                    | Original Found Number | Final Filtered Number |
|----|-----------------------------|-----------------------|-----------------------|
| 1  | Platform Strategy           | 4528                  | 270                   |
| 2  | Platform Ecosystem          | 953                   | 111                   |
| 3  | Platform Ecosystem Strategy | 539                   | 93                    |
| 4  | Platform Critical Mass      | 964                   | 65                    |
| 5  | Platform Network Effect     | 3380                  | 204                   |

*Table 16: The found Number of References for All Keywords in “Springer Link” Online Database*

However, it is worth mentioning that especially this online database has some critical limitation that had affected both the number and nature of found references. From the above table, it is somehow evident that the numbers of the found references are slightly huge in comparison to the other previous online sources. Even the numbers of the filtered references still give the same impression, which has a rationale behind that is related to the search algorithm of this online source.

Actually, the search algorithm has a specific limitation when more than one keyword is used to search in the title. As an example, when two keywords such as “Platform Strategy” are inserted in the title search filed, which actually means “Platform AND Strategy”, the search algorithm finds only references that have the two keywords adjacently. Unfortunately, a reference with a title like “Platform Good Strategy” for example is going to be excluded and not considered as a matching reference. This resulted in less than 20 references for the five keywords options. These 20 references themselves are not bad as they are at least equal to the double of the number found on SAGE Journals. However, the problem is that Springer Link provides specific critical types of references, which are the books, books chapters, and book sections. Hence, it was a challenging tradeoff that needs a decision.

Either to submit to this limitation of the search algorithm that seems illogic in itself, or to modify the search parameters to avoid losing these valuable types of the references that are going to enrich the research project. The final decision went in favoring the second option by searching for references that contains the keywords option in general and relaxing the title constrain to contain only the word “Platform”. This resulted in finding book sections and chapters, for example, which can contain the word “Platform” in the title and the word “Strategy” in the abstract.

However, to have the full picture and understand the impact of this decision, it seems logical to understand the impact of this decision on the upcoming different types of bibliometrics analysis techniques. This is going to be explained in detail in the upcoming section. However, briefly and to close this section, this decision is going to affect a limited set of the analysis use cases that will be presented later on, which get benefits form the increase of the number of the input references. An example of this category is the semi-automatic coding support that gains a more comprehended view from the bigger number of input references and can omit further redundant numbers.

On the other hand, this decision is not going to affect the other analysis use cases that are relatively more sensitive to the large number of found references. An example of this category is the research impact that depends on the number of citations.

After explaining the details of the updated practical screening protocol, the searching algorithm, and the information of the found references, it worth compiling all the results in single place, which is the following tabular form (Table 17) and graphical representation (Figure 66 and Figure 67) as follows:

| No           | Keywords                    | Web of Science | Scopus     | Science Direct | Emerald Insight | SAGE Journals | Springer Link | Total       |
|--------------|-----------------------------|----------------|------------|----------------|-----------------|---------------|---------------|-------------|
| 1            | Platform Strategy           | 178            | 288        | 44             | 28              | 1             | 270           | 809         |
| 2            | Platform Ecosystem          | 90             | 180        | 18             | 13              | 9             | 111           | 421         |
| 3            | Platform Ecosystem Strategy | 3              | 14         | 1              | 0               | 0             | 93            | 111         |
| 4            | Platform Critical Mass      | 1              | 2          | 0              | 0               | 0             | 65            | 68          |
| 5            | Platform Network Effect     | 25             | 28         | 1              | 3               | 0             | 204           | 261         |
| <b>Total</b> |                             | <b>297</b>     | <b>512</b> | <b>64</b>      | <b>44</b>       | <b>10</b>     | <b>743</b>    | <b>1670</b> |

*Table 17: The found Number of References for All Keywords in All Online Databases*

The total number of the found references on all selected databases was 1670 references. However, it seems logical to assume that there are many duplicated references that may be found on more than one online database, and this assumption proved to be so true. Hence, the next logical and practical step was to remove these duplicates in a single integrated references database or a single integrated literature dataset.

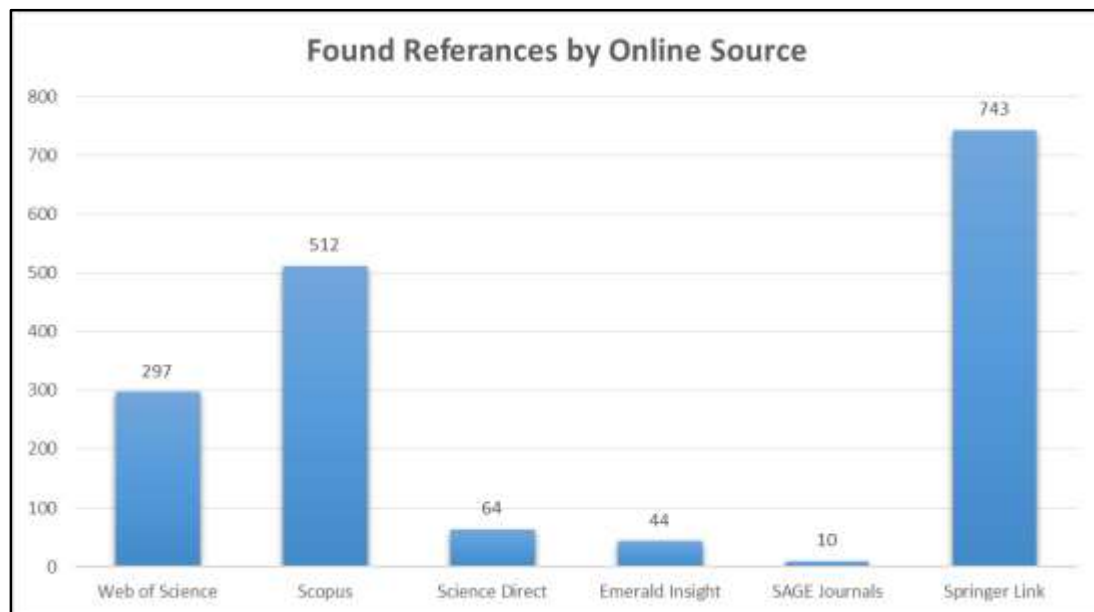


*Figure 66: The Number of Found References by Online Source*

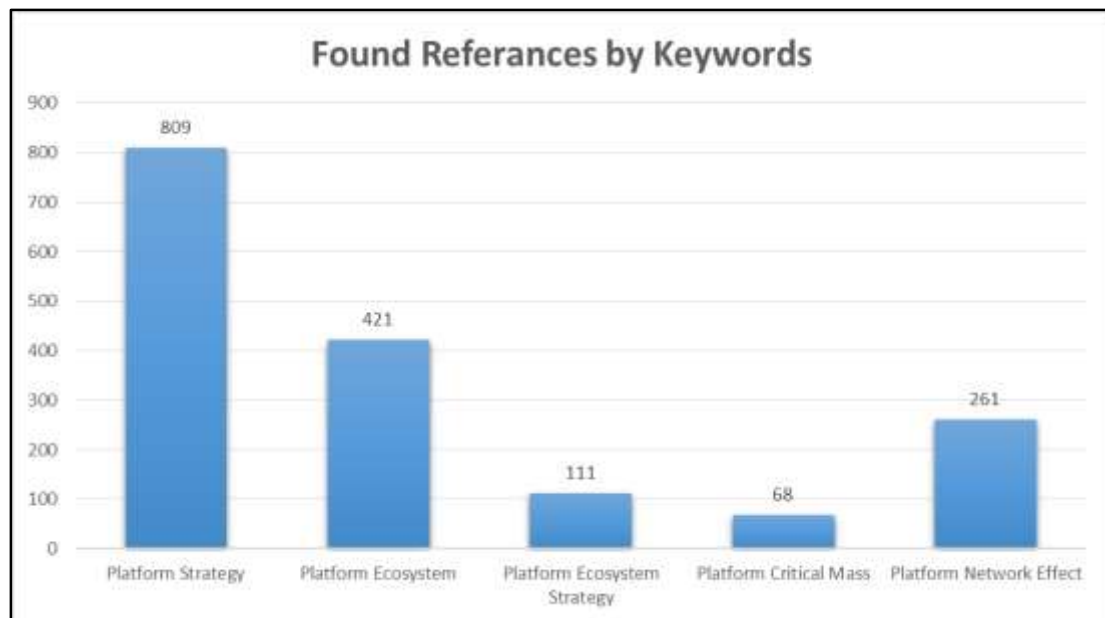


*Figure 67: The Number of Found References by Search Keywords*

## 9.8 The Single Integrated Literature Dataset

To integrate all found references in a single database to facilitate further analysis; all exported search results were imported into the Zotero database. Zotero (2021) is a common and well-known open-source reference management software that is usually used by researchers to manage large bibliographic databases. The resulted Zotero database included 1670 references, which were all imported on “December 25, 2020” as shown in Figure 68. However, this database included duplicated references due to two main reasons:

- Some references appeared in more than a single search result for the same keywords from different online sources. This usually happens when the same reference is listed in many online sources.
- Some references appeared in more than search result for different keywords from the same online source. This usually happens when a single reference includes many keywords in its title. As an example, the reference (Song, P., Xue, L., Rai, A., & Zhang, C. (2018). *The Ecosystem of Software Platform: A Study of Asymmetric Cross-Side Network Effects and Platform Governance*. *Mis Quarterly*, 42(1), 121+) has a title that contains the “Platform Ecosystem” and the “Platform Network Effect” keywords. Or more precisely, a title that contains the “Platform AND Ecosystem” and the “Platform AND Network AND Effect” keywords.

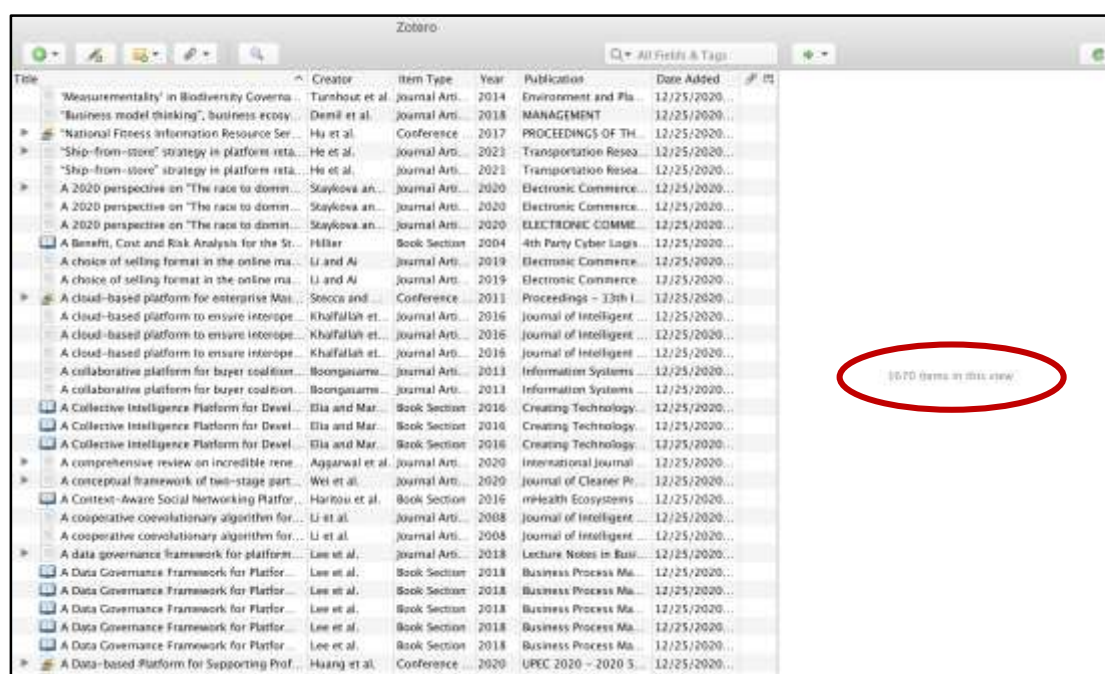


Figure 68: The Zotero Single Integrated Database (1670 References Before Duplicates Removal)

To remove the duplicated references, both of the automatic merge function and the manual merge were used. However, usually, with the trial to keep the most complete version of reference records, especially the version that contains the full text of the abstract section. In a later step, this abstract text is going to be used in one bibliometrics analysis technique.

This duplicates free version of the Zotero database included 928 references as shown in Figure 69.

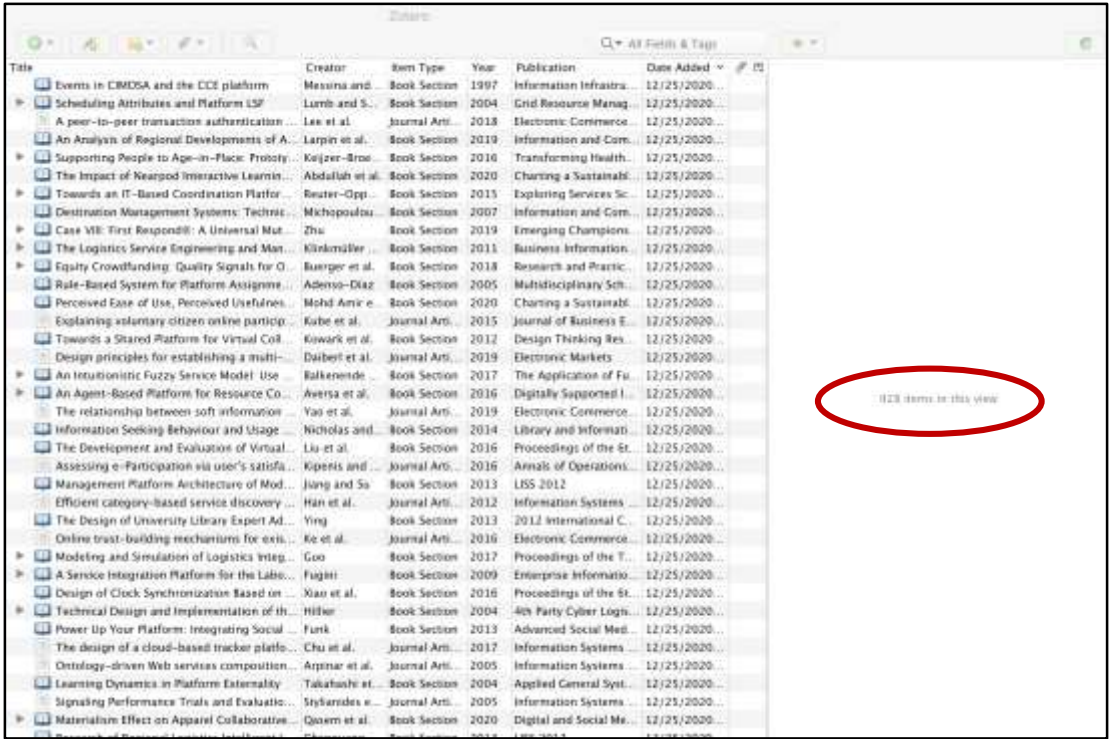


Figure 69: The Zotero Single Integrated Database (928 References after Duplicates Removal)

To complete the preparation of this database for the upcoming bibliometrics analysis step, a further data-cleansing step was needed. In which, the abstract text of the 928 references had to be completed if it is missed. Of course, from the reference page on the online source or database. Although it took a lot of time, but the result was so rewarding as it facilitate some automatic text mining analysis as will be explained later on.

## **9.9 Data Analysis Techniques, Selective, and Theoretical Coding for the Literature Substantive Area**

As previously discussed and as indicated by Holton & Walsh (2016), based on Glaser and Strauss's original work (Glaser & Strauss, 1967), the classical grounded theory enables the researchers to discover theories from empirical data through the constant comparative analysis that enables latent patterns discovery. Furthermore, it provides a considerable amount of flexibility by being able to support the researcher to deal with any type of data from any epistemological perspective. Hence, it supports the logic of discovery over the logic of verification and can be seen as an integrative research paradigm for discovery (Holton & Walsh, 2016).

However, there are many factors that affect the discovered theory. According to Holton & Walsh (2016), the first factor is the researcher's previous training, learning, and experience. The second factor is the selected data that was considered suitable. Some researchers may select qualitative data, while others may select quantitative data, or select to mix both qualitative and quantitative data together, which is going to match the classical grounded theory point of view that "All is Data" (Holton & Walsh, 2016).

Holton & Walsh (2016) explained, based on Glaser's work that for those who come from the traditional qualitative research school of thinking, the most evident required change for them is to stop overemphasizing the dependence on the interview data as well as considering other significant sources such as memoing. More importantly, all is data can prevent the typical mistake of overlooking the secondary data sources as valuable sources because analyzing secondary data can result in unexpected emergent of surprising main concerns and/or core categories that produce a new theory (Holton & Walsh, 2016).

Furthermore, the researcher's goals may affect the nature of the discovered theory. According to Holton & Walsh (2016), Gregor (2006) explained the four primary goals of any theory that lead to five theory types, which are analytical, explanatory, predictive, explanatory and predictive, and prescriptive. However, for grounded theory, at least, type two is required.

In addition, for the novice researcher to be confident of doing the grounded theory correctly, a good understanding of the foundational pillars of the grounded theory is essential. More importantly, following these pillars in the actual research project is what this researcher needs to do. The researchers should exactly be able to distinguish and stick to the emergence of concepts and relationship from the data over preconception, the conceptualization through the constant comparative analysis technique for the new data over the plain description and, finally, the theoretical sampling directed by the emerging theory and theoretical coding until theoretical saturation over simple substantive sampling.

According to all the previously discussed aspects, it is logically expected that the discovered theory as well as the discovery journey itself are going to be affected by my previous training, learning, and experience as a researcher. Furthermore, this part of the thesis is going to conduct the full coding stages of the classical grounded theory using qualitative data, which are the abstracts of literature papers as secondary data.

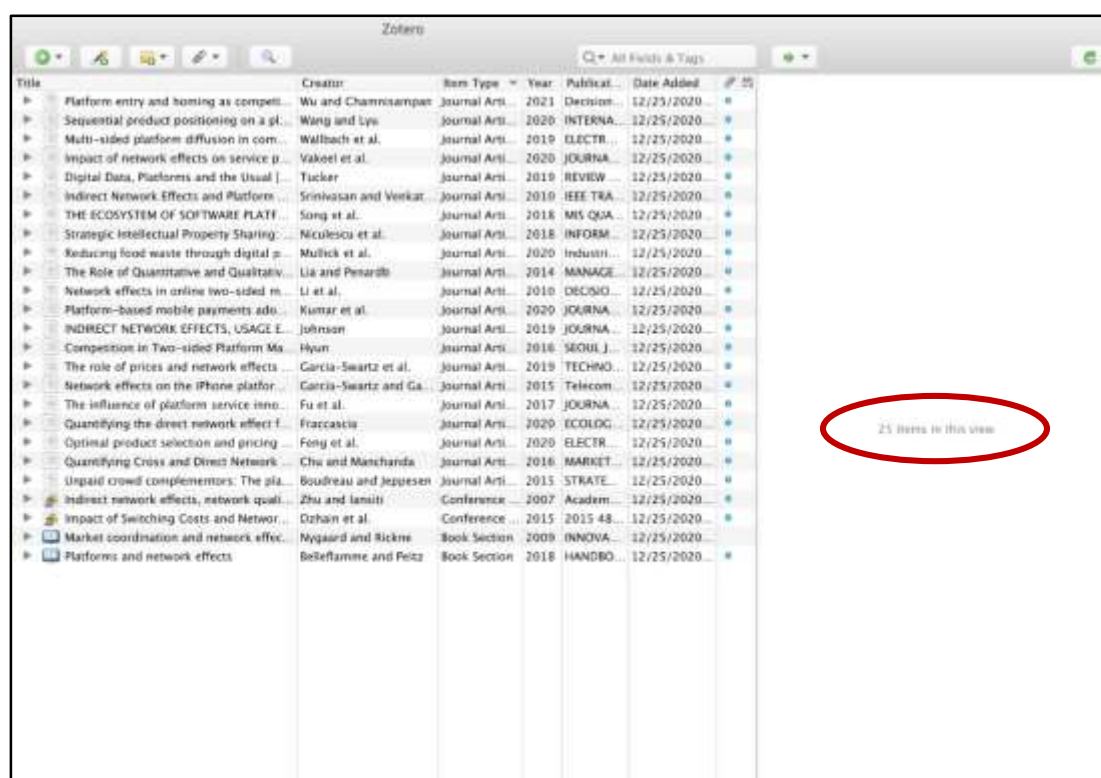


Finally, to ensure the correctness of the journey, the emergence and conceptualization as foundational pillars of the grounded theory are going to be considered carefully.

Guest et. al. (2012) explained in detail the relation between different data types and data analysis methods. The most important conclusion from his argument is that the type of data analysis method (*i.e. either qualitative or quantitative*) is totally independent of the data type itself. For the research project in hand, the “Gioia Method” (Gioia, Corley, & Hamilton, 2013) is going to be used to increase the confidence in the discovered coding system. Other methods can be used later on based on the evolution of the research project. Of course, and as explained before, one generic methodology was already used in the first stage of the research project, which is “Theory Landscaping Review (TLR)” as a “Theory Mining Review (TMR)” for the literature as data sources.

Some of the latent data analysis stages are going to deal with subsets of the data such as the selective and theoretical coding. These stages are going to limit the focus on two subsets, which are:

- The detailed information of the used literature as a secondary data (Group-1) Appendix at the end of the DBA thesis that has a total found matching number of references that was 25 references exactly (Appendix-D). However, Only 23 out of the 25 references can be analyzed because there are two references without an abstract. These two references without abstracts are from the book section type. The other 23 references with abstracts are either from the journal articles or from conference papers types (Figure 70).

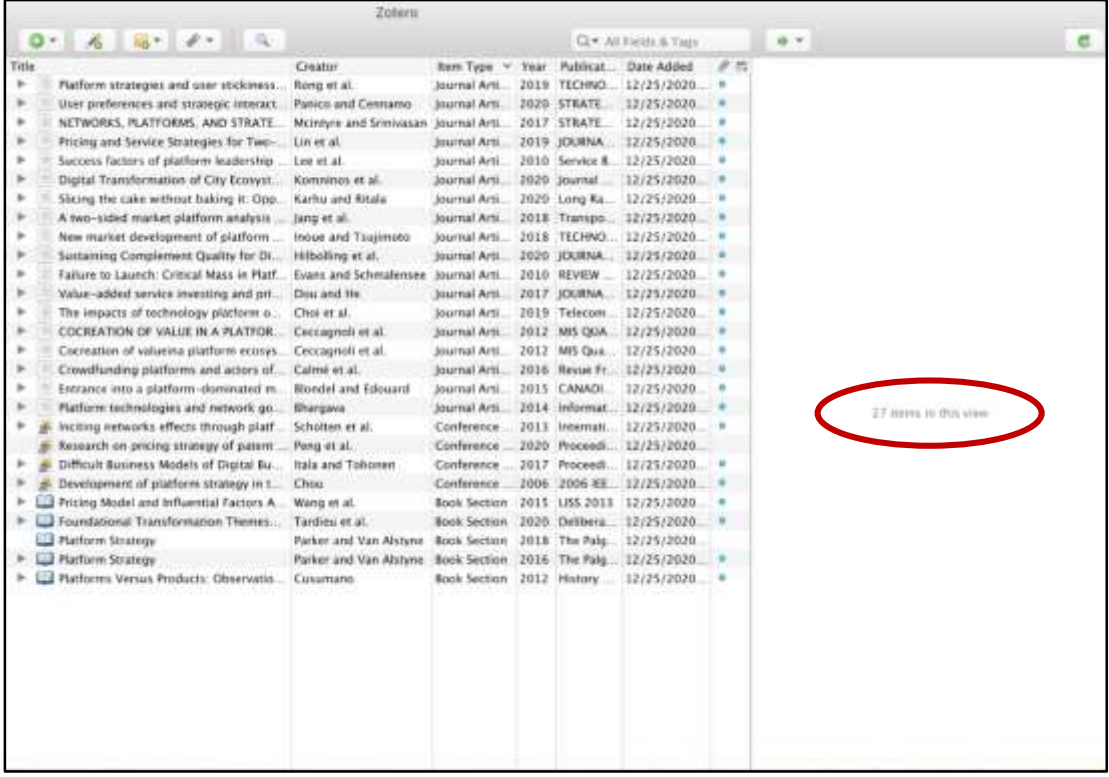


| Title                                      | Creator                  | Item Type       | Year | Publicat... | Date Added |
|--------------------------------------------|--------------------------|-----------------|------|-------------|------------|
| Platform entry and homing as competi...    | Wu and Chamrasampan      | Journal Arti... | 2021 | Decisio...  | 12/25/2020 |
| Sequential product positioning on a gl...  | Wang and Lys             | Journal Arti... | 2020 | INTERNA...  | 12/25/2020 |
| Multi-sided platform diffusion in com...   | Wallbach et al.          | Journal Arti... | 2019 | ELECTR...   | 12/25/2020 |
| Impact of network effects on service p...  | Vakool et al.            | Journal Arti... | 2020 | JOURNA...   | 12/25/2020 |
| Digital Data, Platforms and the Usual J... | Tucker                   | Journal Arti... | 2019 | REVIEW      | 12/25/2020 |
| Indirect Network Effects and Platform...   | Srinivasan and Venkat... | Journal Arti... | 2019 | IEEE TRA... | 12/25/2020 |
| THE ECOSYSTEM OF SOFTWARE PLATF...         | Song et al.              | Journal Arti... | 2018 | MIS QSA...  | 12/25/2020 |
| Strategic Intellectual Property Sharing... | Niculescu et al.         | Journal Arti... | 2018 | INFORM...   | 12/25/2020 |
| Reducing food waste through digital p...   | Mullick et al.           | Journal Arti... | 2020 | Industri... | 12/25/2020 |
| The Role of Quantitative and Qualitativ... | Lia and Penard           | Journal Arti... | 2014 | MANAGE...   | 12/25/2020 |
| Network effects in online two-sided m...   | Li et al.                | Journal Arti... | 2010 | DECISIO...  | 12/25/2020 |
| Platform-based mobile payments ado...      | Kumar et al.             | Journal Arti... | 2020 | JOURNA...   | 12/25/2020 |
| INDIRECT NETWORK EFFECTS, USAGE E...       | Johnson                  | Journal Arti... | 2019 | JOURNA...   | 12/25/2020 |
| Competition in Two-sided Platform Ma...    | Hyun                     | Journal Arti... | 2016 | SEOUL J...  | 12/25/2020 |
| The role of prices and network effects     | Garcia-Swartz et al.     | Journal Arti... | 2019 | TECHNO...   | 12/25/2020 |
| Network effects on the iPhone platform     | Garcia-Swartz and Ga...  | Journal Arti... | 2015 | Telecom...  | 12/25/2020 |
| The influence of platform service inno...  | Fu et al.                | Journal Arti... | 2017 | JOURNA...   | 12/25/2020 |
| Quantifying the direct network effect f... | Fraccastia               | Journal Arti... | 2020 | ECOLOG...   | 12/25/2020 |
| Optimal product selection and pricing      | Feng et al.              | Journal Arti... | 2020 | ELECTR...   | 12/25/2020 |
| Quantifying Cross and Direct Network...    | Chu and Manchanda        | Journal Arti... | 2016 | MARKET...   | 12/25/2020 |
| Unpaid crowd complementors: The pla...     | Boudreau and Jeppesen    | Journal Arti... | 2015 | STRATE...   | 12/25/2020 |
| Indirect network effects, network quali... | Zhu and Iansiti          | Conference      | 2007 | Academ...   | 12/25/2020 |
| Impact of Switching Costs and Networ...    | Dzhan et al.             | Conference      | 2015 | 2015 48...  | 12/25/2020 |
| Market coordination and network effec...   | Nygard and Rickne        | Book Section    | 2009 | INNOVA...   | 12/25/2020 |
| Platforms and network effects              | Bellefamme and Peitz     | Book Section    | 2018 | HANDBO...   | 12/25/2020 |

Figure 70: The First Subset of Zotero Single Integrated Database (25 References)



- The detailed information of the used literature as a secondary data (Group-2) Appendix at the end of the DBA thesis that has a total found matching number of references that was 28 references exactly (Appendix-E). However, only 22 out of the 27 references can be analyzed because there are five references without an abstract. These five references without abstracts are from the book section type. The other 22 references with abstracts are either from the journal articles or from conference papers types (Figure 71).



| Title                                        | Creator                 | Item Type       | Year | Publicat... | Date Added    |
|----------------------------------------------|-------------------------|-----------------|------|-------------|---------------|
| Platform strategies and user stickiness...   | Rong et al.             | Journal Arti... | 2019 | TECHNO...   | 12/25/2020... |
| User preferences and strategic interact...   | Panico and Cennamo      | Journal Arti... | 2020 | STRATE...   | 12/25/2020... |
| NETWORKS, PLATFORMS, AND STRATE...           | McIntyre and Srinivasan | Journal Arti... | 2017 | STRATE...   | 12/25/2020... |
| Pricing and Service Strategies for Two...    | Lin et al.              | Journal Arti... | 2019 | JOURNA...   | 12/25/2020... |
| Success factors of platform leadership       | Lee et al.              | Journal Arti... | 2010 | Service &   | 12/25/2020... |
| Digital Transformation of City Ecosyst...    | Komninos et al.         | Journal Arti... | 2020 | Journal     | 12/25/2020... |
| Slicing the cake without baking it: Opp...   | Karhu and Aitala        | Journal Arti... | 2020 | Long Ra...  | 12/25/2020... |
| A two-sided market platform analysis         | Jang et al.             | Journal Arti... | 2018 | Transpo...  | 12/25/2020... |
| New market development of platform           | Inoue and Tsujimoto     | Journal Arti... | 2018 | TECHNO...   | 12/25/2020... |
| Sustaining Complement Quality for Di...      | Hilbolling et al.       | Journal Arti... | 2020 | JOURNA...   | 12/25/2020... |
| Failure to Launch: Critical Mass in Platf... | Evans and Schmalensee   | Journal Arti... | 2010 | REVIEW      | 12/25/2020... |
| Value-added service investing and pri...     | Djou and He             | Journal Arti... | 2017 | JOURNA...   | 12/25/2020... |
| The impacts of technology platform o...      | Choi et al.             | Journal Arti... | 2019 | Telecom...  | 12/25/2020... |
| COCREATION OF VALUE IN A PLATFORM...         | Ceccagnoli et al.       | Journal Arti... | 2012 | MIS QUA...  | 12/25/2020... |
| Cocreation of value in platform ecosys...    | Ceccagnoli et al.       | Journal Arti... | 2012 | MIS QUA...  | 12/25/2020... |
| Crowdfunding platforms and actors of         | Calmé et al.            | Journal Arti... | 2016 | Revue Fr... | 12/25/2020... |
| Entrance into a platform-dominated m...      | Rondel and Edouard      | Journal Arti... | 2015 | CANADI...   | 12/25/2020... |
| Platform technologies and network go...      | Bhargava                | Journal Arti... | 2014 | Informat... | 12/25/2020... |
| Inviting networks effects through platf...   | Schöten et al.          | Conference      | 2013 | Informat... | 12/25/2020... |
| Research on pricing strategy of patent       | Peng et al.             | Conference      | 2020 | Procedi...  | 12/25/2020... |
| Difficult Business Models of Digital Bu...   | Itala and Tohonen       | Conference      | 2017 | Procedi...  | 12/25/2020... |
| Development of platform strategy in t...     | Chou                    | Conference      | 2006 | 2006 IE...  | 12/25/2020... |
| Pricing Model and Influential Factors A...   | Wang et al.             | Book Section    | 2015 | ISS 2015    | 12/25/2020... |
| Foundational Transformation Themes...        | Tardieu et al.          | Book Section    | 2020 | Delibera... | 12/25/2020... |
| Platform Strategy                            | Parker and Van Alstyne  | Book Section    | 2018 | The Palg... | 12/25/2020... |
| Platform Strategy                            | Parker and Van Alstyne  | Book Section    | 2016 | The Palg... | 12/25/2020... |
| Platforms Versus Products: Observatio...     | Cusumano                | Book Section    | 2012 | History     | 12/25/2020... |

Figure 71: The Second Subset of Zotero Single Integrated Database (27 References)

The exact single difference between the two groups is that group-1 contains the keywords “Platform Network Effect” in the title, while group-2 contains only the word “Platform” in the title and “Network Effect” in the abstract. Of course, it is expected that group-1 is going to be more valuable and richer for the analysis than group-2, which proved to be true as would be explained in the discovered theory chapter. The farther steps of the analysis will use and depend on the full dataset that contains 928 references as shown in Figure 69. The full list of these 928 references can be found in (Appendix-B) following the Zotero default exported bibliography format.

Exactly, the analysis step is going to analyze the abstract text of each reference from the references, while the full text of the reference is going to be used to gain a more in-depth understanding of the discovered codes in the abstract.

## 9.10 UBER Case Study as Substantive Area Data Collection and Preparation Steps

One of the reasons for selecting UBER as a case study, which was mentioned before, is that UBER is one of the most famous digital services platform-based ecosystems worldwide. Hence, and most likely, it is expected to have the highest and richest media presence, which if collected carefully, can be used as a proxy for its strategy. Being famous means that publishing news about UBER will be an attractive act for readers worldwide, while the news themselves usually try to highlight significant strategic actions taken by the company. Hence, the news is a very powerful instrument to collect raw and unprocessed data records that describe the company strategy. first of all, to find these records, the following online news libraries were used during the search:

- ProQuest.
- MarketLine.

The above-mentioned libraries were used in the search that utilized strict search criteria, which are going to be explained shortly. To ensure that most accurate and repeatable results and to have a unified view; the search was conducted with the objective to minimize the gap between searches on the different libraries to the minimum. Exactly, searching all the previously mentioned online libraries was conducted on the same day, which is “May 14, 2021” according to the following previously designed search criteria. Simply, the news article should include the following keywords in title of the article, which are:

- UBER Strategy
- UBER Ecosystem
- UBER Ecosystem Strategy
- UBER Critical Mass
- UBER Network Effect

However, to be more precise, this means that the title should include all these mentioned keywords with the “AND” operator. As an example, the “Platform Strategy” keywords mean “Platform AND Strategy”. Of course, the order does not matter. It is worth mentioning that this is the default setting in ProQuest only, while MarketLine has the “OR” operator as a default. Hence, these previously mentioned keywords were used with ProQuest, while only the word “UBER” was used in the case of MarketLine. At the end, and as a reminder, these keywords were the same keywords used to find relevant references for the literature as a data source.

Of course, the total found matching number of news articles was different on each database as well as the types of the source itself. For example, ProQuest contains only trade journals, newspapers, magazines, and reports while MarketLine has a single source type that is the news. All scholarly types were excluded from the sources, which include books, scholarly journals, conference papers, conference proceedings, dissertations, and thesis types.

Regarding the quality appraisals for the found news articles, no quality appraisals of any type were used to drop any piece of work. The reasons behind this decision are simple and intuitive too as follows:

- Simply, to match the typical screening criteria used in this DBA thesis that aims to support the theory discovery mindset
- Due to the high quality of the chosen databases themselves, it is expected to found only high quality news that went through an acceptable level of the quality appraisals before being published and further appraisals may simply waste time and drop valuable articles

The following section is going to explain the details of the date of collection steps as well as the steps for filtering and exporting the found records within and from each data source.

**ProQuest:** this is the first database and online source that was used to search for news using the previously explained search criteria. For the first keywords option (i.e. “Platform Strategy”), a total of 49,427 articles were resulted from the search. However, to find the more relevant news to the thesis field of study, the search was refined using a filter to be limited to only English articles with full text, which are related to UBER Technologies Inc. in the United States-US.

This reduced the found number of articles to 174 articles only. The full information records of these found articles were exported using different file formats such as “RIS” and “XLS”. Figure 72 shows a screenshot of the result.

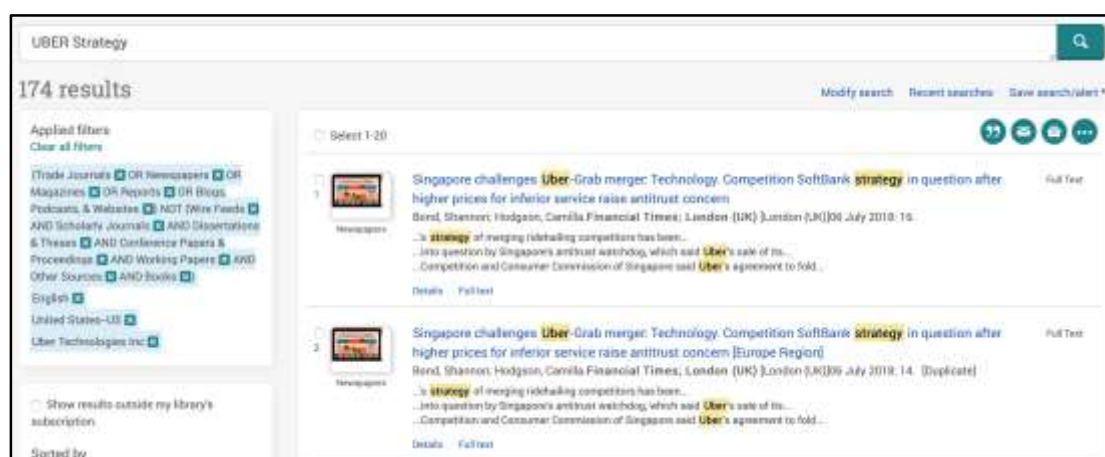


Figure 72: Search Results for “UBER Strategy” News on ProQuest

The search was completed for the other keywords following the same approach mentioned above and as a conclusion, and finally, these found search results can be summarized in the following tabular form ( Table 18):

| No | Keywords                    | Original Found Number | Final Filtered Number |
|----|-----------------------------|-----------------------|-----------------------|
| 1  | Platform Strategy           | 49,427                | 174                   |
| 2  | Platform Ecosystem          | 11,833                | 19                    |
| 3  | Platform Ecosystem Strategy | 9,240                 | 6                     |
| 4  | Platform Critical Mass      | 10,508                | 7                     |
| 5  | Platform Network Effect     | 30,642                | 42                    |

Table 18: The found Number of News Articles for All Keywords in “ProQuest”  
Online News Library

**MarketLine:** this is the second database and online source that was used to search for news using the previously explained search criteria. As a reminder, only “UBER” keyword was used because using multiple keywords increase the number of found article and includes less relevant contents due to the default “OR” operator. For the UBER keyword, a total of 3,036 articles were resulted from the search.

However, to find the more relevant news to the thesis field of study, the search was refined using a filter to be limited to only English articles with full text, which are related to UBER Technologies Inc. in the United States-US. This reduced the found number of articles to 498 articles only. The full information records of these found articles were exported using different file formats such as “PDF”. Figure 73 shows a screenshot of the result.

| Date        | Headline                                                                            | Category                  | Company                    | Geography     | Sentiment |
|-------------|-------------------------------------------------------------------------------------|---------------------------|----------------------------|---------------|-----------|
| 08 May 2021 | Uber and Arrival confirm deal to produce electric vehicles                          | Strategic Actions         | Uber Technologies Inc      | United States | Positive  |
| 06 May 2021 | Hefty \$600m fare for Uber's ride out of UK gig economy                             | Operations Update         | Uber Technologies Inc      | United States | Neutral   |
| 05 May 2021 | Uber Announces Results for First Quarter 2021                                       | Financial Announcements   | Uber Technologies Inc      | United States | Positive  |
| 04 May 2021 | Uber and Gopuff partner to bring everyday essentials to Uber Eats                   | Business Expansion        | Uber Technologies Inc      | United States | Positive  |
| 29 Apr 2021 | Uber, Wegmans partner to give people easy access to COVID-19 vaccines               | Sales, Marketing & Advert | Wegmans Co.                | United States | Positive  |
| 28 Apr 2021 | Uber tweaks app to further integrate food delivery with rides                       | Operations Update         | Uber Technologies Inc      | United States | Positive  |
| 28 Apr 2021 | Uber app launches car rental feature                                                | Sales, Marketing & Advert | Uber Technologies Inc      | United States | Positive  |
| 18 Apr 2021 | Uber expands its SeaB offerings to three agencies                                   | Contracts & Tenders       | Uber Technologies Inc      | United States | Positive  |
| 14 Apr 2021 | Marriott Bonvoy and Uber team up for first of its kind collaboration enabling me... | Business Expansion        | Marriott International Inc | United States | Positive  |
| 12 Apr 2021 | Uber Announces Date of First Quarter 2021 Results Conference Call                   | Financial Result Timings  | Uber Technologies Inc      | United States | Neutral   |
| 09 Apr 2021 | Uber Eats launches new Dine-in feature that allows diners to order in-person w...   | Sales, Marketing & Advert | Uber Technologies Inc      | United States | Positive  |
| 09 Apr 2021 | Uber Eats launches in-restaurant food ordering platform                             | Sales, Marketing & Advert | Uber Technologies Inc      | United States | Positive  |
| 08 Apr 2021 | Work for us on temporarily decent pay, says Uber amid driver shortage               | Operations Update         | Uber Technologies Inc      | United States | Positive  |
| 06 Apr 2021 | We simply can't afford this luxury lifestyle for our drivers - Uber                 | Operations Update         | Uber Technologies Inc      | United States | Neutral   |
| 30 Mar 2021 | Uber CDO announces expansion of digital carpool advertising network to New Ya...    | Business Expansion        | Adomni                     | United States | Positive  |
| 29 Mar 2021 | Uber opens new San Francisco Mission Bay headquarters                               | Operations Update         | Uber Technologies Inc      | United States | Positive  |
| 24 Mar 2021 | Uber Green: EV-only service goes live in London                                     | Operations Update         | Uber Technologies Inc      | United States | Neutral   |
| 25 Mar 2021 | Uber Eats and Hims announce launch of on-demand prescription delivery in C...       | Business Expansion        | Uber Technologies Inc      | United States | Positive  |
| 24 Mar 2021 | Uber expands prescription delivery business with ScriptDrop partnership             | Partnerships              | Uber Technologies Inc      | United States | Positive  |
| 23 Mar 2021 | Uber Tech appoint Alexander Wynaendts to Board                                      | Management Changes        | Uber Technologies Inc      | United States | Neutral   |
| 11 Mar 2021 | Leading ridehare companies launch industry sharing safety program in the U.S.       | Operations Update         | Lyft Inc.                  | United States | Positive  |

Figure 73: The found Number of News Articles for All Keywords in “MarketLine”  
Online News Library

Hence, the collected raw and unprocessed data records, in the form of news, that describe the company strategy from the two online news libraries ProQuest and MarketLine can be summarized in the following tabular form (Table 19):

| No                        | Online News Library | Number of News Articles                                                  | Publishing Start Date    | Publishing End Date | Media Coverage Time Span |
|---------------------------|---------------------|--------------------------------------------------------------------------|--------------------------|---------------------|--------------------------|
| 1                         | ProQuest            | 248                                                                      | November 22, 2014        | January 28, 2021    | 6+ Years                 |
| 2                         | MarketLine          | 498                                                                      | February 24, 2015        | May 8, 2021         | 6+ Years                 |
| <b>All Published News</b> |                     | <b>746</b>                                                               | <b>November 22, 2014</b> | <b>May 8, 2021</b>  | <b>6.5 Years</b>         |
| <b>Average News Rate</b>  |                     | <b>Approximate of 115 News Articles/Year (or 10 News Articles/Month)</b> |                          |                     |                          |

*Table 19: Summary of the Collected News Articles for UBER Technologies Inc. Case Study*

It is worth mentioning that the explained UBER media coverage above and its time span represent the most important period of time in the UBER lifetime in general and the most important period from the perspective of this DBA thesis. UBER Technologies Inc. was established in March 2009.

However, the real post-startup era or the UBER hypergrowth era can be considered from 2014 to 2021 according to Brickell (2019) (i.e. after around five years from its establishment as shown in Figure 74 in the next page). This makes that collected news about UBER represent the era that is free from the typical startup challenges, which matches this DBA scoping and critical business considerations that have been discussed in Chapter-3. This represents the maximum fit of purpose for the collected news as raw data for the UBER case study.

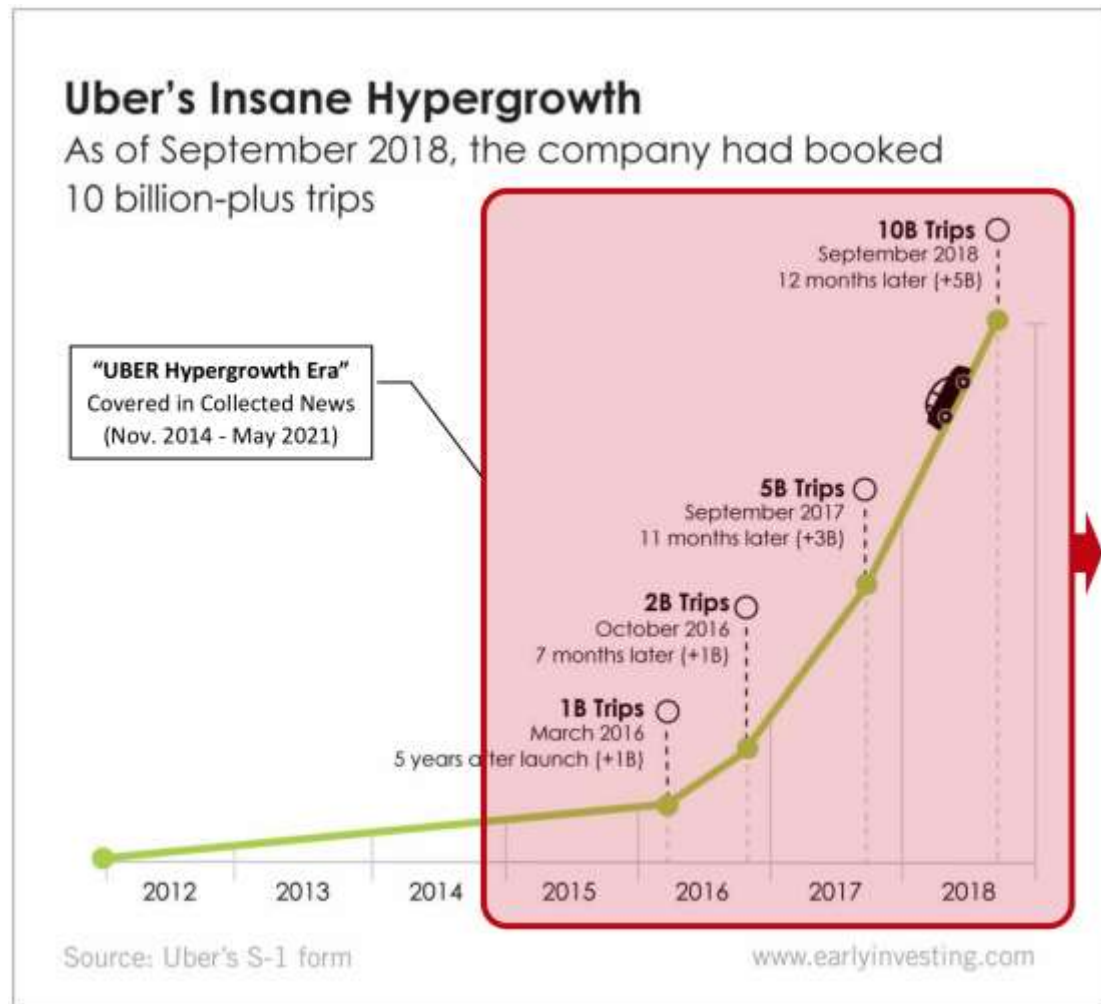


Figure 74: UBER Hypergrowth Era & Maximum Fit of Purpose of Collected News – Adapted from (Brickell, 2019)



## 9.11 Summary of the Used Datasets and Their Interrelationships

Many of the previous sections in this chapter has explained different aspects related to collected, prepared, and will be used datasets in this DBA thesis. Furthermore, some section in the literature review chapter did the same as well. Hence, it seems logical to try to summarize all this discussions and to highlight the Interrelationships and Interdependence between these dataset. Of course, this can provide more clarity.

The first dataset was the Web of Science dataset that enabled the VOSviewer to carryout three bibliometrics analysis techniques, which were citation analysis, co-citation analysis, and bibliographic coupling analysis (Waltman & Van Eck, 2014) in the literature review chapter. This dataset represents a considerable amount of the collected references from all online resources (i.e. 297 from the total 928 references). As mentioned before, it is impossible to include references from other online sources in these three types of analysis due to the technical limitation of the export function that does not provide the full list of the cited references. This dataset appears in Figure 75 as a subset from the whole dataset. Appendix-C contains the full description of this dataset. The whole dataset is the one that contains all exported search results that were imported into the Zotero single integrated database. This dataset includes 928 unduplicated references with details presented in Appendix-B. This dataset appears in Figure 75 as the largest outer dataset on the left. This dataset will enable the VOSviewer to carry out the co-authoring and keywords co-occurrence analysis (Waltman & Van Eck, 2014).

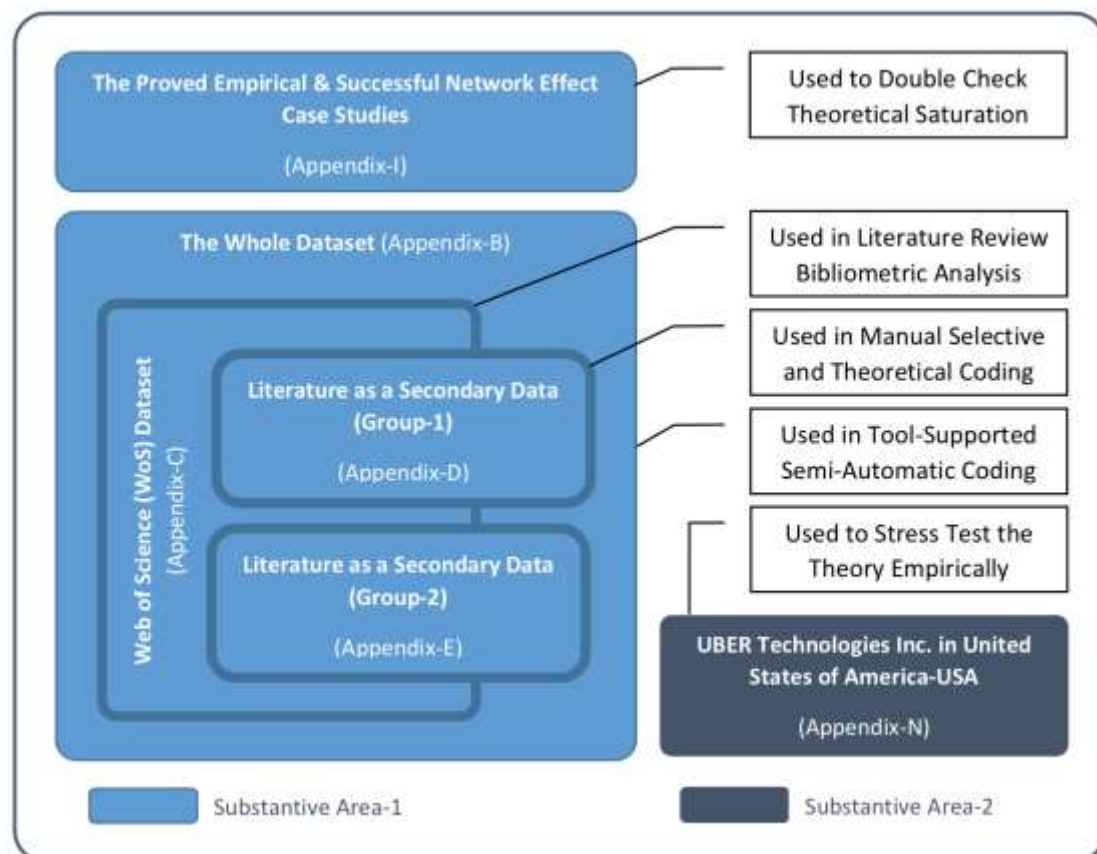


Figure 75: Summary of the Used Datasets and Their Interrelationships

However, some of the latent data analysis stages will deal with subsets of the data such as the selective and theoretical coding. These stages are going to use the Literature as a Secondary Data (Group-1) listed in Appendix-D and Literature as a Secondary Data (Group-2) listed in Appendix-E. Both datasets are mutually exclusive subsets from the whole dataset, but intersecting with Web of Science first subset listed in Appendix-C as appears in Figure 75.

The last dataset is the new case studies that were firstly mentioned in the Appendix A1 of the Garcia-Swartz & Garcia-Vicente (2015) paper as carefully selected successful cases of the researches conducted to examine success-assured platforms that achieved the network effects. This dataset appears in Figure 75 on the upper-left corner. Appendix-I contains the full description of this dataset.

After summarizing the different datasets and their interrelationships, it is worth highlighting one final critical aspect related to the collected datasets. Section 9.6 already explained how the nature of the discovered grounded theory may limit the ability to collect primary field data because of:

- Coverage: scale of the theory is huge. It covers 20+ business verticals and industry sectors.
- Sample size and limits: the theory is grounded on 60+ published cases. This represents 100% of the found literature up to 2020.
- Time dimension: the theory is grounded on 30+ years of documented knowledge. This represents 100% of the found literature up to 2020.
- Size: the theory conceptualized 120+ concept/elements linked to the network effect.
- Conceptualized Logic: the link between each concept/elements and the network effect was hypothetically tested/validated with a way or another. Hence, the theory is grounded on 120+ validated relationships.

As a summary, the discovered theory from the first substantive area that is related to the literature as a secondary data source covers 20+ industry sectors, 60+ real fields, 30+ years, and 120+ concepts. All of them had been logically tested/validated already. Hence, it is logical to assume that the collected field data related to the UBER case study will have a partial coverage of the discovered theory from the first substantive area that is related to the literature as a secondary data source. This will be explained in detail in the upcoming chapter with a detailed explanation of the coverage and intersection between both substantive areas (i.e. the first area related to the literature as secondary data and the second area related to UBER cases study).



## **9.12 Quality Criteria: Transparency, Reflexivity, Transferability and Integrity**

To ensure the quality of the conducted research and the produced knowledge, some quality criteria should be maintained while following the selected research methodology across the research journey. This includes, in the context of the qualitative research, the transparency, reflexivity, and integrity. In hard sciences, different researchers at different times are able to reproduce the same results if they repeated the experiment and/or approach. The reason is that they are trying to explore a natural law that, usually, is independent of the researcher itself. This is because the nature of the created knowledge is both objective and not contextual, which is related to the positivism paradigm. This means that truth exists outside the researcher who has a mission to discover and validate. The relation between the subject and the object is usually an independence. This is the concept of reliability of the hard science research fields.

However, on the other hand, in the qualitative research in the social, management and business sciences, the reliability is usually something that is very difficult to be obtained. The reason is that the repeatability of the data collection methods and data analysis methods, in general, is so difficult or we can say impossible. As an example, in the semi-structured interviews, as a qualitative data collection method, it is almost impossible for another researcher in another time to meet another interviewee, ask him/her the same questions, and expect to receive the same answers. Furthermore, even if another researcher obtained the scripts of the interviews and started to analyze their contents. Most probably, the new researcher is going to reach some slightly different results or provide some different insight and discussion.

Hence, instead of trying to achieve the reliability, it is better to focus on two other aspects, which are the transparency and reflexivity. According to Roller (2017), transparency is about the reporting phase of the qualitative research (i.e. after the data collection and analysis). He explained that transparency means how effectively the researcher is able to communicate how the introduced interpretations and insight were drawn from the collected and analyzed data. On the other hand, Palagans et. al. (2017) explained that reflexivity, or the learning process, means the ability of the researcher to discover how s/he shapes the process of the research and the obtained results as well as how the researcher herself/himself is being shaped during the project.

Palagans et. al. (2017), furthermore, explained that reflexivity is the process of introspection that discusses the emotions, behaviors, and actions of the researcher during the research process. He mentioned many types of reflexivity, which include the personal, epistemological, and critical reflexivity. All of these types explain how the researcher is able to and willing to disclose their personal experience during the research process and project. This experience, if disclosed, can explain how the researcher was shaped by and shaped the project.

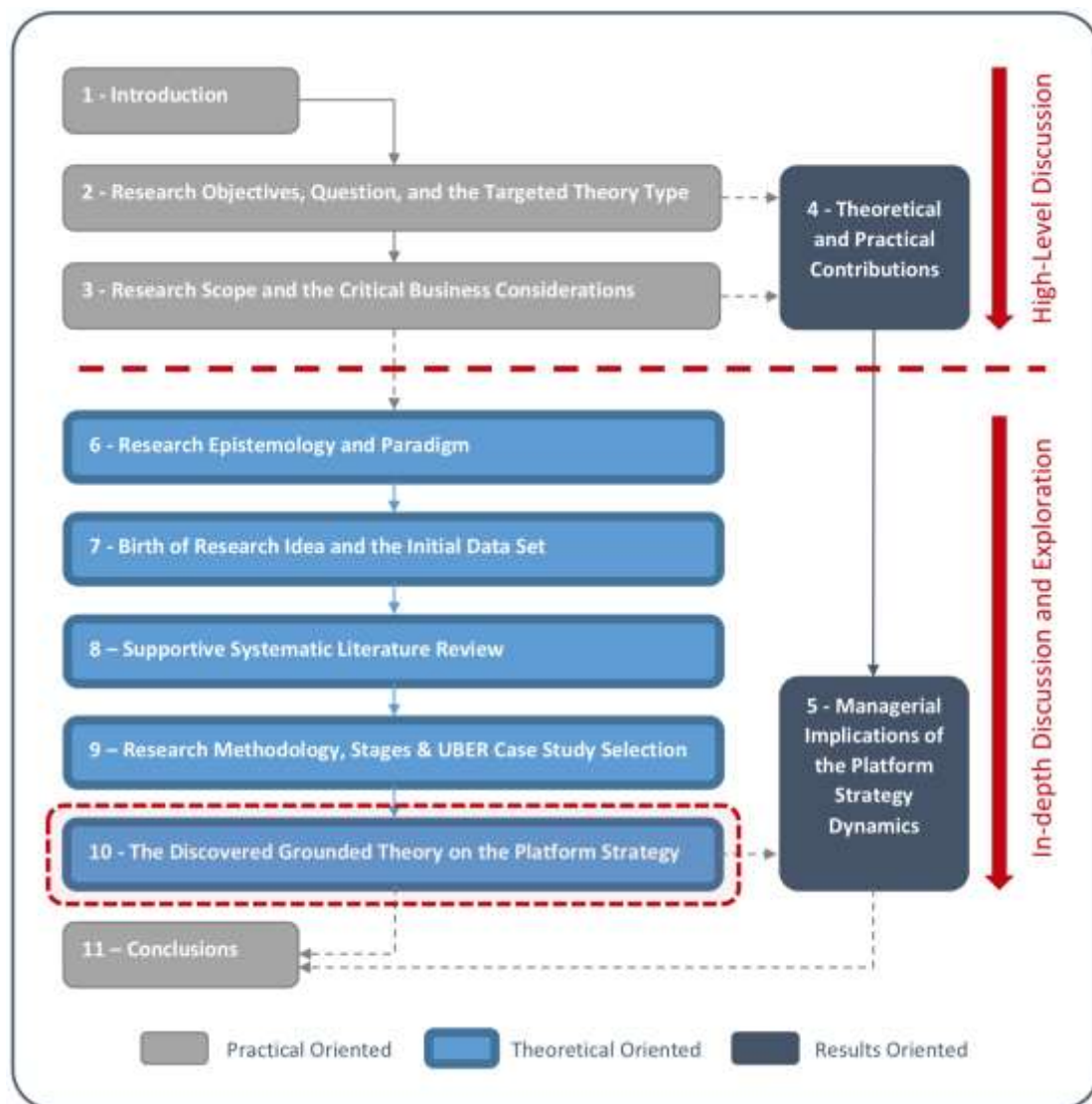
Roller (2017), furthermore, explained that adequate transparency enables the user of the research results to evaluate effectively the transferability of this study/research design to other contexts. The user is being able to assess his/her confidence in the research process as a whole and obtained insight as well.

To enable this, the researcher should provide what we can call a thick description, which is a complete accounting of all the assumptions, decisions, and considerations taken before, during and at the end of the research process. This usually indicates the researcher commitment to transparency by providing a full audit trail to the full process.

On the other hand, the National Academics Press, in its report about the integrity in the scientific research (The National Academies Press, 2017), explained that integrity is based on some of the foundational core values, which are objectivity, honesty, openness, accountability, fairness and stewardship.

## CHAPTER-10

### THE DISCOVERED GROUNDED THEORY ON THE PLATFORM STRATEGY DYNAMICS



## **10. THE DISCOVERED GROUNDED THEORY ON THE PLATFORM STRATEGY DYNAMICS**

This chapter is going to explain and discuss the “**Discovered Grounded Theory on the Platform Strategy Dynamics**”. The following subsections will present the major related aspects including the following:

- 10.1 The Open Coding and the Emerged Core Category**
- 10.2 The Original Conceptualized Outcome Theory**
- 10.3 Summarized Overview for the Digital Platform Strategy Dynamics**
- 10.4 Detailed Explanation of Each Element in the Digital Platform Strategy Dynamics**
- 10.5 The Partial Unsaturated Selective Coding**
- 10.6 User Experience and Customers Satisfaction Gaps in the Digital Services Platform 169**
- 10.7 Quality of Service Research Gap in the Digital Services Platform 173**
- 10.8 Workers and Front Line Employees-FLEs Research Gap in the Digital Services Platform 177**
- 10.9 Conceptualized Outcome of the Selective & Theoretical Coding for the Literature Substantive Area**
- 10.10 Software Tool Support for Semi-Automatic Selective and theoretical Coding**
- 10.11 Theoretical Saturation with the Empirical Case Studies**
- 10.12 The Conceptualized Outcome Theory from Literature as Secondary Data Substantive Area**
- 10.13 Conceptualized Outcome of the Selective & Theoretical Coding for UBER Case Study Substantive Area**
- 10.14 The Conceptualized Outcome Theory from UBER Case Study Substantive Area**
- 10.15 The Conceptualized Outcome General Theory from Both Substantive Areas**
- 10.16 Upgrading the Conceptualized Outcome General Theory with Users’ Behavior Model**
- 10.17 The Modeling Scope and the Bridge to System Dynamics**
- 10.18 The Discovered Grounded Theory, System Dynamics Archetypes and Selection Rationale**
- 10.19 Digital Platform’s Competition Dynamics: The Tragedy of the Commons Archetype**
- 10.20 Digital Platform’s Priorities Dynamics: The Attractiveness Principle Archetype**
- 10.21 Digital Platform’s Capital Planning Dynamics: The Growth and Underinvestment Archetype**
- 10.22 Digital Platform’s Problem Solving Dynamics: The Fixes that Fail Archetype**
- 10.23 Digital Platform’s Vision Focus Dynamics: The Eroding Goals Archetype**
- 10.24 Digital Platform’s Full Strategy Dynamics: The Co-existing Archetypes**
- 10.25 Positioning the Discovered Digital Platform Strategy Theory**
- 10.26 Retrospective on the Research Question, Contributions, and the Managerial Implications**

## 10.1 The Open Coding and the Emerged Core Category

As mentioned in the previous research methodology section about the stage of research journey and empirical time and data limitations, the shaped and integrated discovered theory in the first place is a thin theory. However, it was essential to go for the theoretical sorting even before the saturation and draw the theory conceptual diagram that includes relationships to validate just the suitability of the idea for being considered for a full research study. The upcoming sub-sections are going to present the initial obtained results and the current thin version of the discovered theory to show the validity of the idea as follow:

- The open coding stage and the emerged core category.
- The conceptualized theory outcome.
- Summarized overview for the digital platform strategy dynamics, or how it works.
- The currently partial unsaturated selective coding.
- The further selective and theoretical coding.
- The different approaches to check the theoretical saturation.
- The different steps for the theoretical sorting.
- The modeling scope and the bridge to system dynamics.
- Digital platform strategy's grounded theory and system dynamics archetypes.
- The rationale for selecting archetypes for the digital platform strategy dynamics.
- Description of each archetype and the collective system.

The topic of digital platform strategy started to emerge as a hot topic of research during the past seven years. The idea started to appear as an industry platform derived by the success of some giant information technology corporations such as Apple, Facebook, and Google. Then, the term “Digital Platform” started to dominate during the digital transformation wave emphasizing the critical role played by information technology in leading these industrial platforms.

The topic of digital platforms includes many areas for research such as the business models, role of disruptive technologies in the game, the transformation strategies, and the factors that affect the profitability. However, among all these topics, the topic of digital platforms strategy appears as one of the most critical topics because it contains the set of critical strategic decisions that need to be taken by the platform owner and/or creator. These decisions are going to make or break the whole business or the whole organization.

The real history contains many examples. Facebook was not the only known social media platform, but it became the largest and strongest one that seems to be impossible to compete with. Apple and Google mobile application platforms were not the only two players in the marketplace of mobile operating systems. Microsoft was a typical competitor, who failed to prove successful and the industry ended up consolidated into Apple and Google.

Hence, it seems logical that there are some strategic decisions that either fit with the challenge and create the required harmony and drive the success of the digital platform or break the whole story and fail to gain the required momentum ending up with a dramatic failure story.

These elements of the digital platform strategy is worth the investigation time, which was the main driver behind the theory landscaping review study, which was conducted during the fifth knowledge core doing literature review.

The study ended up by providing a bird-eye view for some of the critical elements of the strategy that includes both decisions and key performance indicators “KPIs”. Furthermore, the relationships between these elements and elements classification into categories were reached too as a part of the findings of the study.

## 10.2 The Original Conceptualized Outcome Theory

This section is going to present the result of the previously mentioned theory landscaping review study, which represents an overview of the first digital platform strategy. Figure 76 represents the strategic decisions that the digital platform owner and/or creator should take and the key performance indicators “KPIs” that measure if the taken decisions were successful or not.

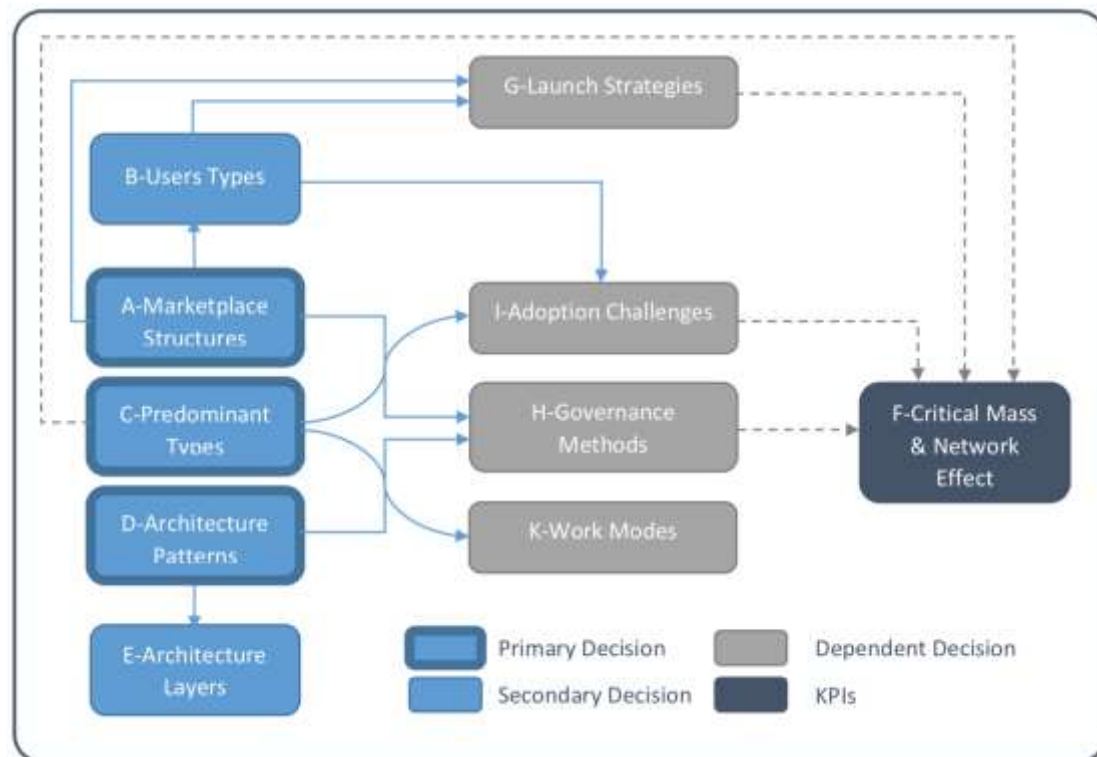


Figure 76: Strategic Decisions and KPIs of the Full Digital Platform Strategy

As seen in Figure 76, three different types of decisions exist and the three categories appear in different colors. The first category represents the primary decisions. These are the decisions that are usually be taken at the early stages of digital platform strategy formulation. Once taken, it is almost impossible to change or the cost of change is going to be significant. Furthermore, these decisions are going to create a chain reaction and affect the subsequent decisions. As an example, selecting the digital platform marketplace structure is one of the major decisions and is going to affect the users’ types and governance methods decisions, which are from the second and third categories.

The second category includes what can be named secondary decisions. These decisions come later on after taking the primary decisions. However, they are not tightly coupled or largely influenced by the primary decisions. Just come after the first category on the time dimension.

As an example, determining the platform architecture layers is going to follow selecting the architecture pattern decision from the first category, but is not going to be tightly coupled with this pattern. The platform designers still have the freedom to use certain set of layers whatever the previously selected architecture pattern.

The third category contains the dependent decisions. Although they are somehow similar to the secondary decisions and come after the primary decisions on the time dimension, they are tightly coupled with the primary decisions and have a lower degree of freedom. As an example, the selection of certain launching strategies is going to follow the determined marketplace structure and the users' type decisions from the first and second categories. However, in contrast to the secondary decisions, the digital platform owner and/or creator doesn't have the same degree of freedom when the first and second categories of decisions were taken, but tightly coupled to all these decisions and is somehow forced to accept certain linked decisions. There are certain launching strategies that should be used when specific marketplace structures are chosen.

The last element of the digital platform strategy is the key performance indicators "KPIs". There are only two KPIs, one can be considered as a qualitative-KPI and the other is a quantitative-KPI. Reaching the critical mass milestone is the qualitative KPI that happens once in the digital platform lifetime, while achieving the desired network effect is the quantitative indicators that can be continuously measured against the time to understand the performance of the digital platform.



### **10.3 Summarized Overview for the Digital Platform Strategy Dynamics (How It Works)**

The ultimate goal for any digital platform owner and/or creator is to reach the critical mass milestone (Edelman (2015) and Morvan, Hintermann, & Vazirani (2016)) by acquiring the required number of platform users. There is no clear definition of how many users are going to achieve this critical mass and it is logical to assume that it is a different number from a platform to another and may be different ranges from type to type. However, this may be considered one of the most confidential information that no owner is willing to reveal. Hence, it is better to understand the critical mass as a qualitative KPI, which represents a tipping point that indicates that the launching strategies of the digital platform were successful and the platform was able to take-off already. After this tipping point, the network effect (Aalst, Hinz, & Weinhardt, 2019) starts to appear and the number of users is going to increase with time, may be exponentially.

Reaching this milestone, and achieving the network effect doesn't represent only the success of the digital platform, but represents also an entry barrier against new entrance that want to compete in the same market. The previously mentioned success indicators need careful preparation that includes taking a sequence of decisions that should achieve the desired harmony and fit together. Failure to match prior decisions with successor ones threaten the overall digital platform strategy. These KPIs are directly affected by the selected governance modes (Parker & Alstyne, 2014); success of launching strategies (Parker & Alstyne, 2014) and overcoming the adoption challenges (Edelman, 2015). These three are linked to previous decisions as follows:

- Briefly, first, the platform is going to face some adoption challenges that result from both chosen platform predominant types (Hsieh & Wu, 2019) and the type of users (Edelman, 2015) that should be acquired.
- Second, the selected governance methods should match the determined marketplace structure (Ghazawneh & Henfridsson, 2015) and the selected architecture pattern (Kazan, Tan, & Lim, 2014).
- Third, the expected work dimensions and modes (Mäntymäki, Baiyere, & Islam, 2019) are going to follow the selected platform predominant type.
- Forth, the launch strategies are affected by the marketplace structure and users' types.

However, some factors that may affect the ability to achieve the network effect is somehow embedded into the earlier layer of decisions, specifically, the marketplace structure.

## 10.4 Detailed Explanation of Each Element in the Digital Platform Strategy Dynamics

The following subsections are going to explain each of the elements that summarized before including the logical relationship that appear between the strategy elements using the same logical order used above.

**Concept-A (Digital Platforms Marketplace Structures):** Ghazawneh and Henfridsson (2015) provided a comprehensive definition and explanation of what a digital platform marketplace is. They explained that any marketplace should play three major roles, which are: matching supply and demand, facilitating value transaction and providing the institutional infrastructure including the legal and regulatory aspects. Although they focused on digital platforms that are specialized in mobile applications, the discussed logic can be applied to other digital platforms.

However, Ghazawneh and Henfridsson (2015) major contribution was introducing a typology for classifying the marketplaces based on two criteria, which are the type of control and the functionality scope. Based on these two criteria, they mentioned four types of marketplaces, which are:

- Type-A (Closed Marketplace): which is controlled by a single player and focus on a specialized scope of functionality.
  - Saxo bank platform is an example of this type.
- Type-B (Censored Marketplace): which is controlled by a single player and support the generalized scope of functionality.
  - Apple App Store platform is an example of this type.
- Type-C (Focused Marketplace): which has a distributed control across multi-players and focus on a specialized scope of functionality.
  - AppChaina platform is an example of this type.
- Type-D (Open Marketplace): which has a distributed control across multi-players and support the generalized scope of functionality.
  - AppsLib platform is an example of this type.

Gawer and Cusumano (2014) mentioned two marketplace structures, which are the double-sided and multi-sided marketplaces.

UBER can be considered as a basic double-sided marketplace that facilitates the interaction between the supply/drivers and the demand/passengers. However, Facebook is an example of the multi-sided marketplace because it provides different services to different segments making multi-markets. Facebook provides social interaction pages, social interaction groups, games, and advertising.

There is a third type of marketplaces that may be not so common and even was not mentioned explicitly by name in Gawer and Cusumano (2014) , which is the single-sided marketplace. Facebook started in its early days as a single-sided marketplace because the platform only facilitated the interaction between similar users or friends. Later on, it had been evolved into the multi-sided marketplace mentioned above.

**Concept-B (Digital Platforms Users Types):** Edelman (2015) mentioned, at the beginning of the article, the most primitive basic types the users of digital platforms, which are the buyers and sellers. Later on, in the same article, he explained a more semantic valuable user type, which is the Marquee Users. These users are usually paid to going the platform and being attracted to do with any type of attractive incentives.

Different studies used different topologies to classify users who use the different types of platforms or simply mentioned different logical types of users. Ghazawneh and Henfridsson (2015) mentioned major three types, which are the highly selective, agnostic, and specific functionality seekers. Agnostic means no difference, while the highly selective means that they are being chosen by the platform owner based on explicit criteria. Functionality seekers are usually for the same technical domain.

**Concept-C (Digital Platforms Predominant Types):** Logical wise, the primitive question that appears at the beginning of understanding the topic of the digital platform, is what are the possible types of these platforms. It is logical to assume that not all digital platforms are equal and that we can find some classifications to classify the existing platforms into some useful categories. Hsieh and Wu (2019) provided a good insight into this domain. This study referenced the simplest type of classification, which is the internal platforms and external platforms. Internal platforms can be dedicated to a single product, a family of products, a single company, or a single supply chain (Gawer & Cusumano, 2014). However, the external is usually an industry-based platform. Gawer and Cusumano (2014) provided a comprehensive discussion and explanation of the nature and characteristics of these two categories.

However, Hsieh & Wu (2019) referenced a more useful classification based on the overall functionality, which includes the innovation platforms, transaction platforms, and the integration platforms. The main purpose of the first two is somehow evident. The first facilitates innovation and the second is more trade-oriented. The third type, which is the integrated platform, provides the right mix of both product innovation and trading these products. Apple iOS is an example for innovation platforms because it enables developers worldwide to develop their mobile applications using the provided programming tools. Amazon, on the other hand, is a clear example of translation/trading platforms. Finally, the Apple App Store is an example of the integration type. It is building on the Apple iOS platform that provided the innovation part and adds the trading marketplace with some quality ratings and reviews.

Aalst et. al. (2019) provided a more similar classification, which includes only two types. The transaction platforms, such as UBER and the technology platforms such as Google. Another simple classification was mentioned by Parker and Alstyne (2014), which included only the product platforms and network platforms. It is easy to discover that they are just using different titles to the previously mentioned internal and external types.

However, Hsieh & Wu (2019) main contribution was to provide a new topology for classifying the platforms from the entrepreneurship point of view. The topology classifies platforms based on two dimensions, which are supporting the build of new innovative products or services and the support that the platform provides in the direction of the commercialization. The four categories include:

- Type-1 (Mavens): which provides high innovation support and low commercialization support.
  - Examples included Apple and Google App Stores.
- Type-2 (Enthusiasts): which provides low innovation support and low commercialization support.
  - Examples included UBER and Airbnb.
  - This category includes three subcategories, which are incubators, open innovation labs, and on-demand platforms.
- Type-3 (Technical Needs): which provides low innovation support and high commercialization support.
  - Examples included Bosch IoT Platform.
- Type-4 (Intrapreneurs): which provides high innovation support and high commercialization support.
  - Examples included Google and P&G.

It is worth noting that only type-4 can be classified as an internal platform, while the other three types are usually external platforms. Kenney and Zysman (2015) explained the additional types of platforms. Some of them represent additional valuable types, which are the platforms for platforms and work mediating platforms. Platforms for platforms are the platforms that provide the technical infrastructure to build other business-oriented platforms. Amazon Web Services (AWS) is a clear example of this category as any digital platform owner can rent this on-demand cloud service to build a new platform from the above types. On the other hand, Work-mediating platforms provide an environment for the new gig-economy.

**Concept-D (Digital Platforms Architecture Patterns):** There are two main and common architecture patterns for digital platforms. Kazan et. al. (2014) discussed centralized digital platforms and decentralized digital platforms. The centralized platforms usually have tightly coupled layers and hence provide platform owner with a high degree of monopolistic power as well as securing the intellectual properties for the owner, as it is difficult to be replicated. Jacobides et. al. (2019) used the term “Closed Architecture” to describe the architecture that does not allow third parties to participate. It is easy to notice the commonalities between the two terms, which are centralized and closed architectures.

However, on the other side, the decentralized architecture depends on decoupled layers with an open specification to facilitate the innovation above these platforms. Jacobides et. al. (2019) used the term “Open Architecture” to describe the architecture that allows third parties to participate and add value to the value system of the digital platform. It is easy to notice the commonalities between the two terms, which are decentralized and open architectures.

**Concept-E (Digital Platforms Architecture Layers):** Kazan et. al. (2014) explained the typical expected architecture layers in any digital platforms, which include: devices, operating systems or systems in general, communication network, digital services, and relevant content.

This study was focusing on the financial sector and the payment digital platforms specifically. Hence, they used two case studies, the first was PayPal as an example for the centralized architecture pattern, while used Coinkite as an example for the decentralized architecture pattern. In addition, Resca et. al. (2013) cited almost a similar list of architecture layers, which include devices, networks, services, and content. In this context, and in comparison to the architecture layers explained by (Kazan, Tan, & Lim, 2014), the only missed layer in Resca et. al. (2013) mentioned architecture layers is the operating system layer.

Although it is beyond the scope of this TLR to investigate the importance of the operating system layer and how it affects the overall success of certain digital platforms, it is fair to assume that it is not just important but also can be considered one of the most critical layers. Apple iOS and Google Android were the key players of the unprocessed success of Apple and Google digital platforms, especially, if compared with other less successful platforms such as Microsoft and its Windows Mobile operating system that was not able to gain any significant market share and ended up as a major failure story.

**Concepts-F & J (Digital Platforms Critical Mass & Network Effect):** Edelman (2015) mentioned a major success factor that determines the overall success of any digital platform, which is attracting users' mass sign-up. This is what can be called the critical mass. Morvan et. al. (2016) explained in detail how to reach the critical mass milestone through excel in five strategies, which include differentiated value proposition, service personalization, dynamic responsive process, effective cyber security and partner scalability. On the other hand, Aalst et. al. (2019) mentioned the network effect as a major performance indicator that measures how the platform is performing and mentioned that when it is achieved, it can make the digital platform difficult to be replicated. Gawer and Cusumano (2014) explained two types of the network effect, which are the direct, or the same-side network effect and the indirect or the cross-side network effect.

Facebook is a clear example of the direct/same-side effect, which happens when further users join the platform to follow their friends who did earlier. On the other hand, advertisers pay for Google Adds because there are more and more users who use Google search engine. Finally, many other studies use the critical mass and the network effect as a de-facto standard for measuring the platform performs even with providing detailed explanation such as Jacobides et. al. (2019) and Parker and Alstynne (2014) and others.

**Concept-G (Digital Platforms Launch Strategies):** Parker and Alstynne (2014) explained that the owner of the digital platforms usually follows some launching strategies to enable them to succeed as digital platforms. These launching strategies can include subsidy, seeding, micro-market start, and piggybacking. According to Parker and Alstynne (2014), subsidy means using temporary penetration prices, permanent discounts and even direct cash transfers. Seeding means offering one side of the double-sided or multi-sided marketplaces with stand-alone value to attract them. Micro-market start means to test the idea first, gain momentum on the narrow niche, and then replicate the success to wider markets. Finally, piggybacking means use another successful platform as an initial carrier and to use its already developed customers' base. Edelman (2015) provided a concise list of launching strategies that can be used by the digital platforms owner and/or creator as a comprehensive checklist for strategy formulation.

**Concept-H (Digital Platforms Governance Methods):** The concept of digital platforms governance is somehow a complex topic. The below lines list some of the most important aspects related to governance, which are governance model, regulations, modes, decisions, and policies.

Parker and Alstytne (2014) explained that a digital platform governance model should include rules and policies for at least three aspects, which are participation, interaction, and conflict resolution. The article cited some references that discussed the typical tradeoff and tension between the required loss of control to encourage participation and adoption and the more tightly control required to ensure appropriation of this participation and adoption. Jacobides et. al. (2019) adds additional aspects that should be governed too, such as how participants create and divide value as well as how to balance the interests.

According to Parker and Alstytne (2014), the digital platform governance model should be able to provide sufficient regulations to prevent the typical market failures. Externalities and Information asymmetry are two common reasons for market failures on digital platforms. Insider trading and private ordering are examples of externalities on financial intermediates platforms and ride-sharing ones. While counterfeit goods represent the typical lemons problem on trading platforms. Penalties, arbitration, and even temporary and permanent exclusion can be used as counteractions and polices to fight these reasons for market failures.

Kazan et. al. (2014) explained there typical governance modes or regimes for the digital platforms, which are centralized, decentralized and hybrid. This classification is based on how the governing decisions are being taken and where the power is allocated. This means that when the power to take the decision is centralized, it is called a fixed platform according to Kazan et. al. (2014) while when the rights to take these decisions is somehow distributed, it is called an agnostic platform. Kazan et. al. (2014) did not provide a comprehensive explanation of the nature of the hybrid governance regime. However, we can simply assume a somehow balanced regime between the centralized and the decentralized with somehow balanced power and control.

Jacobides et. al. (2019) provided a detailed explanation of the governance decisions and choices. These choices include, defining neutrality and independence, assessing the scope of compliance oversight, chooses the level of transparency, minimize the algorithmic bias, set the data property rights and create the due process. The first three are needed to attract users to the platform, while the later three are needed to retain these users thought fair game rules.

Many studies, such as (Gawer & Cusumano, 2014), discussed different policies for governance in the digital platforms. As an example, is the policy decision related to the acceptable homing. There is the single-homing policy, which prevents the platform members from switching freely between different competing platforms. On the other hand, multi-homing policy allow this switching without notable penalties.

**Concept-I (Digital Platforms Adoption Challenges):** Edelman (2015) discussed some of the common adoption challenges related to digital platforms strategies, which include offering stand-alone value, attracting marquee users, reaching the critical mass, reducing users' risks and ensuring the compatibility with legacy systems.

Form these five challenges, only stand-alone value and marquee users need more clarifications. Others seem logical and intuitive. Marquee users are those who are usually paid to going the platform and being attracted to do with any type of attractive incentives. Stand-alone value means the ability to provide value for a single-sided network without needing a different side to join. As an example, Skype and Facebook platforms can still be useful with a single type of users such as chatters and social networkers.

Some of these challenges appear logically to come in sequence after another. As an example, if the platform owner was able to ensure compatibility with legacy systems, reducing the risks and providing standalone value, this platform can attract marquee users faster and achieve the required critical mass sing-up.

Hsieh & Wu (2019) added some additional challenges, which include management process coordination, knowledge control/spillover, capturing value, validated business models, conflicting priorities, unbalanced power, and influence. To some extent, most of them appear typical business challenges, however, of course, should be investigated within the context of special platforms.

**Concept-K (Digital Platforms Work Dimensions and Modes):** Digital platforms were able to impact and somehow alert the nature of work and introduced some new modes. Mantymaki et. al. (2019) discussed and explained two major work dimensions that were built on and extend previously introduced dimensions, which are temporal and administrative. Mantymaki et. al. (2019) introduced the digital temporal and algorithmic administration as the two key dimensions of work in the digital platform.

According to Mantymaki et. al. (2019), digital temporal work dimension means that the work is usually a micro work with very short engagement time and high volatility in demand. This dimension is usually related to three work mechanisms, which are self-employment, time management, and income controllability. On the other hand, the algorithmic administration work dimension means that some sophisticated computer algorithms that work behind the sense to allocate work, match the demand with the supply, determine prices, and rate the delivered service. This dimension is usually related to three work mechanisms, typically automated computerized mechanisms, which are information control, dynamic pricing, and quality of service rating (Mäntymäki, Baiyere, & Islam, 2019).

Kenney and Zysman (2015) explained in detail many different versions of work modes, which given the name of mediated work, which include biddable work, occasional informal work, online software making tools, professional services, finance intermediaries and social-political organizations. Upwork is an example for the biddable work. Task rabbit is an example of occasional informal work, while GitHub is an example for the online software making tools. Furthermore, UBER is from the professional services category, while Indiegogo is a finance intermediary platform and finally, Facebook usually fits within the last social-political organizations type.

Whatever the type of the mediated work, Kenney and Zysman (2015) mentioned an additional important aspect, which the digital platform impact in general on the typical organizational forms of work, or what can be called the packaged work in which the employee secure a long-term fixed-income relation with the organization.

Digital platforms transform these employees into contractors, and these contracts can be named as mini-entrepreneurs. These contractors are competing to either become a platform big-winner or just an average producer/contributor. Kenney and Zysman (2015) indicated that there are usually very few big-winners with a very long tail of average producers. This somehow following the winner-takes-all phenomena. This results in some mediated work-related issues, such as instability and vulnerability to demand fluctuations.

**Relationship A to B (Factors That Determine The Users Types):** Ghazawneh and Henfridsson (2015) mentioned that the Type-A Closed Marketplace usually has highly selective users, while Type-B Censored Marketplace and Type-D Open Marketplace are usually agnostic to any user type. This seems logical because the closed marketplace is the most tightly control marketplace, while the censored and open marketplaces have generalized functionality by design. Finally, Type-C Focused Marketplace usually has the users who seek some specific functionality. This also seems logical because the functionality is specialized around certain domain while the control is distributed. Parker and Alstyne (2014) mentioned that their marquee users usually appear in the double-sided or multi-sided marketplaces. Hence, the types of the **Marketplace Structure** directly affecting the types of users.

**Relationships C to I & B to I (Factors Affecting The Adoption Challenges):** Hsieh & Wu (2019) provided clear examples of the impact of entrepreneur platform types on the expected challenges that are related to each type. As an example, Type-1 (Mavens) platforms can suffer from the unbalanced power and influence due to the ability of the main player to change the rules of the game, while Type-4 (Intrapreneurs) usually face the challenge of conflicting priorities that may affect the distribution of budget and support. Edelman (2015) explained that the marquee users' type and their acquisition process are usually representing a challenge to any new digital platform as they usually add a burden to the required budget and time to reach the desired success.

**Relationships A to H & D to H (Factors That Enforce Certain Governance Method):** Kazan et. al. (2014) discussed the centralized and decentralized control and governance approaches as two of the three common control approaches in the digital platform. These governing decisions and policies are affecting the marketplace structure. As explained by Ghazawneh and Henfridsson (2015), the centralized governance/control approach usually appears and used in Type-A Closed Marketplace and Type-B Censored Marketplace, while the decentralized governance/control approach usually appears and used in Type-C Focused Marketplace and Type-D Open Marketplace. The agnostic governance regime is usually related to the decentralized architecture pattern, while the fixed governance regime is usually related to the centralized architecture pattern as indicated by Kazan et. al. (2014).

**Relationships A to G & B to G (Factors Affecting The Launching Strategies Choice):** Edelman (2015) explained that the marquee users' type and their acquisition process usually appear as part of the typical digital platform launching strategies to accelerate the platform's success. Furthermore, Parker and Alstyne (2014) mentioned that marquee users usually are the target segment of the typical seeding launching strategy. According to Parker and Alstyne (2014), seeding launching strategy means offering one side of the double-sided or multi-sided **Marketplaces Structures** with stand-alone value to attract them.



**Relationship C to K (Factors Affecting The Work Dimensions and Modes):** Kenney and Zysman (2015) mentioned work mediating platform types can provide and is usually related to specific versions of mediated work, which include biddable work, occasional informal work, online software making tools, professional services, finance intermediaries and social-political organizations.

**Relationships C, G, H, I to F (Factors That Accelerate Achieving The Network Effect):** Gawer and Cusumano (2014) mentioned that the direct/same-sided network effect appears in the single-sided platforms, while the indirect/cross-sided network effect usually appears in the double-sided and multi-sided marketplaces structures. This relation is so primitive and needs no further explanation, but it is worth to be mentioned explicitly to link the categories within each concept together. However, Jacobides et. al. (2019) indicated that achieving the indirect/cross-sided network effect in the double-sided marketplace is much easier than achieving it in the multi-sided marketplace due to the additional complexity added by each added side.

Gawer and Cusumano (2014) indicated the link between the homing governing policy and the expected type of network effect. The direct/same-sided effect can be usually reinforced by a single homing governance policy. This can happen when Microsoft Windows applications required the other user to have the same application to be able to receive what had been created using certain formats.

Edelman (2015) explained that the process of acquiring the marquee users represents one of the major adoption challenge to adopting the digital platform strategy and may prevent or delay the ability to achieve the required critical mass success factor. Parker and Alstyne (2014) explained that the previously mentioned launching strategies, which include subsidy, seeding, micro-market start, and Piggybacking is used to achieve the required key performance indicator, which is the network effect.

Edelman (2015) explained how reaching the critical mass is a major milestone on the road for achieving the network effect. Using more accurate terminologies, the critical mass success factor is required to induce the key performance indicator network effect. The same relation was discussed similarly by Parker and Alstyne (2014).

## 10.5 The Partial Unsaturated Selective Coding

As mentioned in the research methodology section, later on, and during the study of the remaining knowledge cores and elective courses in the DBA program, the discovered core category of the theory were stress-tested from many different perspectives in the selective coding stage to find more logical concepts and relationships that haven't appeared yet due to the limited number of used references in the initial data set. So far, the selective coding is partially conducted and no theoretical saturation was reached. Just some indicators that more secondary and primary data is needed and that some other method for data collection such as case studies can help in this area.

The first example of these unsaturation gaps was discovered when a single incident was found in Shipp & Phillips (2013) that highlighted the possible relationship between the users of the digital service platform and the core category or the success KPIs of the platform. In a double-sided platform such as UBER, for example, both users' and workers' satisfaction have a critical role in this KPI and the network effect, which appear as "Gap (1)" and "Gap (2)" in Figure 77. According to Holton & Walsh (2016), even single incidents in the data should be considered and taken into account and not ignored as these single incidents may prove to be a critical concept later on that affects the richness of the discovered theory. However, it should be clarified that the Shipp & Phillips (2013) model related incident was not found as part of UBER case data and that the usage of UBER users and workers example here is used as a logical candidate example only. Hence, although these previously mentioned gaps seem logical to exist in UBER platform from the purely logical point of view, they may or may not appear as explicit elements within the substantive classical grounded theory that will be discovered from UBER case collected data. The existence or the absence of any element depends only on the raw collected data.

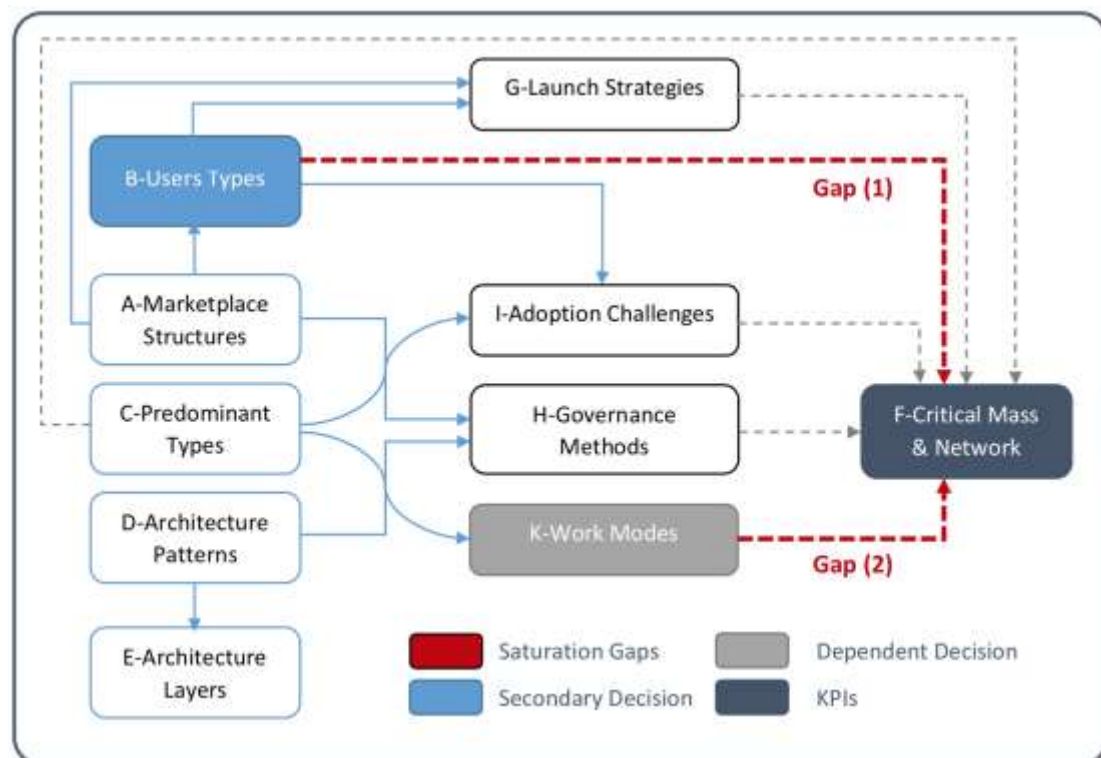


Figure 77: The Possible Saturation Gaps Due to Users' Satisfaction (Red Colored)

The second example of this unsaturation gaps was discovered when many incidents were found in Lovelock & Wirtz (2011) while explaining the servuction model and the service specificities of the services economy and business models. As an example, the user experience as well as customers' satisfactions are going to increase the chance of achieving the required targets of the KPIs, which appear as "Gap (A)" in Figure 78. Furthermore, the Quality of Service as a major concept of the service specificities is going to affect how the users or customers are going to remain in the platform after their original acquisition, or are going to switch to one of the competitors that provide the same services but with better quality. This second gap appears as "Gap (B)" in Figure 78. The same negative effect can happen due to the platform workers or the front line employees "FLE" in some types of the digital platforms and their sabotage behavior, which may reduce customers' trust in the digital platform services. This last gap appears as "Gap (C)" in Figure 78.

Again and as previously mentioned in relation to the first found incident in the previous page, although these previously mentioned user experience, customers' satisfaction, quality of service, and sabotage behavior gaps seem logical to exist in the UBER platform from the purely logical point of view, they may or may not appear as explicit elements within the substantive classical grounded theory that will be discovered from UBER case study collected data. The existence or the absence of any element depends only on the raw collected data from the ground.

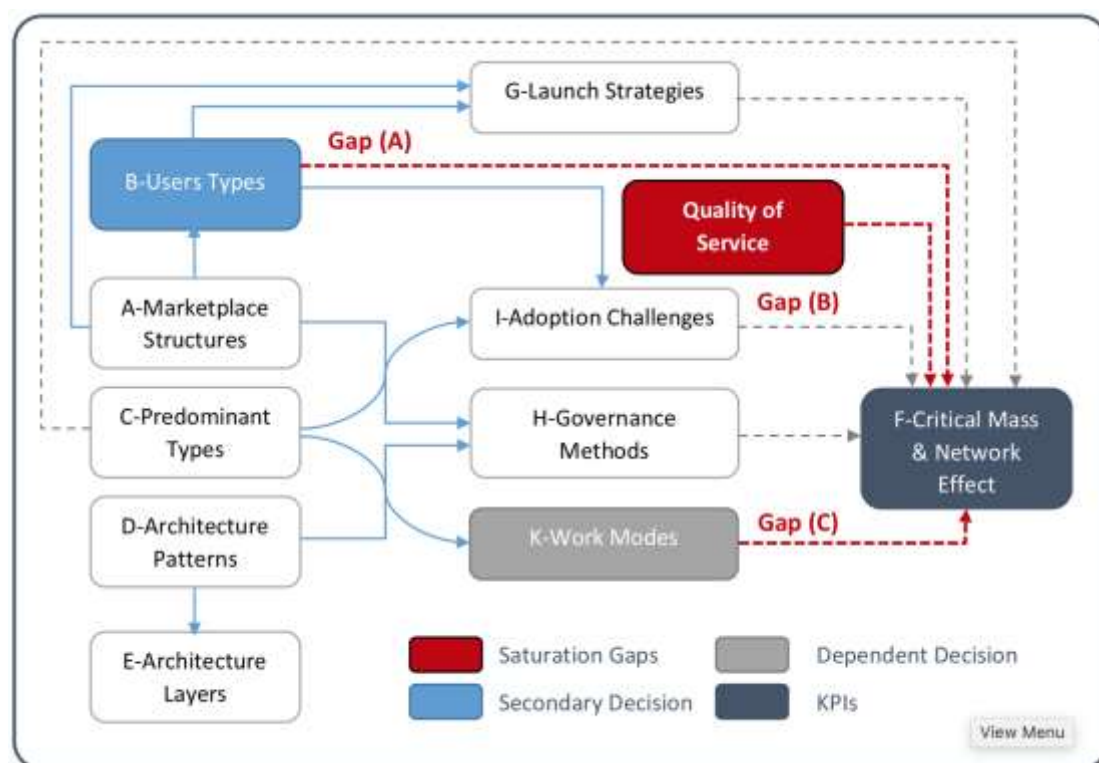


Figure 78: The Possible Saturation Gaps Due to Service Specialties (Red Colored)

Hence, more primary and secondary data, following the all is data philosophy, is required to be collected through different methods to validate these incidents and check the soundness of these concepts and relationships.

However, before going further in collecting more data, analyzing this data, and enriching the theory, it is worth taking these service-related gaps more seriously and giving them more explanation to clarify the added value of including them into the final theory. This explication will provide two benefits. First, it will help emphasize the service-oriented focus in this DBA thesis within the field of digital platforms. Second, it is going to help get a sense of the level of complexity that exists behind each element and relationship in the final discovered classical grounded theory. This opportunity may become something that is almost impossible to be done for the remaining of the discovered elements because there may be more than one hundred of elements. Of course, it is beyond the practical limits.

## 10.6 User Experience and Customers Satisfaction Gaps in the Digital Services Platform

Being able to design and manage user experiences is critical to any service firm. However, for digital service platforms that usually have double or multiple sided market (Gawer & Cusumano, Industry platforms and ecosystem innovation, 2014), the challenge is doubled or multiplied. For each side of the market, the platform owner should be able to design a detailed experience journey, though using the concept of service blueprinting (Lovelock & Wirtz, 2011).

However, being able to redesign the blueprinted user experience is more important. Usually, the first version of the designed service or the as-is plotted journey is not the most perfect one. Therefore, being able to redesign this blueprint will help the decision-makers to improve the added value to the customer. Lovelock & Wirtz (2011) explained five types of service redesign as indicated in Figure 79. Of course, eliminating non-value added steps is intuitive, while focusing on self-services seems to be more important especially to the context of the digital service platform, which is the focus of this report.

| TABLE 8.1 Five Types of Service Redesign                                 |                                                                                                                                                                                       |                                                                                                                                                                                                                  |                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APPROACH AND CONCEPT                                                     | POTENTIAL COMPANY BENEFITS                                                                                                                                                            | POTENTIAL CUSTOMER BENEFITS                                                                                                                                                                                      | CHALLENGES/LIMITATIONS                                                                                                                                                                                           |
| Elimination of non value-added steps (streamlines process)               | <ul style="list-style-type: none"> <li>Improves efficiency</li> <li>Increases productivity</li> <li>Increases ability to customize service</li> <li>Differentiates company</li> </ul> | <ul style="list-style-type: none"> <li>Improves efficiency, speed</li> <li>Shifts tasks from customer to service firm</li> <li>Separates service activation from delivery</li> <li>Customizes service</li> </ul> | <ul style="list-style-type: none"> <li>Requires customer education and employee training to implement smoothly and effectively</li> </ul>                                                                        |
| Self-service (customer assumes role of producer)                         | <ul style="list-style-type: none"> <li>Lowers cost</li> <li>Improves productivity</li> <li>Enhances technology reputation</li> <li>Differentiates company</li> </ul>                  | <ul style="list-style-type: none"> <li>Increases speed of service</li> <li>Improves access</li> <li>Saves money</li> <li>Increases perception of control</li> </ul>                                              | <ul style="list-style-type: none"> <li>Must prepare customers for the role</li> <li>Limits face-to-face interaction and opportunities to build relationships</li> <li>Harder to get customer feedback</li> </ul> |
| Direct service (service delivered to the customer's location)            | <ul style="list-style-type: none"> <li>Eliminates store location limitations</li> <li>Expands customer base</li> <li>Differentiates company</li> </ul>                                | <ul style="list-style-type: none"> <li>Increases convenience</li> <li>Improves access</li> </ul>                                                                                                                 | <ul style="list-style-type: none"> <li>Imposes logistical burdens</li> <li>May be costly</li> <li>Needs credibility and trust</li> </ul>                                                                         |
| Bundled service (combines multiple services into a package)              | <ul style="list-style-type: none"> <li>Differentiates company</li> <li>Aids customer retention</li> <li>Increases percapita service use</li> </ul>                                    | <ul style="list-style-type: none"> <li>Increases convenience</li> <li>Customizes service</li> </ul>                                                                                                              | <ul style="list-style-type: none"> <li>Requires extensive knowledge of targeted customers</li> <li>May be perceived as wasteful</li> </ul>                                                                       |
| Physical service (manipulation of tangibles associated with the service) | <ul style="list-style-type: none"> <li>Improves employee satisfaction</li> <li>Increases productivity</li> <li>Differentiates company</li> </ul>                                      | <ul style="list-style-type: none"> <li>Increases convenience</li> <li>Enhances function</li> <li>Generates interest</li> </ul>                                                                                   | <ul style="list-style-type: none"> <li>Easily imitated</li> <li>Requires expense to effect and maintain</li> <li>Raises customer expectations for the industry</li> </ul>                                        |

Source: Adapted from Leonard L. Berry and Sandra K. Lampo, "Teaching an Old Service New Tricks: The Promise of Service Redesign," *Journal of Service Research*, 2, no. 3 (2000): 265-275.

Figure 79: Five Types of Service Redesign - Source: Table 8.1 in (Lovelock & Wirtz, 2011)

On the other hand, in order to manage customer satisfaction, the digital platform should focus on managing the customer expectation model. According to Lovelock & Wirtz (2011), there are many factors that affect Customer Expectation of the delivered service as shown in Figure 80. These factors make three versions of the services co-exist, which are desired service, adequate service and predicted service. The model shows that the operators of the digital service platform should, at least, understand the personal needs of the customers first. Then, they should tightly control the explicit and implicit service promises, track and monitor the word of mouth on social media channels as an example and analyze past experiences to maximize understanding of how the customer feels about the delivered service(s).

Depending on the type of the provided services, the previously mentioned mission may be easier or harder. As an example, setting the explicit and implicit expectations in UBER transportation services may be easier than setting the expectation of the services related to management consulting and its added value. Two totally different challenges that need different strategies. However, it should be clarified that the discussion of this example is not a direct result of being found as part of UBER case study data and that the usage of UBER users' expectation example here is used as a logical candidate example only.

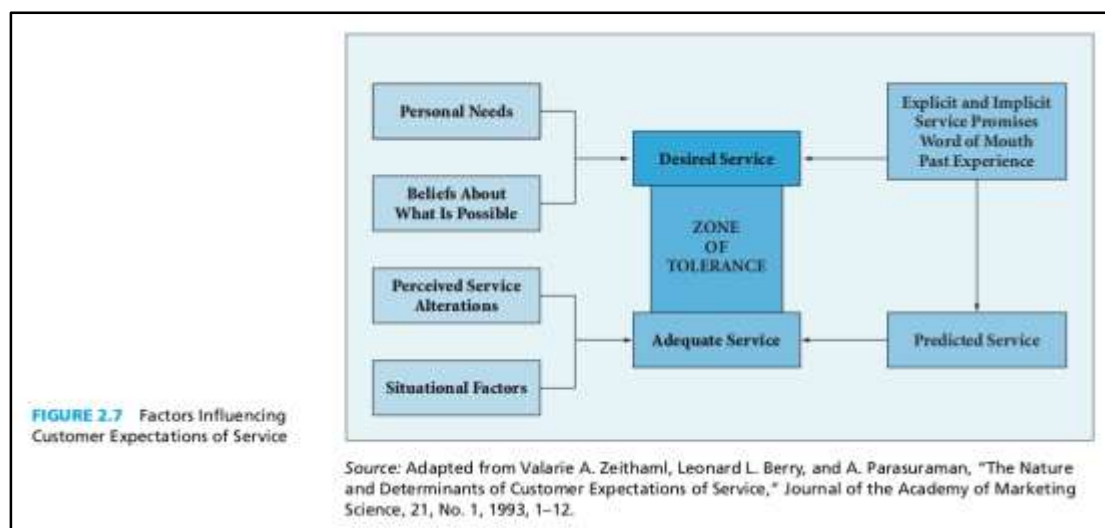


*Figure 80: Factors Influencing Customer Expectations - Source: Figure 2.7 in (Lovelock & Wirtz, 2011)*

Managing the zone of tolerance between the desired service and the adequate service in the model in Figure 80 will help the digital service platform operators manage customer satisfaction. Adding this satisfaction dimension to the retention dimension provides a single model that can help the operators pushing their customers towards the zone of affection in the customer satisfaction-loyalty relationship model shown in Figure 81 (Lovelock & Wirtz, 2011). Again, depending on the type of the provided services, the previously mentioned mission may be easier or harder. As an example, retaining customers in services that have lower switching costs such as UBER transportation services may be harder than retaining customers in services related to management consulting. When management consultants succeed to add value, it became like an addicted relation with their customers with a significant switching cost.



However, it should be clarified that the discussion of this example is not a direct result of being found as part of UBER case study data and that the usage of the UBER switching costs example here is used as a logical candidate example only.

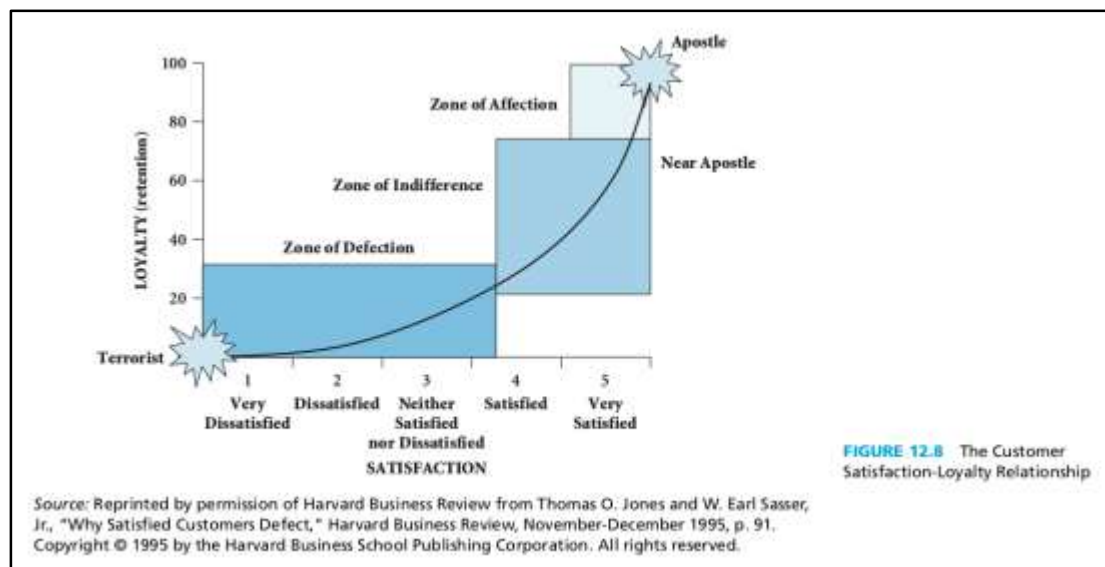


Figure 81: Customer Satisfaction-Loyalty Relationship - Source: Figure 12.8 in (Lovelock & Wirtz, 2011)

However, the switching cost is not the only factor in the equation. Lovelock & Wirtz (2011) explained a detailed model for the drivers that push customers to switch from one service provider to another (Figure 82). The factors fall into three categories, which are value proposition, service failure/recovery and others.

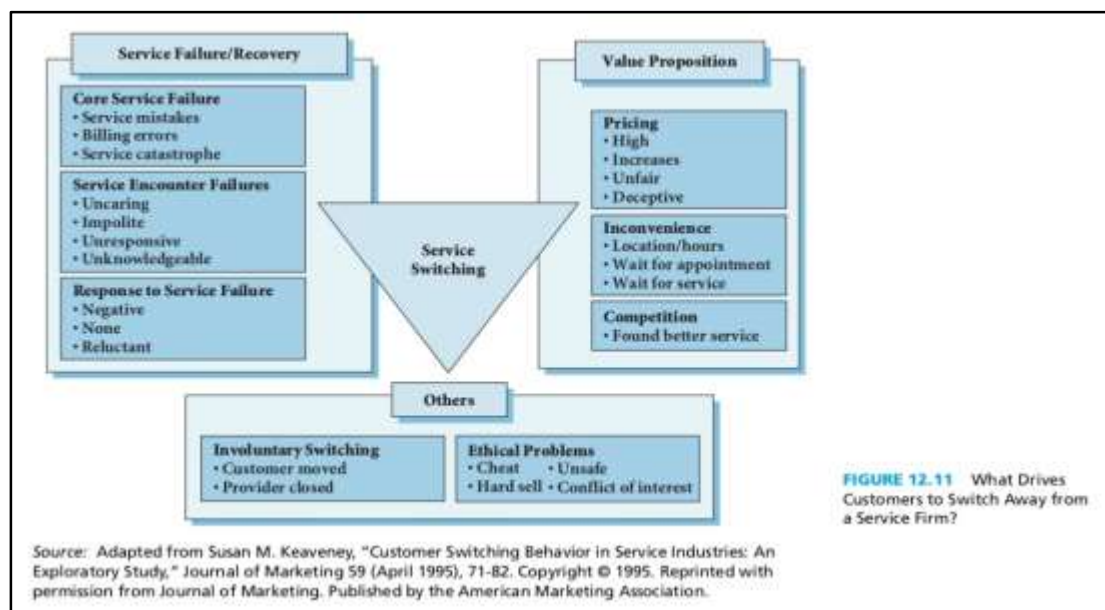


Figure 82: Customers' Switch Factors - Source: Figure 12.11 in (Lovelock & Wirtz, 2011)

This leads to the implications that should be considered based on the previous discussion. Even with the maximum level of standards and focus on customer satisfaction, the service failure is possible and a recovery plan should be there. Lovelock & Wirtz (2011) explained an effective recovery model that should be used in case of failure to reduce the negative consequences as shown in Figure 83. Based on the model and logical wise at the same time, doing it right in the first time is the golden advice. In case it failed, then, an effective complaints handling system should be used. However, it is worth mentioning that complaints were just one type of customers' response from the categories mentioned previously in the customer response model that will be shown in Figure 85. Hence, additional plans should be in place beside the model in Figure 83 to deal with the additional response actions.

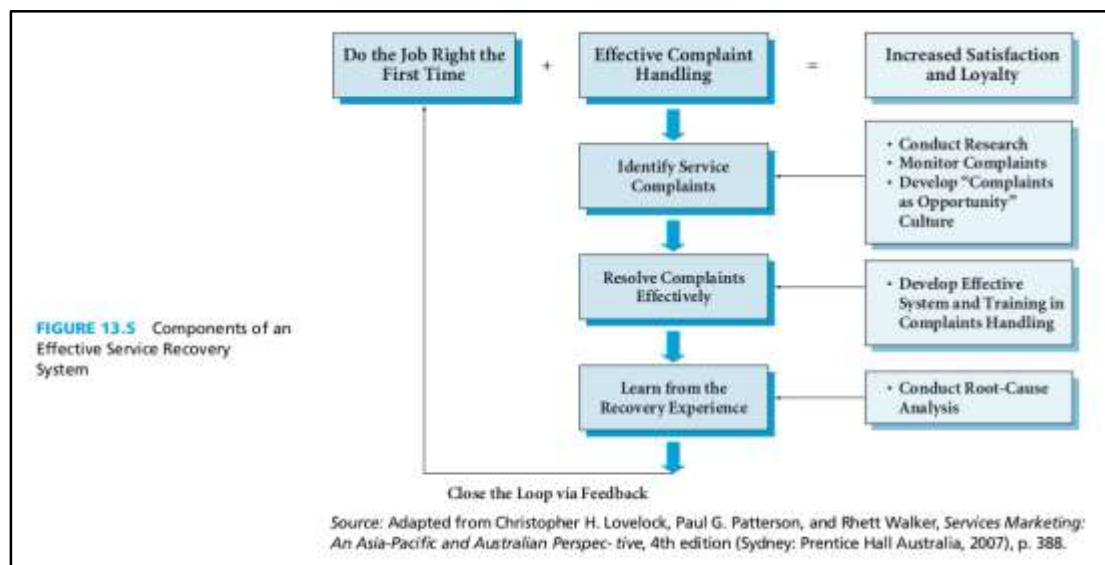


Figure 83: Effective Service Recovery System - Source: Figure 13.5 in (Lovelock & Wirtz, 2011)

As a reminder and as previously mentioned in relation to the first found incident in the previous section, although these previously mentioned user experience and customers' satisfaction gaps seem logical to exist in the UBER platform from the purely logical point of view, they may or may not appear as explicit elements within the substantive classical grounded theory that will be discovered from the UBER case study collected data. The existence or the absence of any element depends only on the raw collected data from the ground.



## 10.7 Quality of Service Research Gap in the Digital Services Platform

Because customer role is usually highly emphasized in the services-based economy, managing the quality of the delivered service requires understanding the two sides of the system, which are the service firm, or the digital platform in our case, and the customers. Lovelock & Wirtz (2011) explained a detailed model that includes six quality gaps that may cooperate together to negatively affect the quality of the delivered service as shown in Figure 84. Although all of the gaps are important, the most critical one is the perception gap, which is the gap between the actual delivered service by the firm and the perceived service by the customer.

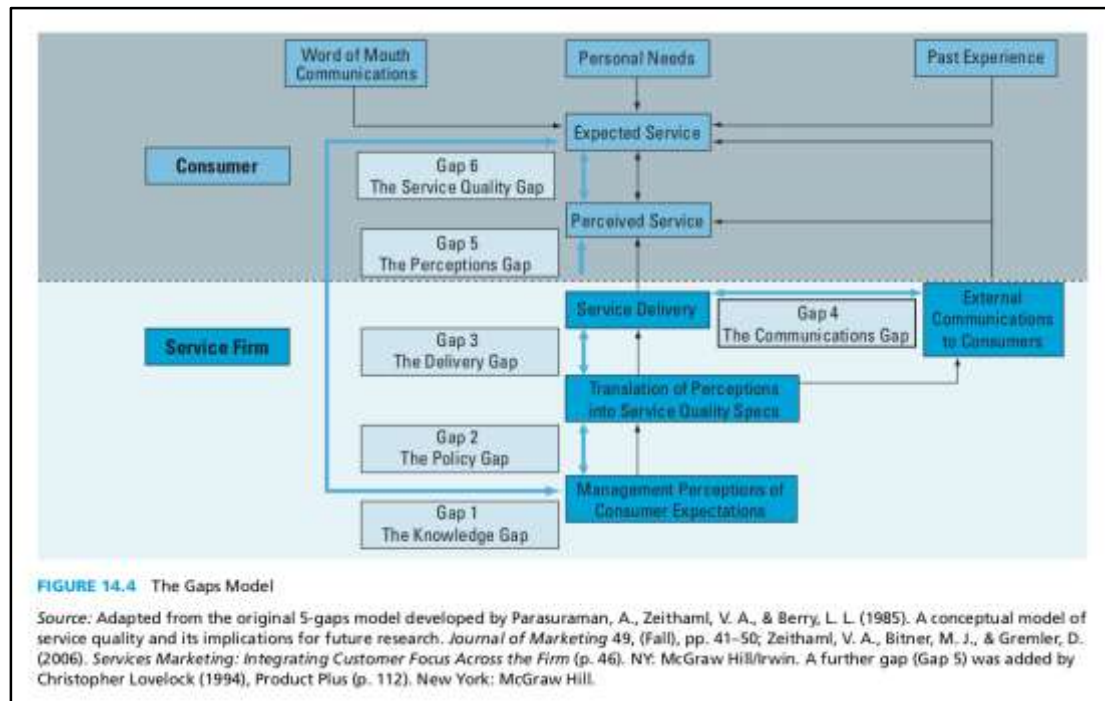


Figure 84: The Gaps Model - Source: Figure 14.4 in (Lovelock & Wirtz, 2011)

Again and similar to the customer expectation model (Lovelock & Wirtz, 2011) that appeared in Figure 80. There are some factors that should be on the radar of the decision-makers. The model six-quality gaps shown in Figure 84 shows that the operators of the digital service platform should, at least, understand the personal needs of the customers first. Then, they should tightly control the explicit and implicit service promises, track and monitor the word of mouth on social media channels as an example and analyze past experiences to maximize understanding of how the customer feels about the delivered service(s). This should lead to the ability to affect the customer perception as well as manage the specifications and delivery of the service to minimize these gaps. On the other hand, customer response to the increase of these gaps or what is called the service failure should be understood by the decision-makers. Lovelock & Wirtz (2011) explained a detailed model that indicates many categories of responses that the customer may take one or some of them when the delivered service differed from the perceived service as shown in Figure 85. Although all of them are critical, some of them are linked to other models that were discussed during the analysis in this report.

As an example, in the private action category, there is the switch provider, which is linked to what was discussed when discussing the drivers that push customers to switch from one service provider to another shown previously in Figure 82. Furthermore, from the same category, there is the negative word of mouth, which was mentioned when discussing the customer expectation model shown in Figure 80 and the six quality gaps shown in Figure 84. The word of mouth has an impact on both customers' expectation setting and quality perception. However, the public action category appears in Figure 85 may have a more dramatic or ripple effect. Complaining in public may induce other customers to take action or may alert customer expectations as well. Of course, decision-makers and the operators of the digital service platform should monitor all these categories and be ready to either predict proactively or deal with reactively.

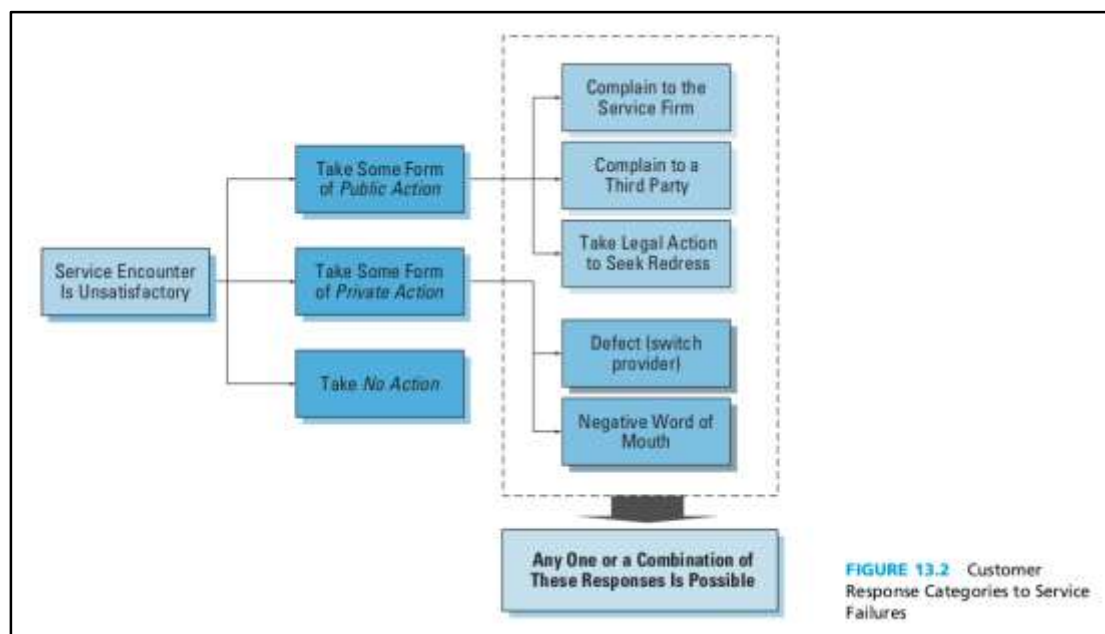


*Figure 85: Customer Response to Service Failure - Source: Figure 13.2 in (Lovelock & Wirtz, 2011)*

Although all responses may result in negative consequences, the problem is not just a single action. There is a dynamic complex system that is going to respond too with greater power in the background. This is what Lovelock & Wirtz (2011) explained as the cycle of failure model (Figure 86). This model includes two cycles, which are the employee cycle and the customer cycle. Both cycles cooperate and interact in an endless trend of service system performance degradation. Going back to the topic of digital platform strategy and to be able to achieve the success and the network effects, whatever the starting point that the reader starts from trying to interpret the cycle of failure model, the high customer turnover element in the top of the outer customer cycle (Figure 86) has a direct negative effect against these KPIs.

The complexity of this failure cycle makes it so difficult to recommend some actions to the decision-makers to break out of this cycle. However, the simplest recommendation that can be given in this situation is that the solution is in the inner cycle.

The decision-makers and the operators of the digital service platform should start by focusing on the employee cycle first if they want to make improvements in the outer customer cycle.

Figure 86: The Cycle of Failure - Source: Figure 11.5 in (Lovelock & Wirtz, 2011)

Again, these quality standards should be linked back to the six-quality gaps model indicated before in Figure 84. The final step is to define the performance targets for service delivery. With this system, decision-makers are proactively a step ahead.

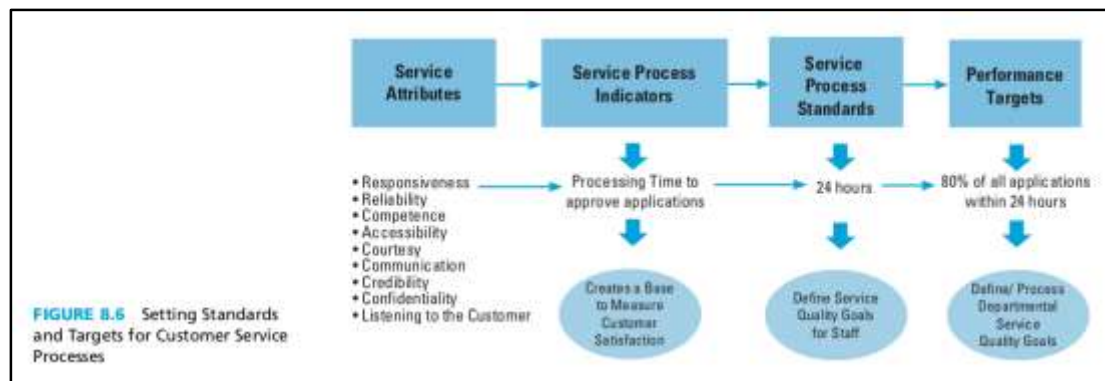


Figure 87: Setting Service Standards and Targets - Source: Figure 8.6 in (Lovelock & Wirtz, 2011)

Finally, Lovelock & Wirtz (2011) explained the cycle of success model (Figure 88) that can be focused on by the decision-makers to fight the previously mentioned cycle of failure that was shown in Figure 86. Again, the simplest recommendation is to focus on the inner employee cycle first to maintain a continuous success loop.

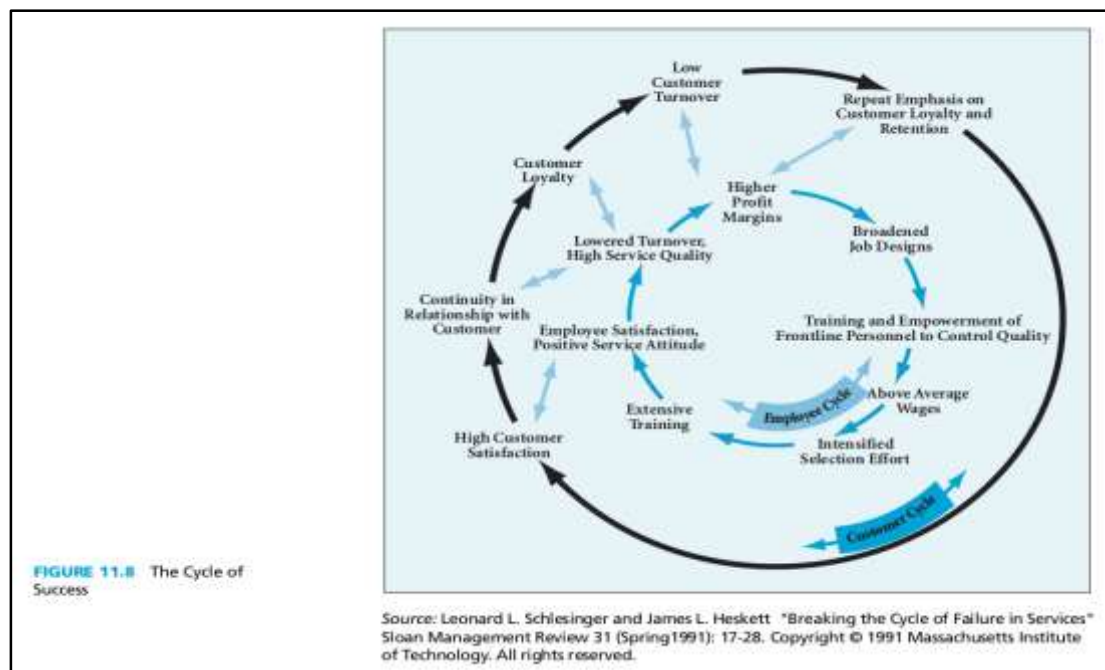


Figure 88: The Cycle of Success - Source: Figure 11.8 in (Lovelock & Wirtz, 2011)

Again and as a reminder, although these previously mentioned quality of service gap seem logical to exist in the UBER platform from the purely logical point of view, they may or may not appear as explicit elements within the substantive classical grounded theory that will be discovered from UBER case study collected data. The existence or the absence of any element depends only on the raw collected data from the ground.

## 10.8 Workers and Front Line Employees-FLEs Research Gap in the Digital Services Platform

In the services-based economy, the front line employees usually have an emphasized role, which contradicts with employee role in the product-based economy. However, not all services are equal in these dimensions. Lovelock & Wirtz (2011) introduced a soft classification model that differentiates services in regard to the levels of customer contact as well as either an emphasized encounters with service personnel or emphasized encounters with physical service elements as shown in Figure 89. Of course, something like UBER has a lower contact level but is still above the line. However, it should be clarified that the discussion of this example is not a direct result of being found as part of UBER case study data and that the usage of the UBER contact level example here is used as a logical candidate example only. Another example can be given by going back to the management consulting professional services, Figure 89 shows that in this type of service, there is a near high level of customer contact along with emphasized encounters with service personnel. This example may have clear importance if the digital service platform under consideration is related to providing consultancy services.

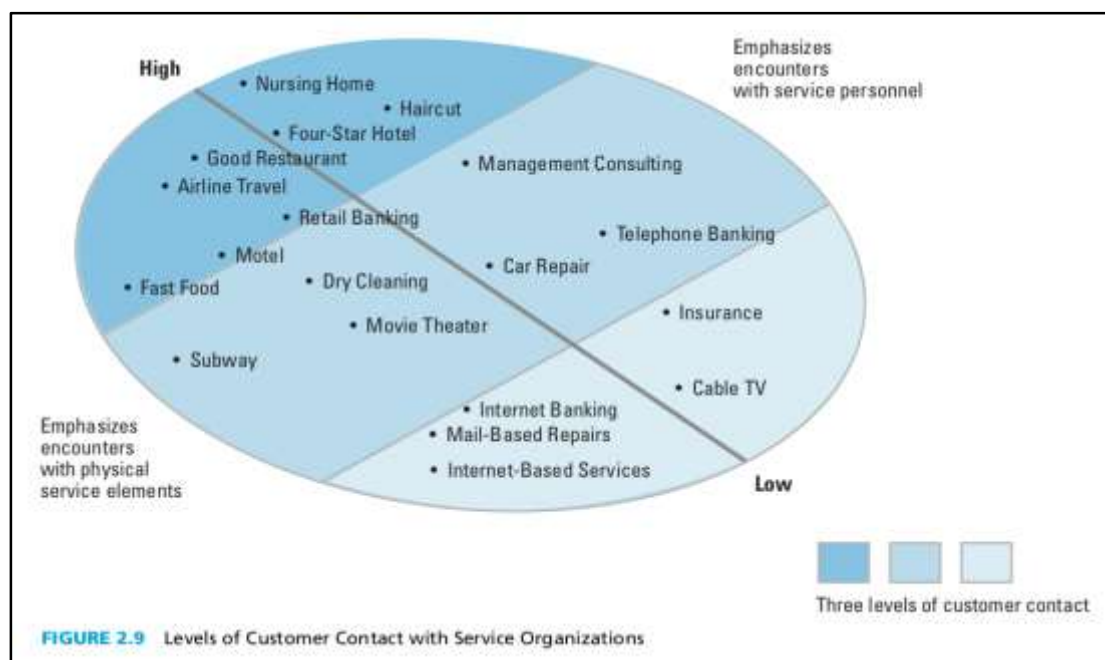


Figure 89: Levels of Contact with Service Organization - Source: Figure 2.9 in (Lovelock & Wirtz, 2011)

In this case, the front line employees “FLEs” are the consultants in the same time, which make their negative impact on the delivered service more critical. Lovelock & Wirtz (2011) introduced a model for classifying the front line employees’ sabotage behavior based on two dimensions, which are the openness of sabotage behavior and the normality of the sabotage behavior as shown in Figure 90. Although all of them are critical and may negatively affecting the brand of the digital service platform, the covert behavior is much more critical than the overt one whatever it is routinized or intermittent.



The covert behavior is usually much more difficult to be captured through the regular typical quality audits. Hence, the recommendations for the decision-makers and the operators of the digital service platform is to use close monitoring to detect this type of behavior.

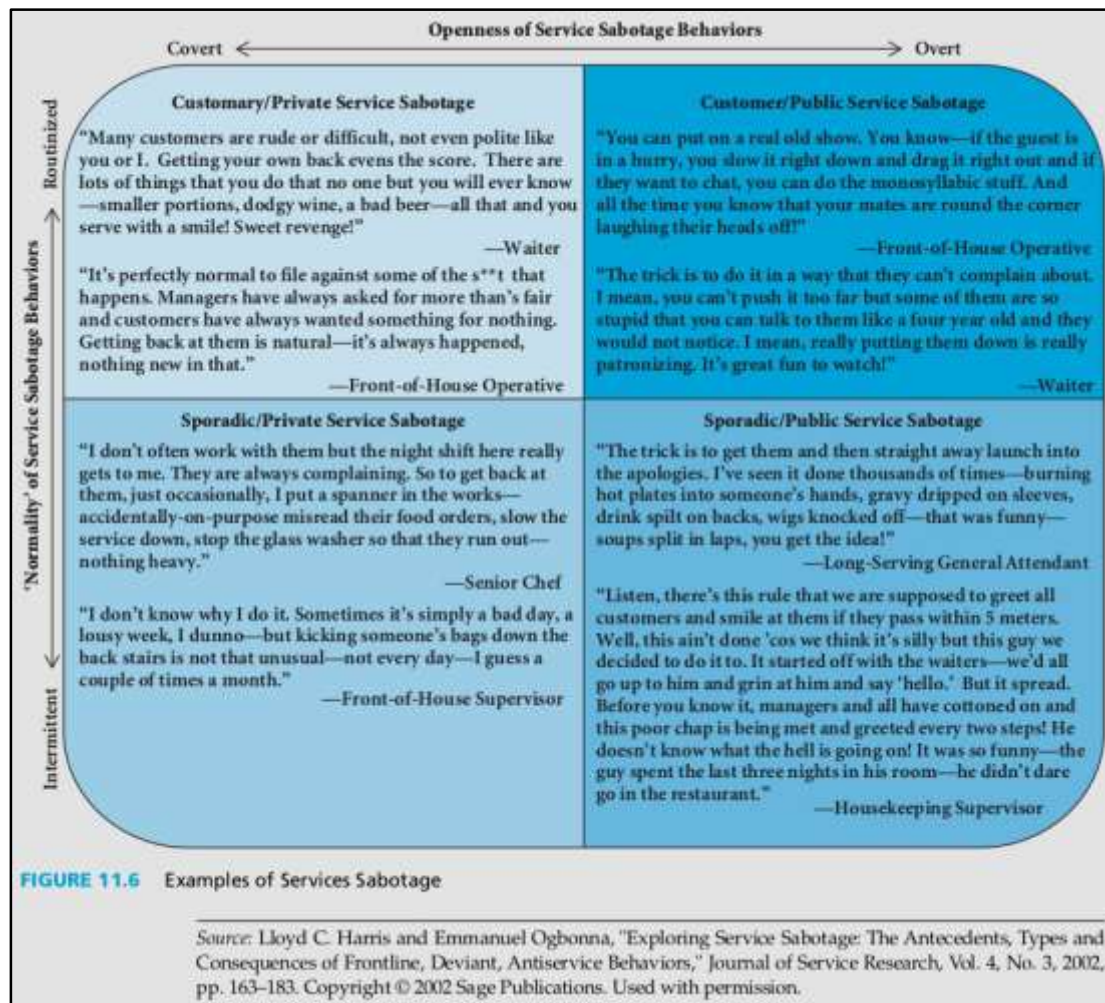


Figure 90: Services Sabotage Examples- Source: Figure 11.6 in (Lovelock & Wirtz, 2011)

This leads to the implications that should be considered based on the previous discussion. As mentioned before, and in the services-based economy, the FLEs usually have an emphasized role due to the previously discussed negative impact due to their sabotage behavior in any service firm or specifically in the digital services platform. Hence, there should be a clear vision of how to deal with this issue. Lovelock & Wirtz (2011) introduced the inverted organizational pyramid that highlights the concept of the moments for truth where the actual contact happens between the customers and the front line employees as shown in Figure 91. These inverted pyramids represent a mind shift that the decision-makers should thoroughly understand. All organizational levels and resources should provide supports to the front line employees to deliver successfully the service in contrast to the old model that all staff is supporting top managers.

Within the context of the digital services platforms, the challenge is usually more difficult. The front-line employees are usually from one side of the market in a double or multi-sided market (Gawer & Cusumano, 2014). As an example, in UBER, the drivers, which are the front-line employees, are usually platform users but from the worker side. However, it should be clarified that the discussion of this example is not a direct result of being found as part of UBER case study data and that the usage of the UBER front-line example here is used as a logical candidate example only.

On the other hand, in a management consulting platform, the consultants are the expert side of a double-sided market and so on. Hence, it is not only the challenge of managing front line employees, but platform operators are managing a special type of employees, which are customers in the first place. This makes training and monitoring more challenging.

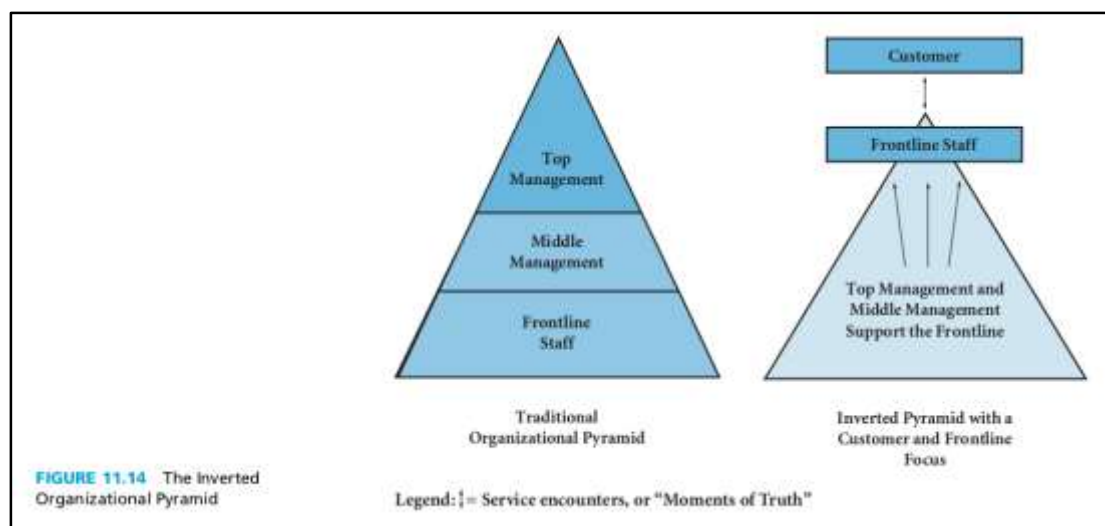


Figure 91: The Inverted Organizational Pyramid - Source: Figure 11.14 in (Lovelock & Wirtz, 2011)

Again and as a reminder, although these previously mentioned workers/front line employees gap seem logical to exist in the UBER platform from the purely logical point of view, they may or may not appear as explicit elements within the substantive classical grounded theory that will be discovered from UBER case study collected data. The existence or the absence of any element depends only on the raw collected data from the ground.

## 10.9 Conceptualized Outcome of the Selective & Theoretical Coding for the Literature Substantive Area

According to the data collection and preparation, steps described in detail in the research methodology chapter, more than one dataset was ready for analysis during both selective and theoretical coding stages. The direct objective of these stages is to transfer the previously presented thin version of the discovered classical grounded theory about the platform strategy dynamics into a full rich version. The first and second datasets/groups of the literature as a secondary dataset are presented in Appendix-D and Appendix-E.

The first stage of the analysis started manually without any support of software tools and produced a coding system that is produced and presented in three appendices. The first one is the manual coding system itself that appears in Appendix-F including the in-vivo codes for the found relevant incidents. Appendix-G, on the other hand, shows a manual memo that was created during the process of organizing the found manual codes/incidents into categories. However, the readability of such a memo is somehow difficult as it captures the thinking processes as it happened and it is not neatly organized. It is added only for the purpose of keeping records. Then, the neatly organized version of the discovered initial data structure, during the manual coding and categorization process, can be found in Appendix-H.

However, the discovered data structure was not the only outcome from this manual coding process, the other and even more important outcome was discovering that completing the theorizing process manually is going to be neither doable nor satisfactory. The number of found incidents/codes started to explode and some important ones seem to be overlooked. This was the entry point to start using a software tool to complete the journey. This tool is MAXQDA (2020). A brief overview of this tool can be found in Appendix-J. Hence, as a summary, these are the appendices and the contained relevant information as follows:

- Appendix-F: Contains the detailed in-vivo Incidents found during the manual open coding.
- Appendix-G: Contains the Memo created along the process of conceptualization.
- Appendix-H: Contains the manual mapping of the incidents to the Conceptualized Categories.
- Appendix-J: Contains a brief about the used software tools during the research including MAXQDA.

The first step was to import the datasets into MAXQDA using the exported dataset from Zotero. The imported references or datasets appear on the upper-left side of Figure 92. The second step was somehow a little bit daunting but rewarding at the same time.

In this second step, all found incidents/codes from the previously described manual coding processes were recoded into MAXQDA. A sample of this step, which is recoding the in-vivo found incidents/codes, appears on the right-left side of Figure 92.



The added value from this step was to transfer the manual coding system into a reusable coding system inside the tool. Furthermore, it was a good chance to discover some important missed incidents/codes that were missed in the first place. The resulted coding system appears in the lower-left side of Figure 92 too.

The process of the in-vivo coding was completed on both group-1 and group-2 of references, which were described in the data collection and preparation steps described in detail in the research methodology chapter. The results of the coding and a detailed distribution of the resulted coding system, including incidents and codes, are presented in the upcoming tables (Table 20 and Table 21). These tables show that the first dataset or group-1 of references generated the vast majority of both the incidents and codes, while only 28 additional incidents and 3 additional codes were found in the second dataset or group-2, which seems both logical and interesting.

First, it is logical because the first dataset or group-1 includes the references that include the core concern of the research or the keywords network effects in the title. This means that the research study itself is organized around this core concern. While the second dataset or group-2 includes the references that have the keywords network effects that appear only in the abstract text and not in the title. This means that the research study itself may touch the core concern but was not organized around it.

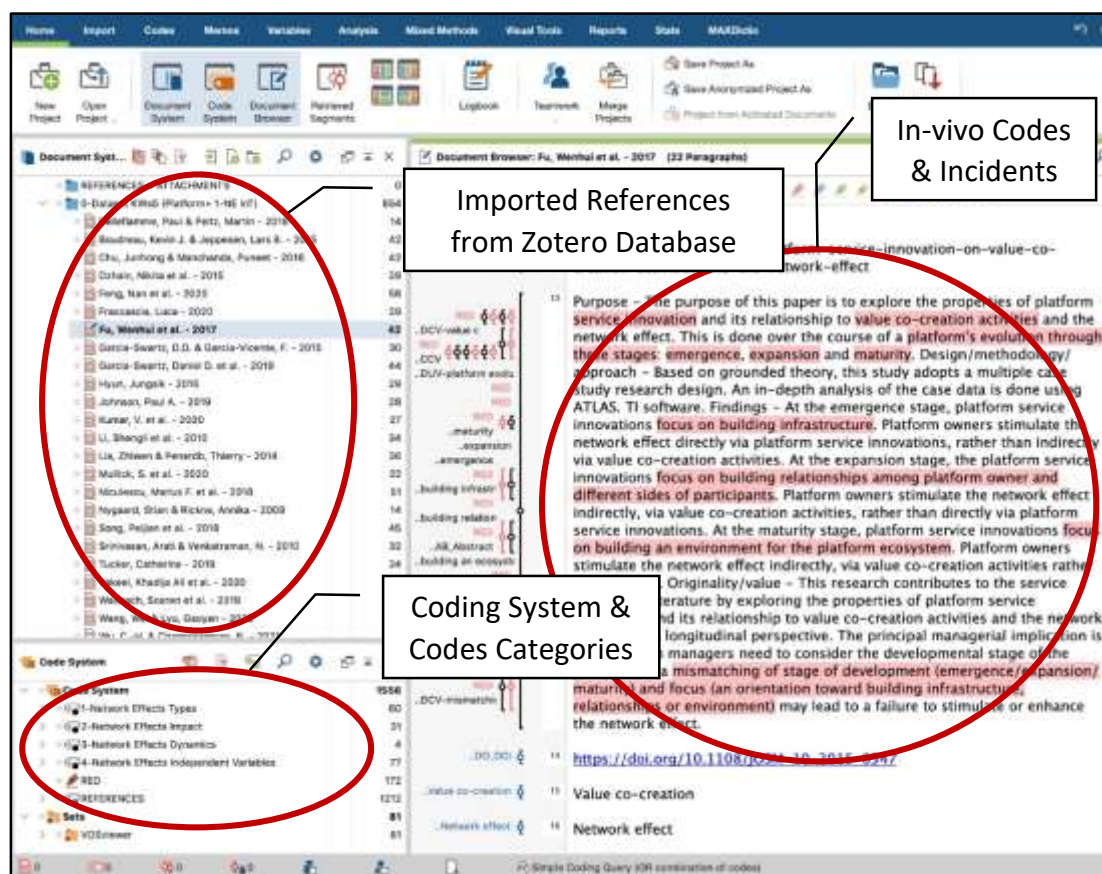


Figure 92: MAXQDA Document Groups, In-vivo Coding Sample, and the Coding System

| No | Category                              | New From Group-1 | New From Group-2 | Total      |
|----|---------------------------------------|------------------|------------------|------------|
| 1  | Network Effects Types                 | 60               | 0                | 60         |
| 2  | Network Effects Impact                | 26               | 5                | 31         |
| 3  | Network Effects Dynamics              | 4                | 0                | 4          |
| 4  | Network Effects Independent Variables | 52               | 23               | 75         |
|    | <b>Totals</b>                         | <b>142</b>       | <b>28</b>        | <b>170</b> |

*Table 20: MAXQDA Found Incidents in Datasets or Groups*

| No | Category                              | New From Group-1 | New From Group-2 | Total      |
|----|---------------------------------------|------------------|------------------|------------|
| 1  | Network Effects Types                 | 15               | 0                | 15         |
| 2  | Network Effects Impact                | 19               | 3                | 21         |
| 3  | Network Effects Dynamics              | 5                | 0                | 5          |
| 4  | Network Effects Independent Variables | 65               | 0                | 65         |
|    | <b>Totals</b>                         | <b>104</b>       | <b>3</b>         | <b>107</b> |

*Table 21: MAXQDA Found Codes in Datasets or Groups*

Second, these results presented in Table 20 and Table 21 are interesting because they show a clear indication of the theoretical saturation based on the available datasets in hand. Group-1 produced 142 incidents out of 172 total incidents, which represents around 83% of the found incidents, while group-2 produced only 17%. Regarding the codes, Group-1 produced 104 codes out of 107 total codes, which represents around 97% of the found codes, while group-2 produced only 3%. According to Holton & Walsh (2016), saturation depends mainly on the nature of the available datasets and may change if new datasets are obtained. However, taking the nature of the used datasets in this DBA thesis into consideration, obtaining new datasets needs many years to come to find newly generated knowledge and published literature around the network effects core concern. Hence, the current obtained results may have a satisfactory degree of stability for a relatively reasonable time in the future from the saturation point of view. As shown in Figure 92 and Table 20, there are four categories as follows:

- The types of network effect: contains incidents found that mentioned different types of the network effect such as direct, indirect...etc.
- The impact of the achieved network effect: contains incidents found that mentioned different impacts of the archived network effect such as increased market share, alerted market structure...etc.
- The dynamics of different types of network effect: contains incidents found that mentioned different dynamics of different types of the network effect such as certain type dominating the other...etc.
- The independent variables that affect achievement of the network effect: contains incidents that show different independent variables that lead to achieving the dependent variable (i.e. Network effect).

After categorization, the third coming step was the conceptualization. The main objective of this stage was to deal with the complexity that resulted from a large number of found codes inside the independent variables category as shown on the left-hand side of the following figure (Figure 93). These independent variables are the variables that help the decision-makers or platform owner/operator to achieve the dependent variable, which are the network effects. Of course, if the decision-maker can gain some sort of control over these variables. Hence, the dilemma is not only to find the most important or critical variables inside this large number of independent variables but to find the most controllable ones. Distinguishing between what is controllable and what is not will help the decision-makers to divide the attention and find the right action as follows:

- The uncontrollable variables should be monitored to gain a sufficient level of situational awareness that help understand what is going on around the platform business. The concept of the uncontrollable variables was, for example, studied thoroughly by Patzer (1984) in the marketing context. The uncontrollability of the variable means that it is beyond the ability of the decision-makers to manipulate it by any mean. Hence, they have to live with as it is and think how to get benefit from the situation.
- The controllable variable should be managed and/or manipulated to gain control over the situation and being able to achieve the network effects.

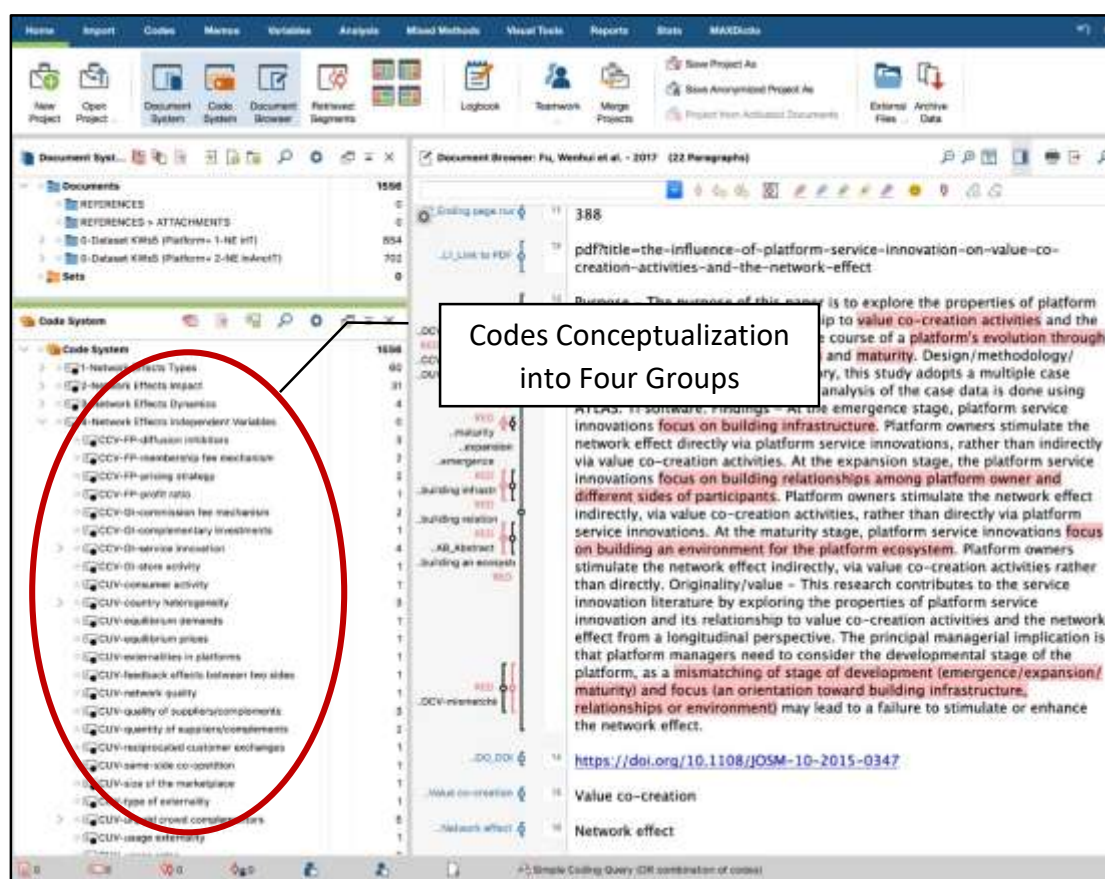


Figure 93: MAXQDA Coding System Categories showing the Independent Variables Category

Furthermore, another piece of information is needed. Is the variable discrete or continuous? Continuous variables will be taken into consideration in the further steps when the system dynamics model is going to be updated from the thin version of the theory to the full version. The following figure (Figure 94) shows the four categories on the left-hand side. The result of this step was to divide the independent variables into Four Groups as follows:

- Continuous Controllable Variable – CCV.
- Continuous uncontrollable Variable – CUV.
- Discrete Controllable Variable – DCV.
- Discrete uncontrollable Variable – DUV.

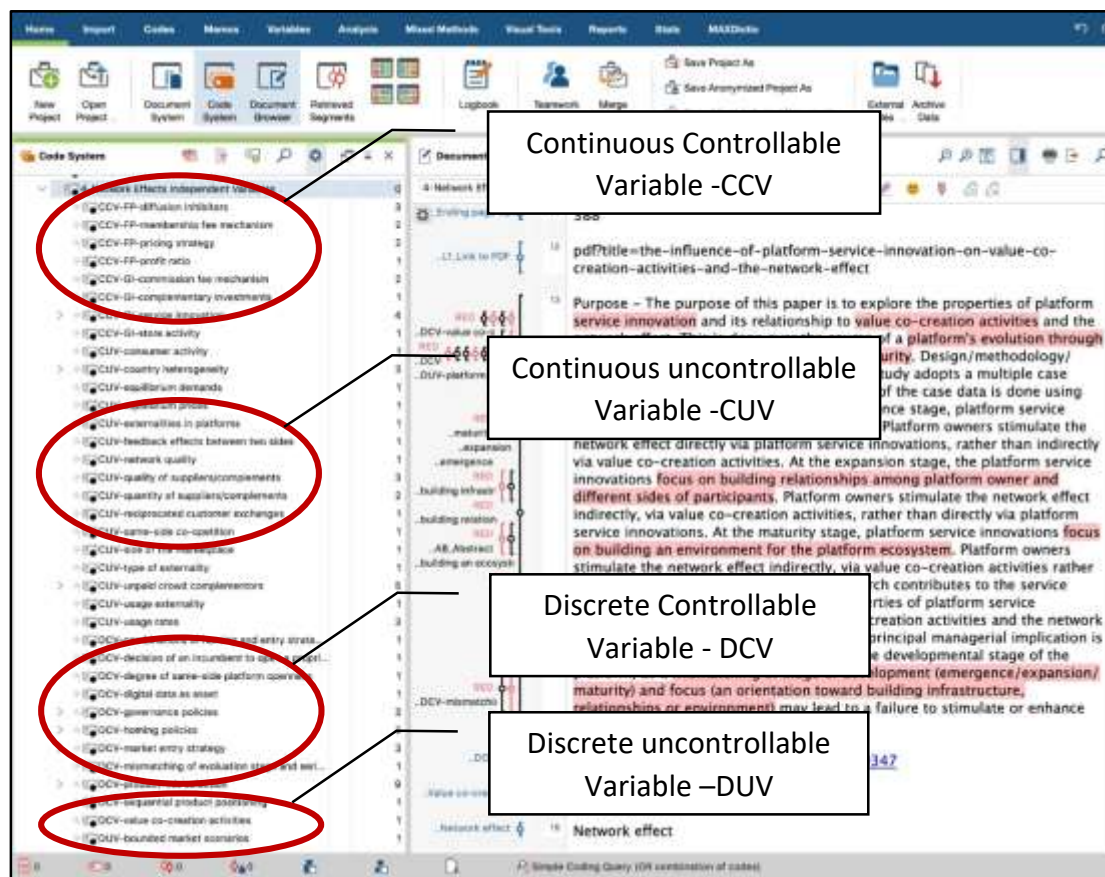


Figure 94: MAXQDA Four Categories of the Network Effects Independent Variables

All the previous steps were focusing on the selective coding around the core concern or the network effects; the fourth step was focusing on the theoretical coding to give the discovered theory a reasonable shape (Holton & Walsh, 2016). MAXQDA usually supports this step by providing what is called a creative coding function.

The following figure (Figure 95) shows the starting point of this creative coding function with the initial creative coding board while including all the found codes inside the coding system without being organized yet. This included the codes connected to the previously described four codes categories, which are the types, impact, dynamics, and independent variables.



This creative coding steps focused on the controllable discrete and continues independent variables because these are the variables that the decision-maker is going to manage and/or manipulate to reach the network effect away from the uncontrollable ones that need only awareness.

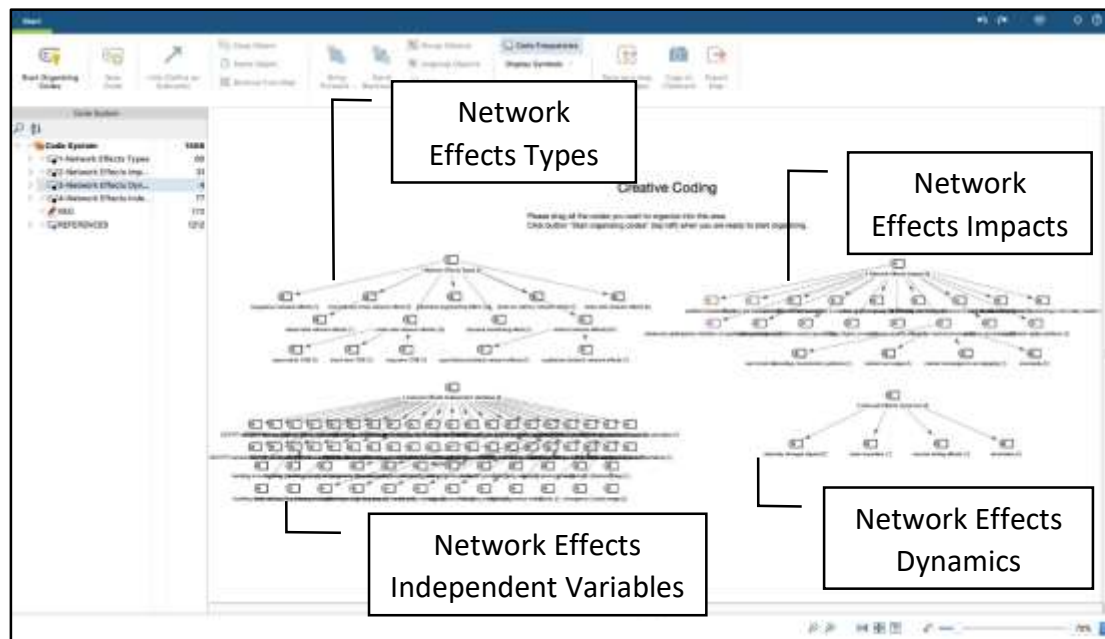


Figure 95: MAXQDA Initial Creative Coding Board

As shown in the following figure (Figure 96), all the “Discrete Controllable Variables – DCVs” can be found on the left-hand side. Logically, and after careful investigation of their nature, this collection was given the name of game shaping strategies because these are the discrete controllable variables that will help the decision-maker to shape the strategy game against the competitions. As an example, what are the platform governance and homing policies that are going to be enforced? Another example can be found about the data. Are the decision-makers going to use platform data as strategic or operations assets?

Furthermore, all the “Continuous Controllable Variables – CCVs” were considered carefully. Logically, and after careful investigation of their nature, this collection was devised into two collections that were giving descriptive names. The first collection was named the induction strategies to raise the motivation of platform users to use the platform and hence achieve the network effects. For example, designing the commission fees mechanism that increases these commissions gradually may motivate the user to increase their usage to the platform and also increase the number of the users themselves. This group appears in the upper-right corner of Figure 96.

The other collection is named the barriers overcoming strategies to raise ability of platform users to use the platform and hence achieve the network effects. These are the discrete controllable variables that will help the decision-maker to increase the usage of the platform more than the competitions. For example, designing the membership fees mechanism that decreases these fees may remove the barriers that face users, increase the usage of the platform, and also increase the number of the users itself. This group appears in the lower-right corner of Figure 96.

Both collections are related to the concepts of system dynamics and its archetypes that will be explained in detail later on as follows:

- The induction strategies to raise the motivation are related to growth initiatives and objective by definition (Figure 96).
- The barriers overcoming strategies to raise ability are related to fixing problems initiatives and objective by definition (Figure 96).

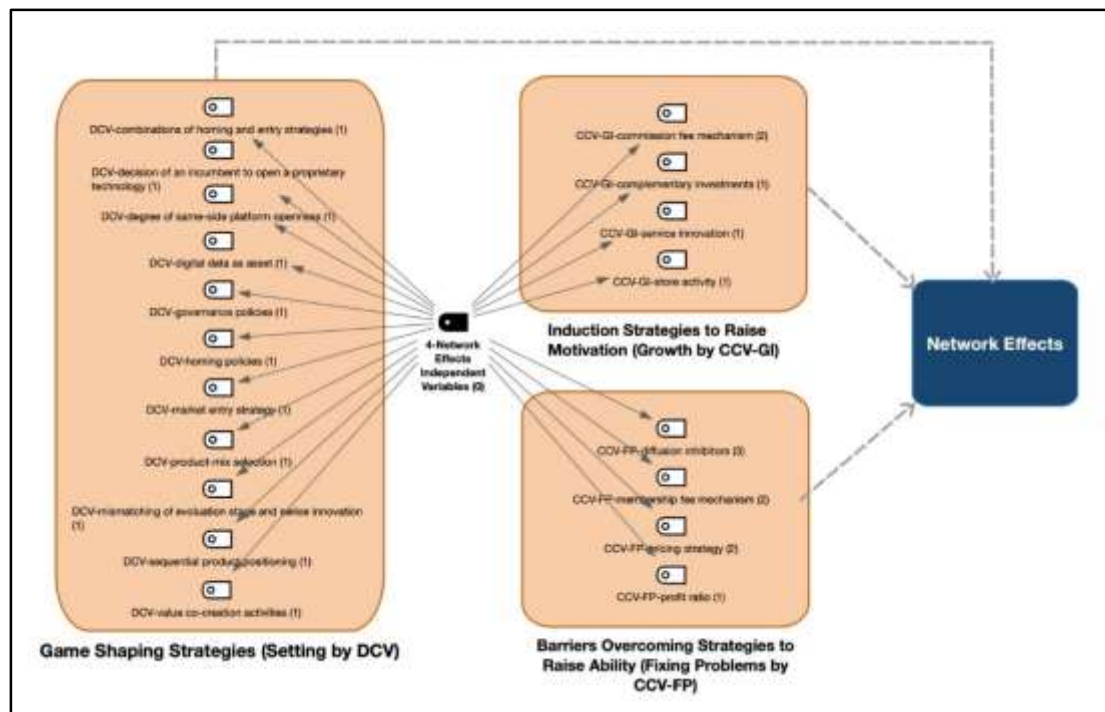


Figure 96: MAXQDA Initial Creative Coding of the Independent Variables That Affect the Network Effects

Finally, it is worth mentioning that the three orange conceptualized collections that appear in Figure 96 were incorporated using the concept of theoretically sorting in the classical grounded theory (Holton & Walsh, 2016); to transfer the previously presented thin version of the discovered theory into a full version that will be presented and explained initially in Figure 105 and finally in Figure 113 later on.

However, there is still a step for ensuring theoretical saturation that is needed and is going to be explained immediately in the upcoming subsection before presenting the full version of the theory.

This is the step in which the software tools, VOSviewer and MAXQDA, functionalities were used to provide a semi-automatic coding support to ensure saturation. This is the step that was discussed briefly before in the theoretical contribution part in the contribution chapter and was considered as something innovative.

## 10.10 Software Tool Support for Semi-Automatic Selective and theoretical Coding

In this step, two VOSviewer types of analysis were used, which are the “Keywords Co-occurrence Analysis” and the “Text Mining Analysis”. Again, both were conducted following the previously mentioned default automatic thresholds strategy on the full dataset presented in Appendix-B. In the co-occurrence analysis, the data of the top 20 discovered keywords was exported from VOSviewer and imported into Microsoft Excel to obtain a bar chart that is shown in Figure 97. For example, ecosystems were the first one with 82 times, while the network effects are 11th with 21 times. This chart can give a quick impression about the concepts that attracted the attention of the researchers most.

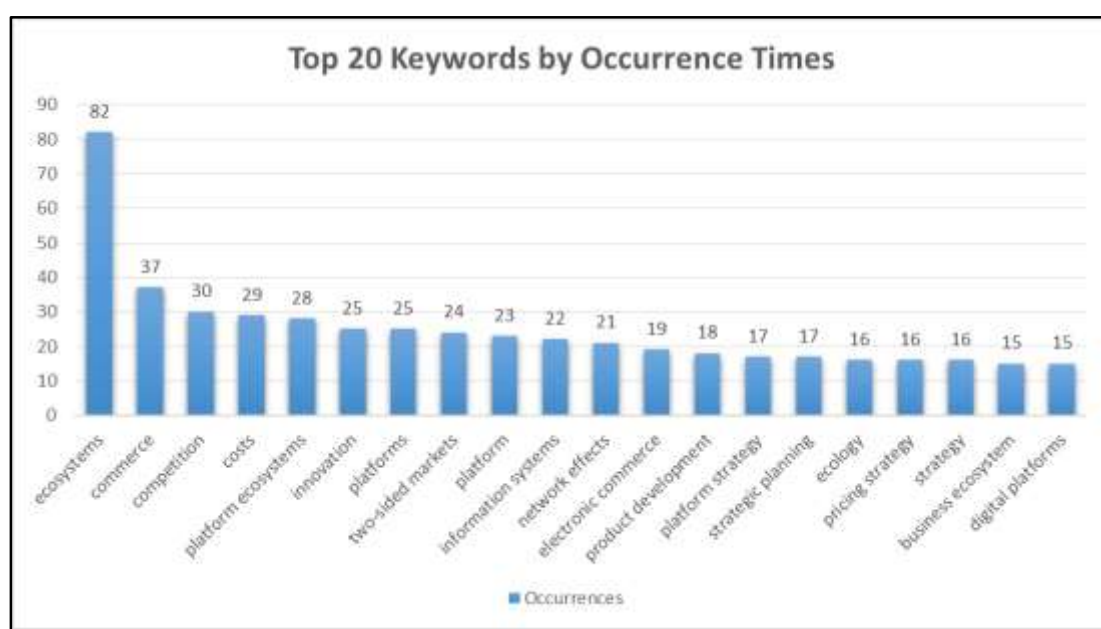


Figure 97: The Top 20 Keywords or Concepts by Occurrence Times

The bibliometrics keywords co-occurrence analysis was conducted and the “Keywords Co-occurrence Map” was produced and it is shown in Figure 98 using the timespan function of the VOSviewer that uses the cold-warm colors to show the relevant timeline of these keywords. As appears in the figure, the time period from 2012 to 2018 includes the vast majority of these keywords.

For example, the keywords, “Digital Platform”, “Platform Ecosystems”, and “Big Data” are so recent keywords and appear with the dark red color, while the keywords “Platform development”, “Product Development”, and “Technology” are somehow old and appear with the cold blue color. Furthermore, the map shows a high degree of relatedness between the old and/or cold keywords that are clustered in the right-down side of the map, while the relatively new keywords propagate in all directions away from this cluster. Of course, the size of the circle or its diameter represent the relative occurrence times. For example, the keyword “Ecosystems” has the biggest size, which matches the results presented in the figure of the top 20 keywords (Figure 97).

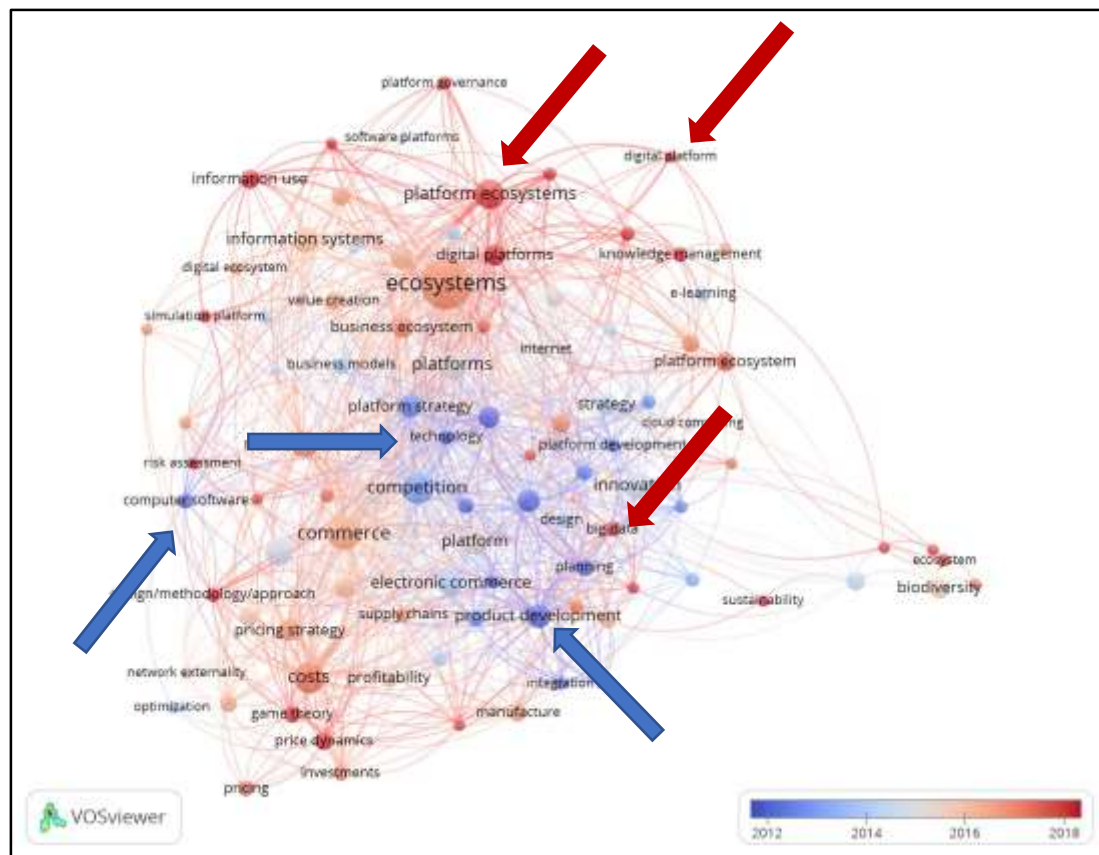


*Figure 98: The Overall Keywords or Concepts with Keywords Co-occurrence Map*

Using VOSviewer functionality to focus around the core concern of this DBA thesis, all related keywords that are directly connected and coupled with the keywords “Network Effects” were identified as shown in Figure 99. Again, using the cold-warm colors to show the relative newness.

For example, the keywords, “Platform Governance”, “Price Dynamics”, and “Big Data” are so recent related keywords and appear with the dark red color, while the keywords “Computer Software”, “Industry Management”, and “Technology Management” are somehow old related keywords and appear with the cold blue color. Furthermore, the map shows a high degree of relatedness between the keywords network effects and relatively new keywords that appear in light and dark red. Only few keywords that are related to the network effect appear in light or dark blue. This means that research that is related to the network effect represent the Modern Wave in the field of platform research.



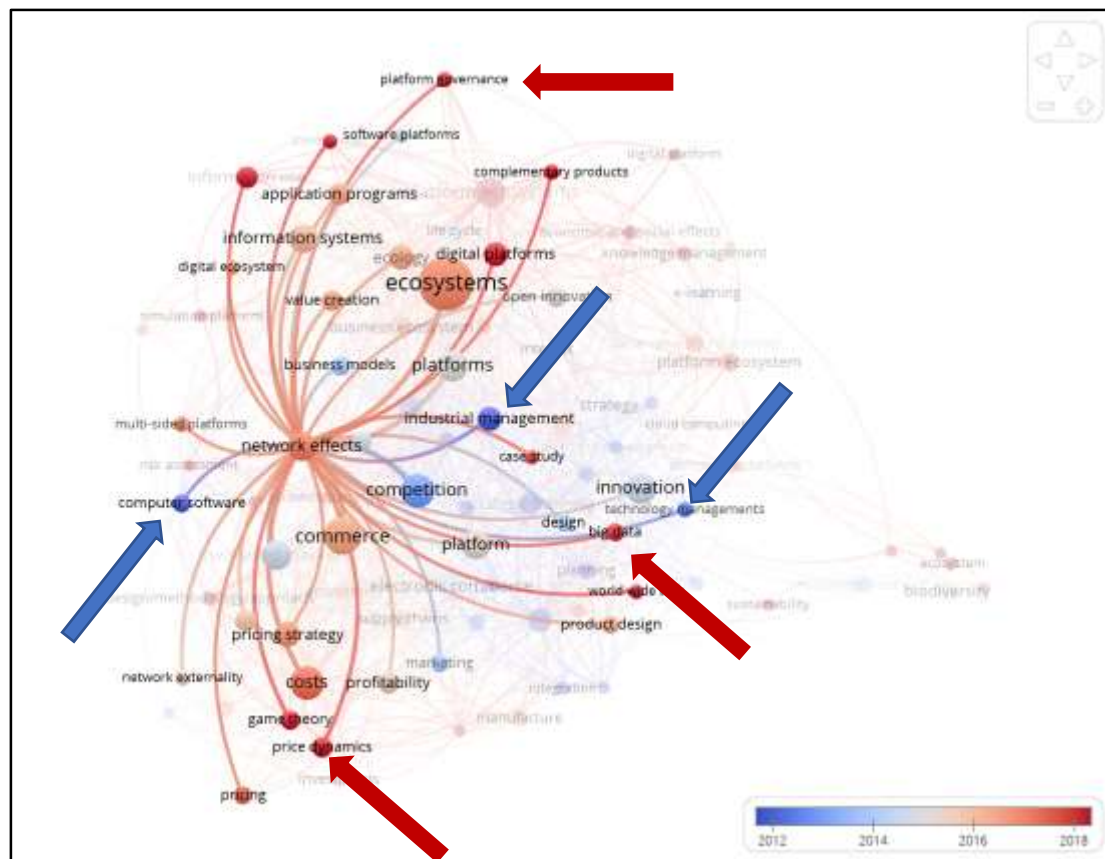


*Figure 99: The “Network Effects” Keyword or Concept and the Related Keywords Co-occurrence*

Then, the text mining analysis was conducted on titles and abstracts and the “Text Mining Map” was produced and it is shown in Figure 100 using the timespan function of the VOSviewer that uses the cold-warm colors to show the timeline of these keywords. The period from 2014 to 2018 includes the majority of these terms.

For example, the terms, “Consumer”, “Price”, and “Profit” are so recent terms and appear with the dark red color, while the terms “Knowledge”, “Tool”, and “Option” are somehow old and appear with the cold blue color. Furthermore, the map shows a high degree of relatedness between the old and/or cold terms that are clustered in the upper-left side of the map, while the relatively new terms propagate in all directions away from this cluster. Of course, the size of the circle or its diameter represent the relative occurrence times. For example, the term “Product” has the biggest size.

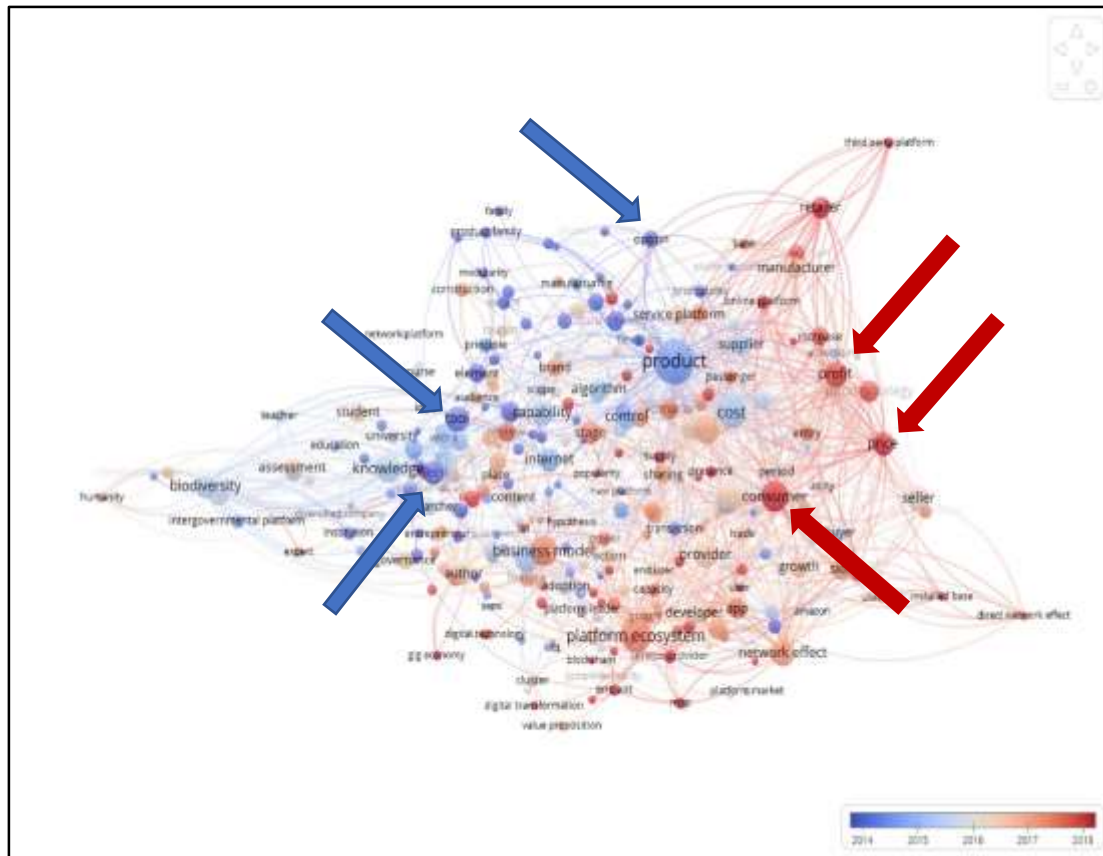


*Figure 100: The Overall Terms or Concepts with Text Mining Map*

Using VOSviewer functionality to focus around the core concern of this DBA thesis, all related keywords that are directly connected and coupled with the terms “Network Effects” were identified as shown in Figure 101. Again using the cold-warm colors to show the relative newness.

For example, the terms, “Consumer”, “Pricing Strategy”, and “Price” are so recent related terms and appear with the dark red color, while the terms “Product”, and “Technology Platform” are somehow old related terms and appear with the cold blue color.

Furthermore, the map shows a high degree of relatedness between the keywords network effects and relatively new keywords that appear in light and dark red. Only few keywords that are related to the network effect appear in light or dark blue. This means that research that is related to the network effect represent the modern wave in the field of platform research.

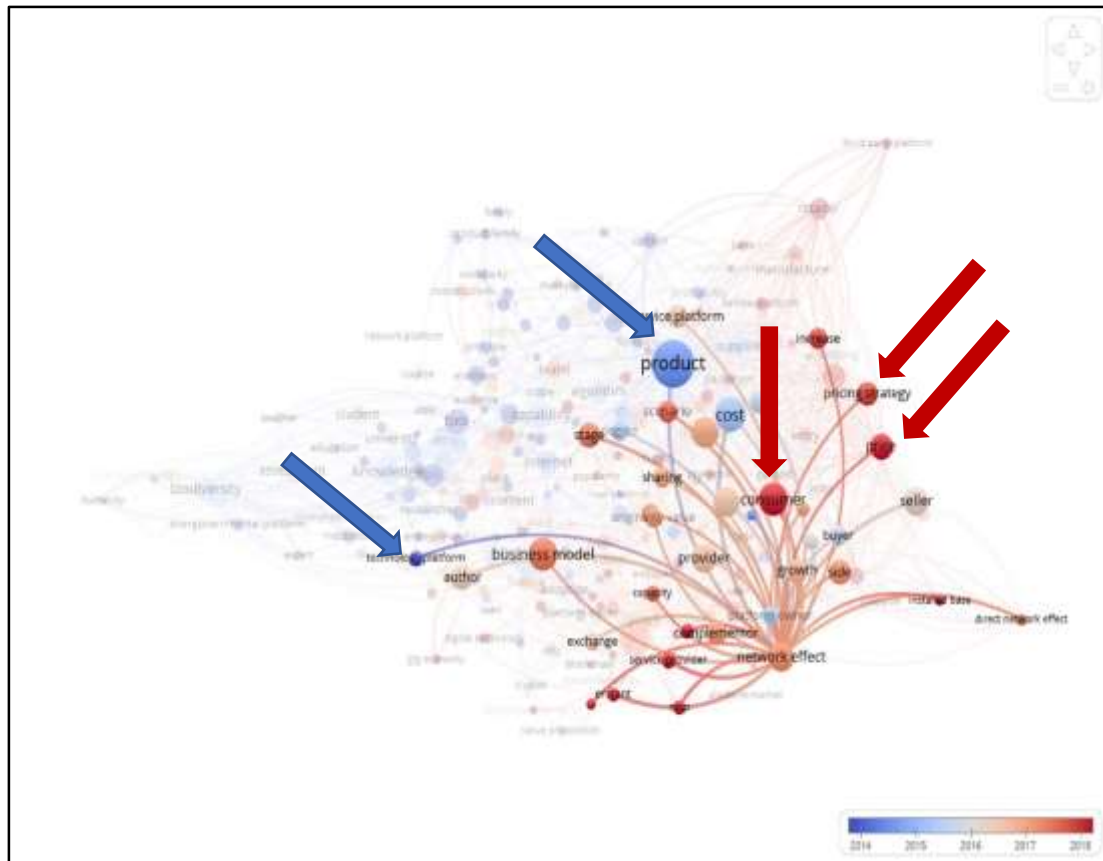


Figure 101: The “Network Effect” Term or Concept and the Related Mined Terms

The resulted direct related/connected keywords and terms from the previous two conducted analyses were used inside MAXQDA to find the same identical automatically produced codes by MAXQDA. Hence, all automatically generated and matched keywords/terms that were identified by both VOSviewer and MAXQDA were collected in a special set of codes in the MAXQDA coding system as shown in Figure 102.

The next step was to use these automatically generated codes as suggestions from the tools for some prospect codes and/or incidents. These suggestions were used for recoding the available datasets just in case this can help in discovering any missed or overlooked important codes and/or incidents. The accumulated results and the updated coding system are summarized in Table 22. Only two new incidents were discovered with no new codes, which is a good second indicator of the desired theoretical saturation too.

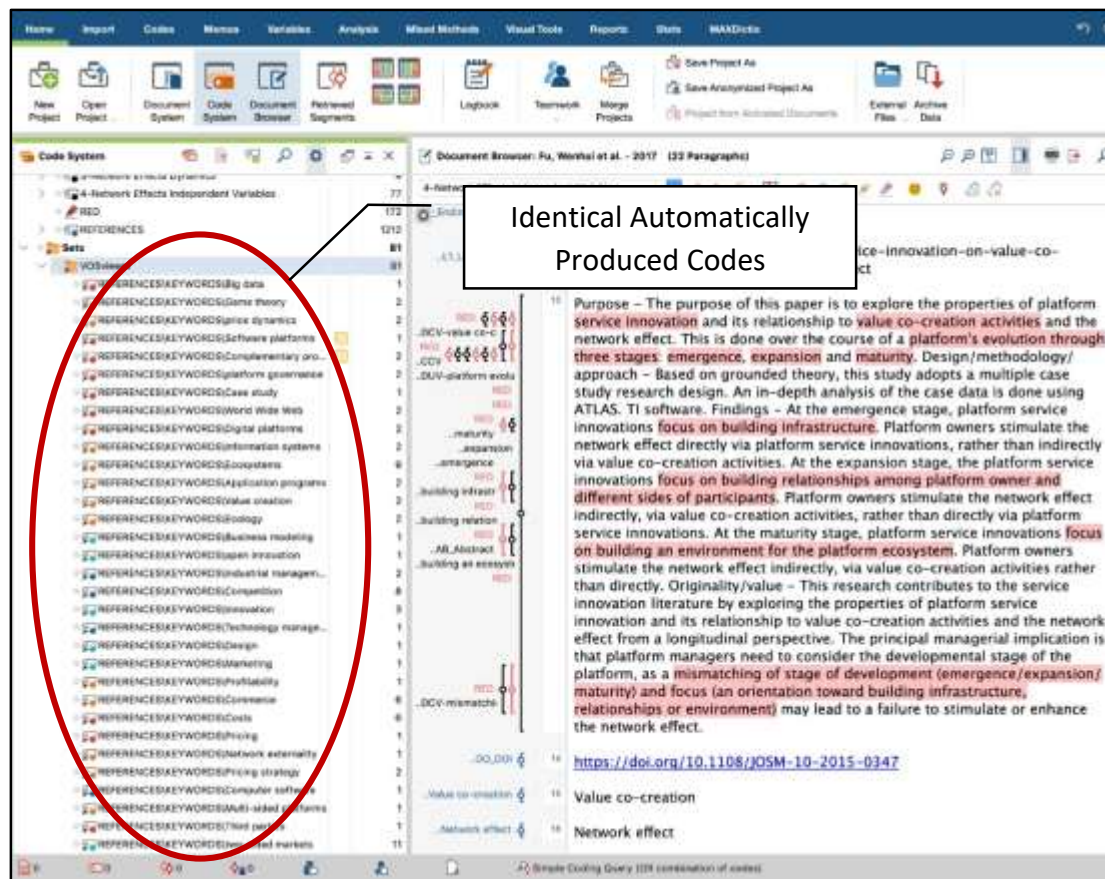


Figure 102: MAXQDA Coding Systems Updated With VOSviewer Suggested Codes

| No | Category                              | New From Group-1 | New From Group-2 | Saturate d From VOS Viewer | Total      |
|----|---------------------------------------|------------------|------------------|----------------------------|------------|
| 1  | Network Effects Types                 | 60               | 0                | 0                          | 60         |
| 2  | Network Effects Impact                | 26               | 5                | 0                          | 31         |
| 3  | Network Effects Dynamics              | 4                | 0                | 0                          | 4          |
| 4  | Network Effects Independent Variables | 52               | 23               | 2                          | 77         |
|    | <b>Totals</b>                         | <b>142</b>       | <b>28</b>        | <b>2</b>                   | <b>172</b> |

Table 22: MAXQDA Found Incidents in Datasets or Groups & VOSviewer Semi-Automatic Support

## 10.11 Theoretical Saturation with the Empirical Case Studies

After completing all the coding process in the substantive area-1 up to the semi-automatically tools supported coding, the focus shifted to the saturation of the substantive area-1 using the empirical cases studies. The process of the in-vivo coding was completed on the empirical references group, which were described in the data collection and preparation steps described in detail in the research methodology chapter. The resulted coding system, including incidents and codes are presented in the upcoming tables (Table 23 and Table 24).

These tables show that the first dataset or substantive area-1 of references generated the vast majority of both the incidents and codes, while only 46 additional incidents and 11 additional codes were found in the saturation empirical references group of the substantive area-1, which seems both logical and interesting. These results presented in Table 23 and Table 24 are interesting because they show a clear indication of the theoretical saturation based on the available datasets in hand. Substantive area-1 produced 172 incidents out of 218 total incidents, which represents around 79% of the found incidents, while the saturation empirical references group of the substantive area-1 produced only 21%. Regarding the codes, substantive area-1 produced 107 codes out of 118 total codes, which represents around 90% of the found codes, while the saturation empirical references group of the substantive area-1 produced only 10%. According to Holton & Walsh (2016), saturation depends mainly on the nature of the available datasets and may change if new datasets are obtained.

However, taking the nature of the used datasets in this DBA thesis into consideration, obtaining new datasets needs many years to come to find newly generated knowledge and published literature around the network effects core concern. Hence, the current obtained results may have a satisfactory degree of stability for a relatively reasonable time in the future from the saturation point of view.

| No | Category                              | Substantive Area-1 |                   |                           |                                     | Total      |
|----|---------------------------------------|--------------------|-------------------|---------------------------|-------------------------------------|------------|
|    |                                       | New From Group -1  | New From Group -2 | Saturated From VOS Viewer | New from Saturation Empirical Group |            |
| 1  | Network Effects Types                 | 60                 | 0                 | 0                         | 12                                  | 72         |
| 2  | Network Effects Impact                | 26                 | 5                 | 0                         | 12                                  | 43         |
| 3  | Network Effects Dynamics              | 4                  | 0                 | 0                         | 0                                   | 4          |
| 4  | Network Effects Independent Variables | 52                 | 23                | 2                         | 22                                  | 99         |
|    | <b>Totals</b>                         | <b>142</b>         | <b>28</b>         | <b>2</b>                  | <b>46</b>                           | <b>218</b> |

Table 23: MAXQDA Found Incidents in the First Substantive Areas



| No | Category                              | Substantive Area-1 |                   |                           |                                     | Total      |
|----|---------------------------------------|--------------------|-------------------|---------------------------|-------------------------------------|------------|
|    |                                       | New From Group -1  | New From Group -2 | Saturated From VOS Viewer | New from Saturation Empirical Group |            |
| 1  | Network Effects Types                 | 15                 | 0                 | 0                         | 3                                   | 18         |
| 2  | Network Effects Impact                | 19                 | 3                 | 0                         | 1                                   | 23         |
| 3  | Network Effects Dynamics              | 5                  | 0                 | 0                         | 0                                   | 5          |
| 4  | Network Effects Independent Variables | 65                 | 0                 | 0                         | 7                                   | 72         |
|    | <b>Totals</b>                         | <b>104</b>         | <b>3</b>          | <b>0</b>                  | <b>11</b>                           | <b>118</b> |

Table 24: MAXQDA Found Codes in the First Substantive Areas

Table 24 above indicates that there were additional eleven codes that were found in the saturation empirical references group of the substantive area-1. Furthermore, Figure 103 below shows the full list of these found eleven codes on the left-hand side. However, due to the size limitation, only the seven codes related to the network effect independent variables are shown in detail with the yellow color.

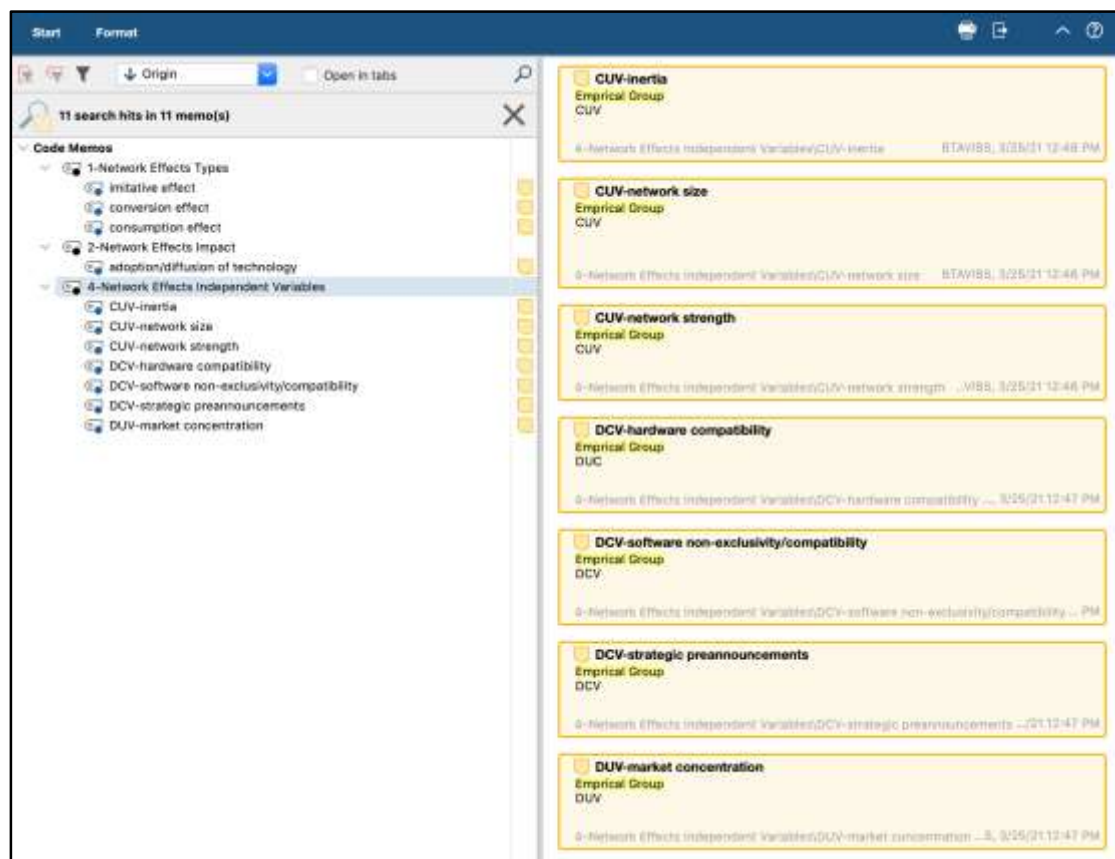


Figure 103: MAXQDA Additional Found Codes in the Saturation Group of the First Substantive Areas

Three codes are related to the network effects types, which are the imitative effect (Majumdar & Venkataraman, 1998), conversion effect (Majumdar & Venkataraman, 1998), and consumption effect (Majumdar & Venkataraman, 1998). While, there was only one new code that is related to the network effects impact, which is the adoption/diffusion of technology (Doganoglu & Grzybowski, 2007), (Gandal, Kende, & Rob, 2000), (Goolsbee & Klenow, 2002), (Majumdar & Venkataraman, 1998) & (Saloner & Shepard, 1992).

Finally, the seven codes related to the network effect independent variables include three codes from the continuous uncontrollable variables (CUV) category, which are:

- The inertia (Birke & Swann, 2007) & (Clements & Ohashi, 2005).
- The network size (Shankar & Bayus, 2003).
- The network strength (Shankar & Bayus, 2003).

Then the seven codes related to the network effect independent variables include four codes from the discrete uncontrollable variables (DUV) category, which are:

- The hardware compatibility (Corts & Lederman, 2009), (Gandal, Greenstein, & Salant, 1999), (Nair, Chintagunta, & Dubé, 2004) & (Stremersch, Tellis, Hans Franses, & Binken, 2007).
- The software non-exclusivity/compatibility (Corts & Lederman, 2009), (Gandal, 1994), (Lee R. S., 2013), (Nair, Chintagunta, & Dubé, 2004)& (Stremersch, Tellis, Hans Franses, & Binken, 2007).
- The strategic preannouncements (Dranove & Gandal, 2000).
- The market concentration (Gowrisankaran & Stavins, 2002).

As shown in the following figure (Figure 104), the “Discrete Controllable Variables – DCVs” updated list can be found on the left-hand side with the codes came from the substantive area-2 (filed with the red color). The name of this group or list itself has not changed. These three added DCVs are as the follows:

- The strategic pre-announcements for different offerings (Dranove & Gandal, 2000).
- The hardware compatibility of the infrastructure (Gandal, Greenstein, & Salant, 1999).
- The software non-exclusivity for the platform application (Lee R. S., 2013).

The first collection induction strategies to raise the motivation and the second collection barriers overcoming strategies to raise ability have not been affected by the coding of the substantive area-2.

Finally, it is worth mentioning that the three orange conceptualized collections that appear in Figure 96 and its enhanced more saturated version that appears in Figure 104 were incorporated using the concept of theoretically sorting in the classical grounded theory (Holton & Walsh, 2016); to transfer the previously presented thin version of the discovered theory into a full version that will be presented and explained initially in Figure 105 and finally in Figure 113 later on.

After two steps of ensuring the theoretical saturation, the full version of the discovered classical grounded theory is going to be explained immediately in the upcoming subsection.

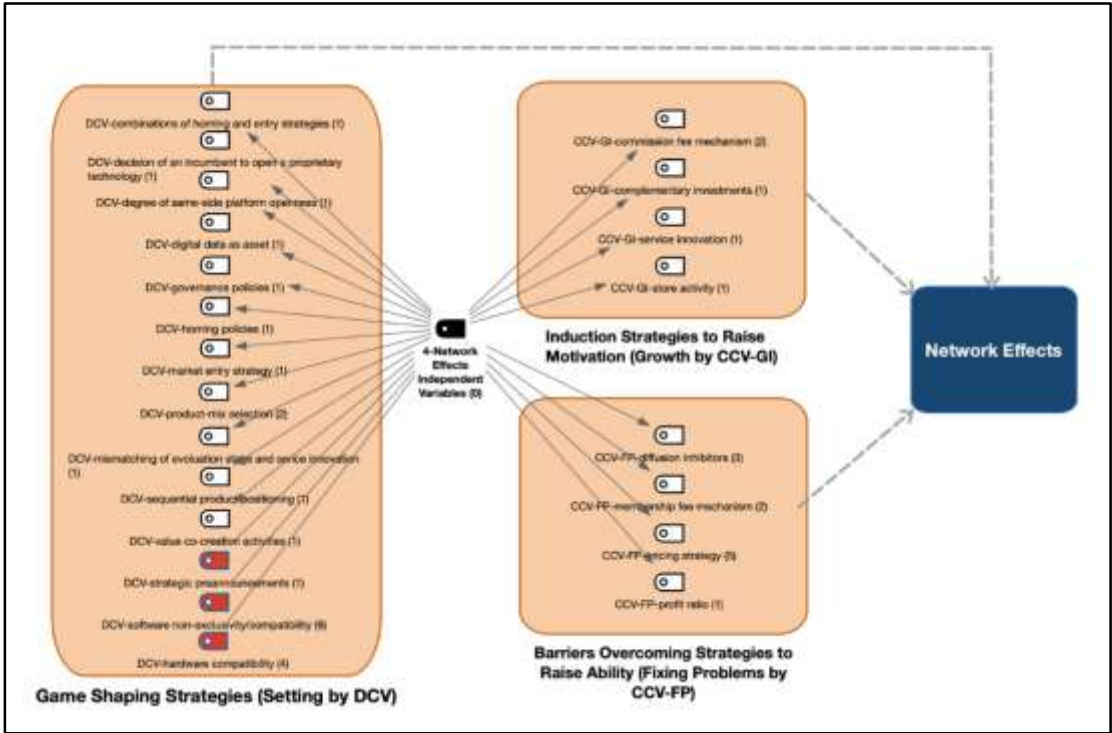


Figure 104: MAXQDA Final Creative Coding of the Independent Variables That Affect the Network Effects



## 10.12 The Conceptualized Outcome Theory from Literature as Secondary Data Substantive Area

During the past conducted and presented stages of the classical grounded theory in this DBA thesis, many coding and analysis steps were conducted either manually or with some software tools support including the open coding, conceptualization, theoretical sorting for the first thin version of the discovered theory, initial selective coding that revealed the unsaturation, and the intensive selective coding that included a double check for the theoretical saturation. This theoretical saturation is what will transfer the thin version of the initially discovered theory into a full rich one.

Hence, it is time to carry out the final round of the theoretical sorting to give this rich version of the theory its final shape. Of course, it is going to be built on the shape of this first initial thin version. It is something like organic growth of the discovered theory, which will produce the final rich version that contains more concepts and relationships. However, of course, increasing the number of concepts and relationships is not a target in itself, but increasing the depth of the discovered theory and increasing the insight provided by the final version are the direct targets. This final rich version of the discovered theory should provide the decision-makers with valuable insight, which includes all critical decision points in the strategizing process. Briefly, and to avoid providing redundant information, the theory should fulfill the promised contributions in the chapter of the theoretical and practical contributions as well as should guide to the previously promised managerial implications that were mentioned in the relatively dedicated chapter for this purpose too. Aggregating the conceptualized parts of the discovered theory, across the journey of this DBA thesis, presented in Figure 76, Figure 77, Figure 78, and Figure 96; the initial final version can be presented in Figure 105.

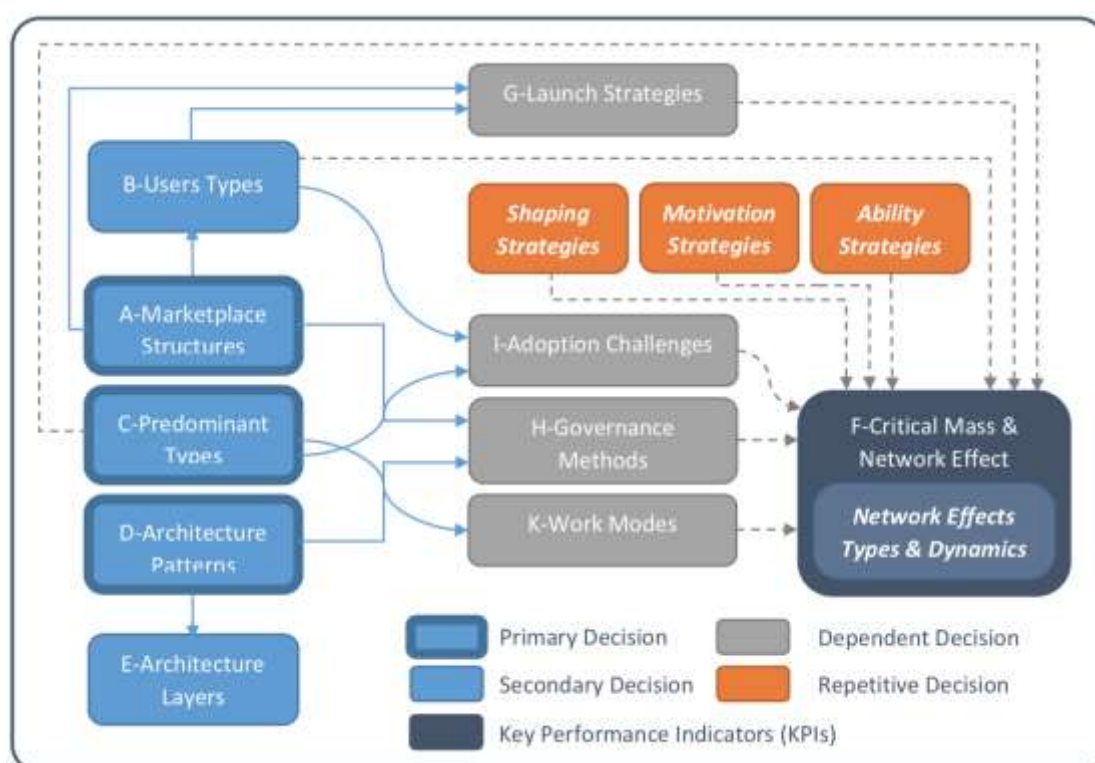


Figure 105: The Initial Full Digital Platform Strategy in the Literature Substantive Area

If the version presented in Figure 105 was compared with the initial thin version presented in Figure 76, the newly added elements can appear clearly. The clearest elements are the orange boxes that came directly from the conceptualized collections presented previously in Figure 96 plus some relationships that came directly from Figure 77 and Figure 78. The three orange boxes were given short representative names, which are the shaping strategies, motivation strategies, and ability strategies.

These are short versions for the long ones previously presented in Figure 96. In addition, the orange color was used to distinguish their type of decisions, which are the repetitive decisions. This means that these decisions are going to be taken over and over many times during the lifetime of the platform to match the changing market conditions. As an example, pricing strategies can change, and should change, often to match what is happening in the changing in competitions.

The other clear elements are the lighter blue box inside the network effect itself, which presents two categories out of the four categories presented in Figure 92. These two categories are the network effects types and dynamics. This means that in this initial final version presented in Figure 105, had included three categories out of four presented in Figure 92. The remaining fourth one, which is the network effects impact. The rationale behind this is that these discovered four categories in relation to network effects have different importance from this DBA perspective as follows:

- The independent variables category are the most important category as it is needed to achieve the success indicator or the dependent variable, which is the network effect itself.
- The types and dynamics categories are used by the decision-makers to increase the understanding of the strategic challenge in hand.
- The impact category is beyond the scope of this DBA thesis and was used only to highlight some important aspects related to the managerial implications and was added to the managerial implications chapter.

Furthermore, Figure 105 shows clearly how achieving the network effect is no longer a simple mission. In this version, there are nine relationship arrows that are directly affecting the achievement of this network effect. Each relation is affected in the real world by many controllable variables. Each variable is a critical business decision that needs both managerial knowledge and practical experience to tackle. As an example, what is the optimum pricing strategy that should be used to achieve the network effect? The pricing strategy is one of the continuous controllable variables that are related to raising ability strategies orange box that appears in the right-most side in Figure 105.

Hence, as mentioned in the theoretical and practical chapter, this discovered classical grounded theory can be considered as a “Meta-Strategy” that informs the decision-makers when to call their knowledge and experiences to employ certain specific strategies. Furthermore, it covers all historical schools of thought and emergent research themes that focused on achieving the network effect as presented previously in Figure 11. This meta-strategy contains a comprehensive accumulation and aggregation of all the previously documented human knowledge and experiences that were published in reputable references and contained strategic decision points.

However, and up to this point, the journey of theorizing has not come to the end yet. There is still a room for higher level of conceptualization that tends to add more added value and in-depth insight to the discovered classical grounded theory.

### 10.13 Conceptualized Outcome of the Selective & Theoretical Coding for UBER Case Study Substantive Area

According to the UBER Technologies Inc. case study data collection and preparation, steps described in detail in the research methodology chapter, more than one dataset was ready for analysis during both selective and theoretical coding stages. The direct objective of these stages is to discover classical grounded theory about the platform strategy dynamics from the empirical raw collected data about UBER as the second substantive area. Of course, theoretical sorting is going to be influenced by the discovered theory from the first substantive area related to the literature as secondary data. The UBER news datasets are fully presented in Appendix-N.

There was no manual coding in this second substantive area and to use MAXQDA supported coding the first step was to import these datasets into MAXQDA using the exported news PDFs dataset from ProQuest and MarketLine online libraries. The imported news PDFs appear on the upper-left side of Figure 106. In the second step, the already existing coding system from the first substantive area (*i.e. literature as secondary data*) was reused and enriched with the new codes and incidents found from coding the second substantive area (*i.e. UBER cases study*). The resulted updated and enriched coding system appears in the lower-left side of Figure 106 too.

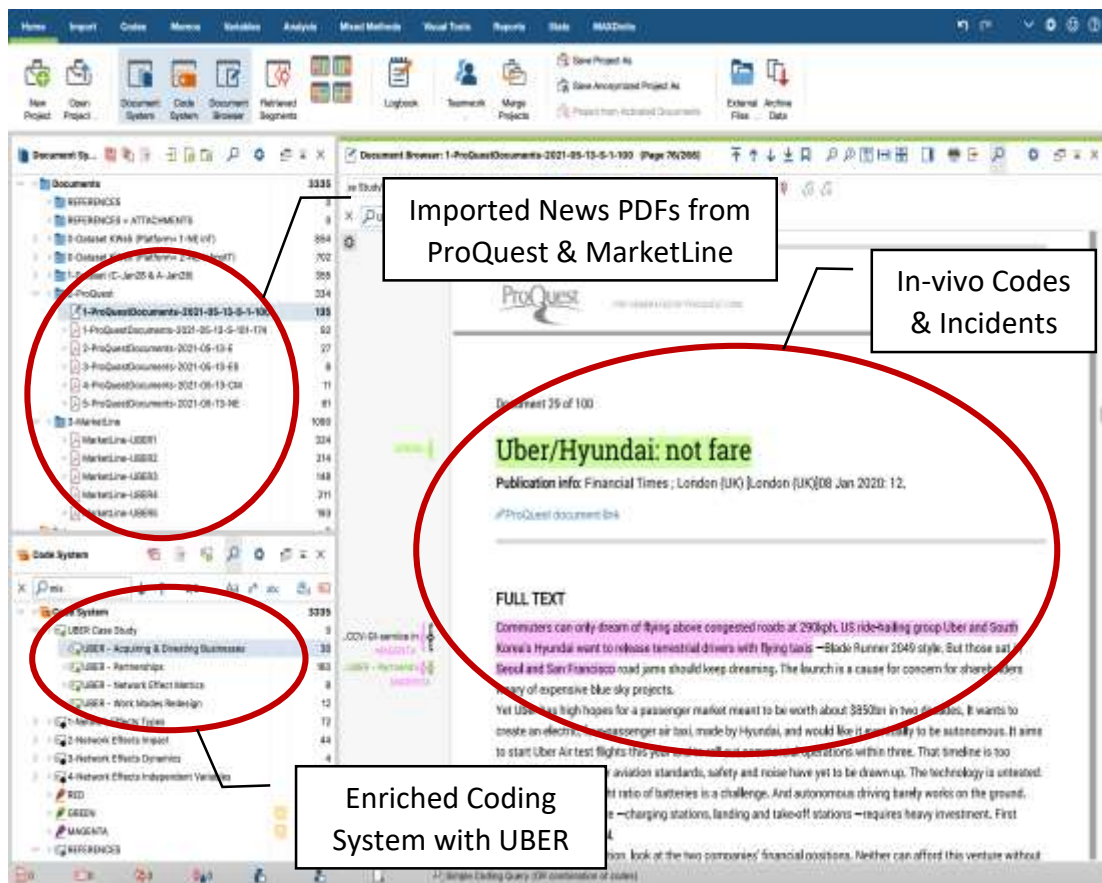


Figure 106: MAXQDA UBER News PDFs, In-vivo Coding Sample, and the Enriched Coding System

The process of the in-vivo coding was completed and resulted in additional several hundreds of incidents, while only 4 additional codes were found which both seem logical and interesting. First, it is logical because that many of the codes that were used in the second substantive area (i.e. UBER cases study) came from the first substantive area (i.e. literature as secondary data). This is the reason that there are only four additional codes. Second, it is interesting because this great matching is going to enable and facilitate the generalization stage, in the classical grounded theory journey, from the two discovered classical grounded theories.

As shown in Figure 106, there were four new codes as follows:

- The acquisitions and divesting in UBER: Contains incidents found that mentioned different types of strategic businesses acquisitions and divesting. There were some evidences with around 15 incidents that UBER is using this strategic action to dominate the market and overcome any significant competition in some strategic regions. As an example, UBER acquired Careem (UBER, 2021), the UAE company, which had a significant market share in the Gulf and Middle East regions.
- The partnerships in UBER: Contains incidents found that mentioned different types of strategic partnerships and agreements. There were so many pieces of evidence with more than 50% of all found incidents in UBER case study collected data that the UBER is using this strategic action to penetrate new markets as well as expand in existing markets. These partnerships came in all forms such as contracts, agreements, and even technical integration features on the mobile application level. Furthermore, these partnerships covered many national and international regions, industry lines, and organization types such as high-tech companies, banks, other platforms, FinTech organizations, governmental organizations, and even military divisions. In addition, the purpose of these partnerships varied too. Some were for the research and development, some for the financial side and payments, some on the operational levels and many for providing both customers and drivers with some attractive offers. This huge intensity of using these strategic partnerships provides a surprising single about the ability of these partnerships on inducing a significant ratio of the network effects, which represents a “Non-Organic Growth-NOG” of course. This ratio can be named as a “NOG-Induced Network Effects”
- The network effects metrics in UBER: Contains incidents found that mentioned different and specific metrics of the network effects such as the number of users, ordered rides...etc. This includes some metrics that are used inside UBER to measure the network effects such as the number of new users, the number of rides.
- The redesigning work modes in UBER: Contains incidents found that mentioned different types of strategic redesigning and reshaping the work modes such as switching between temporary contracts and employment. There were some pieces of evidence with 10+ incidents that UBER is using this strategic action to accommodate and adjust with the regulations and legal requirements in some strategic regions.

After categorization, the third coming step was the conceptualization. The main objective of this stage was to deal with the complexity that resulted from the newly discovered and old codes. How to make them fit together? Being influenced with the conceptualization and sorting of the first substantive area (*i.e. Literature as secondary data*), it was easy to conceptualize the new element, which is the non-organic growth “NOG” decision element that include both strategic acquisitions/divesting as well as the strategic partnerships. Both are strategic actions done by UBER to induce the network effect more effectively and efficiently. The fourth step was focusing on the theoretical sorting to give the theory a reasonable shape (Holton & Walsh, 2016). MAXQDA supported this step by creative coding board and it was influenced by the sorting of the first substantive are as shown in Figure 107.

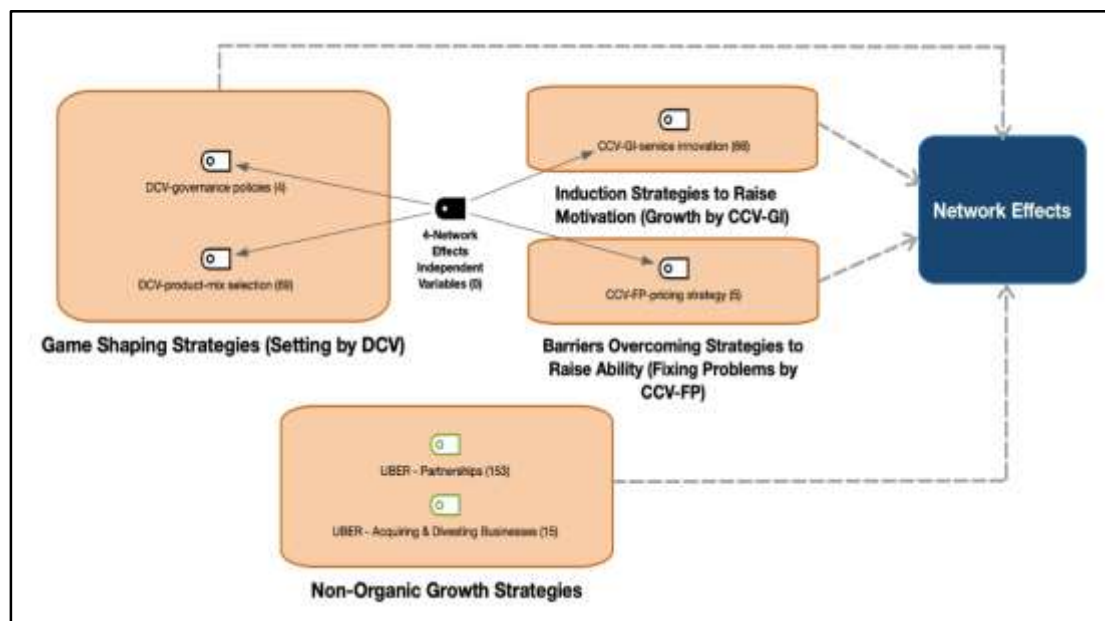


Figure 107: MAXQDA Creative Coding of UBER Independent Variables That Affect the Network Effects

## 10.14 The Conceptualized Outcome Theory from UBER Case Study Substantive Area

Similar to the previously conducted and presented stages of the classical grounded theory for the first substantive area, which is related to the literature as secondary data, many coding and analysis steps were conducted for the second UBER case study substantive area with MAXQDA support including the intensive selective coding, conceptualization, and theoretical sorting. Then, it is time to carry out the final round of the theoretical sorting to give the theory its final shape. Of course, it is going to be built on the shape of the theory discovered from the first substantive area (*i.e. literature as secondary data*). Aggregating the conceptualized parts of the discovered theory from the UBER case study substantive area can be presented in Figure 108.

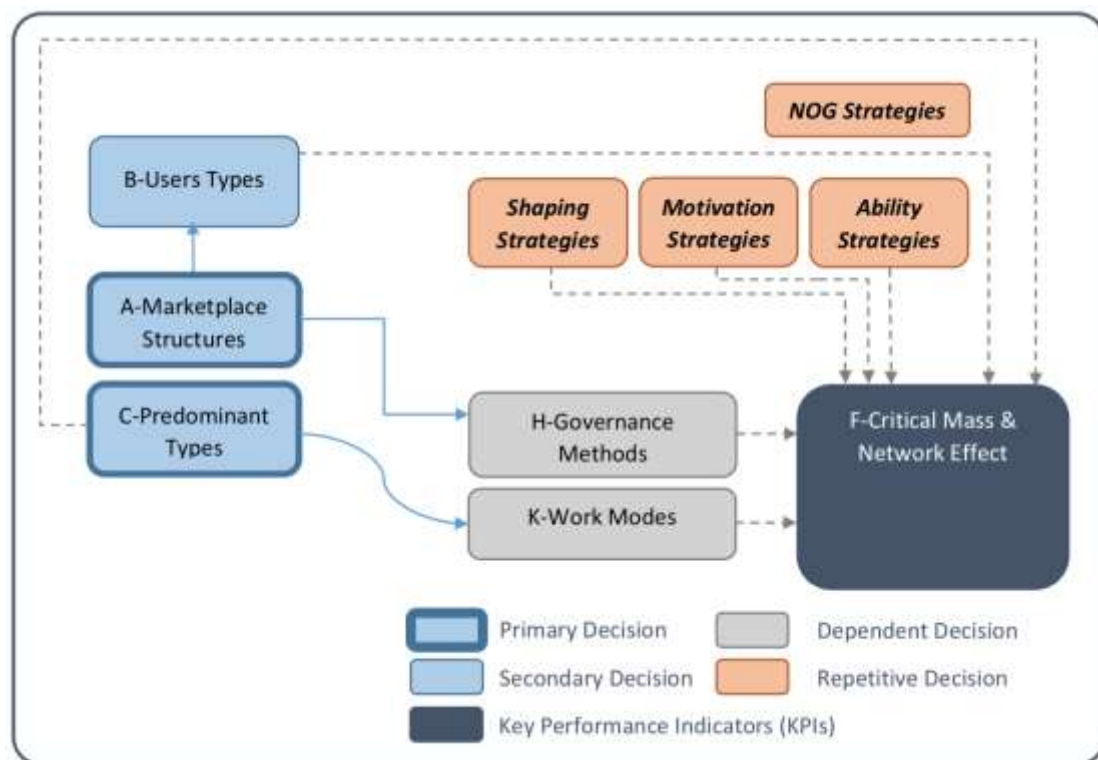


Figure 108: The Initial Full Digital Platform Strategy in the UBER Case Study Substantive Area

If the UBER version presented in Figure 108 is compared with the initial full version of the theory from the literature presented in Figure 105, three major differences can appear clearly. The three differences are the fewer number of elements, the additional “NOG-Strategies” element, as well as the lighter transparent colored boxes. The rationale behind the fewer number of elements is that these are the only elements that were found in the collected news dataset. This seems logical because, for example, the collected news was all from UBER post-startup era, and hence, nothing can be found that is related to launching strategies and adoption challenges.

The Second clear difference is the NOG-Strategies box or element, which presents how UBER is managing its growth by using non-organic growth NOG methods and strategies. The rationale behind this new box is that there are so many incidents that were found in the collected news dataset about UBER partnerships and acquisitions. These NOG-Strategies may provide some rationale for UBER hypergrowth.

The third clear difference is the lighter transparent colored boxes, which present the four decision categories presented in Figure 105. The rationale behind these lighter transparent colors is that there are so few incidents that were found in the collected news dataset. This seems logical because the collected news as raw data is expected to have a much lower signal-to-noise ratio if compared with the peer-reviewed literature that was used in the first substantive area.

Furthermore, Figure 108 shows that there are seven relationship arrows that are directly affecting the achievement of this network effect. Each relation is affected in the UBER world by one or two controllable variables only. Each variable is a critical business decision that was already taken by UBER decision-makers. As an example, how UBER managed the services innovation was critical to achieving the network effect. However, there is no link from the NOG-Strategies to the network effect element because no validated hypotheses were found so far. This can be a candidate future work-study.

Hence, as mentioned in the theoretical and practical chapter, this discovered classical grounded theory can be considered as a meta-strategy that informs the decision-makers when to call their knowledge and experiences to employ certain specific strategies. Furthermore, it covers only a subset of the historical schools of thought and emergent research themes that focused on achieving the network effect as presented previously in Figure 11. This meta-strategy contains a light-weight accumulation and aggregation of all the previously published news.



## 10.15 The Conceptualized Outcome General Theory from Both Substantive Areas

As in the previously discussed in the research methodology chapter the most important research decision is the research domains or by using the grounded theory terminology, the substantive areas that the researcher is going to collect their data from. Starting from the first thin version of the discovered grounded theory, the research went through two parallel paths to collect and analyze data from two domains as follows:

- The first substantive area was the peer-reviewed and gray literature as data source.
- The second substantive area is a leading globally recognized case study, which is the UBER Technologies Inc.

The target was to examine each substantive area that resulted in a substantive grounded theory (Holton & Walsh, 2016). Then, and as explained by Holton & Walsh (2016), the generalization of the previous two discovered substantive grounded theories are formalized into an intermediate theory or a general substantive grounded theory as shown in Figure 109. According to Holton & Walsh (2016), the typical last process of generalization/formalization is called the substantive formalization.

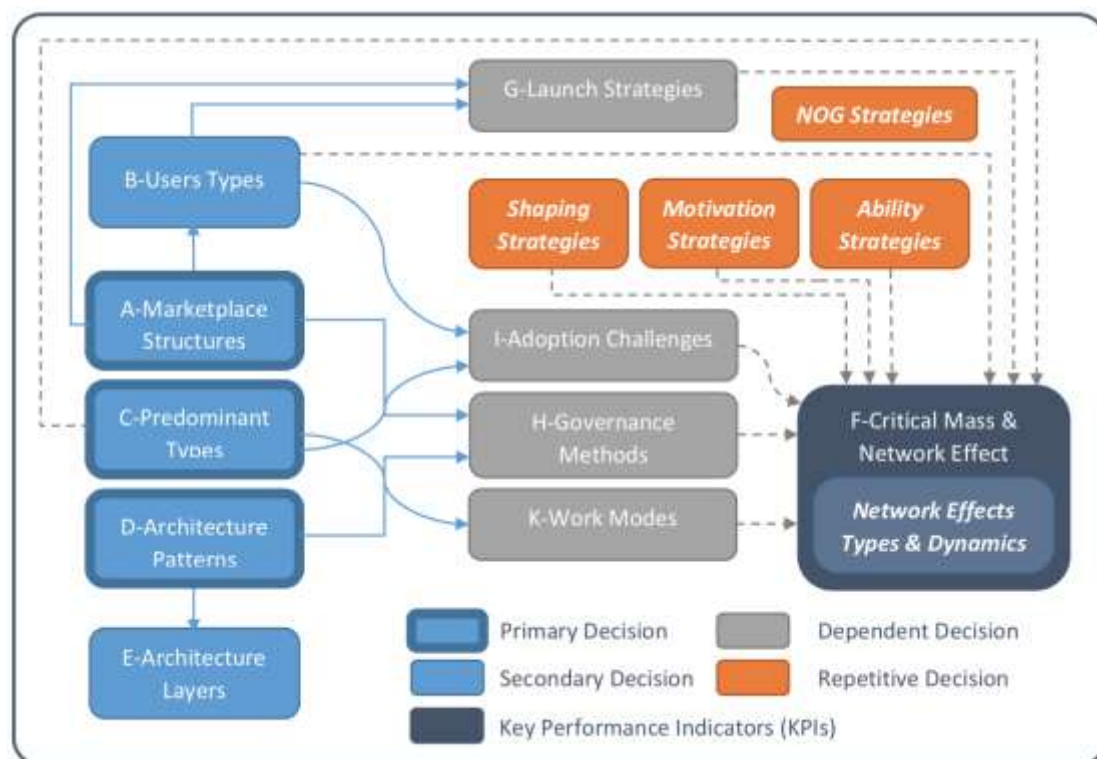


Figure 109: The Initial Full & Generalized Digital Platform Strategy from Both Substantive Areas

To illustrate the aggregation of the conceptualized and generalized parts of both discovered theories from both substantive areas (i.e. the first area related to the literature as secondary data and the second area related to UBER cases study), the tabular form is going to be used in the following table (Table 25).

This table is going to list all decisions elements of the final general classical grounded theory as well as the contribution from each substantive area and its discovered substantive classical grounded theory.

| No | Legend                                                                              | Decision Category                        | Decision Element                 | Literature Data Substantive Area | UBER Case Study Substantive Area |
|----|-------------------------------------------------------------------------------------|------------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 1  |                                                                                     | <b>Primary Decisions</b>                 | A-Marketplace Structures         | X                                | X                                |
| 2  |    |                                          | C-Predominant Types              | X                                | X                                |
| 3  |                                                                                     |                                          | D-Architecture Patterns          | X                                |                                  |
| 4  |    | <b>Secondary Decisions</b>               | B-Users Types                    | X                                | X                                |
| 5  |                                                                                     |                                          | E-Architecture Layers            | X                                |                                  |
| 6  |  | <b>Dependent Decisions</b>               | G-Launch Strategies              | X                                |                                  |
| 7  |                                                                                     |                                          | H-Governance Methods             | X                                | X                                |
| 8  |                                                                                     |                                          | I-Adoption Challenges            | X                                |                                  |
| 9  |                                                                                     |                                          | K-Work Modes                     | X                                | X                                |
| 10 |  | <b>Repetitive Decisions</b>              | Shaping Strategies               | X                                | X                                |
| 11 |                                                                                     |                                          | Motivation Strategies            | X                                | X                                |
| 12 |                                                                                     |                                          | Ability Strategies               | X                                | X                                |
| 13 |                                                                                     |                                          | NOG-Strategies                   |                                  | X                                |
| 14 |  | <b>Key Performance Indicators (KPIs)</b> | F-Critical Mass & Network Effect | X                                | X                                |
| 15 |                                                                                     |                                          | Network Effects Types & Dynamics | X                                |                                  |

*Table 25: Contributed Decision Elements from Both Substantive Areas in the Generalized Discovered Theory*

## **10.16 Upgrading the Conceptualized Outcome General Theory with the Users' Psychological Model**

As previously explained in the research methodology chapter, the usage of the system dynamics domain, the causal loop diagrams, and the well-tested system archetypes (Braun, 2002) enabled the production of a more sound, reliable, and rigorous conceptual diagram. Furthermore, it makes the targeted discovered theory type to be automatically upgraded to the "Type-V: Prescriptive Theory" according to Holton & Walsh (2016). As a brief reminder, the rationale behind this automatic theory upgrading process was that these used well-tested system archetypes explained by Braun (2002) provide a set of daunting down-to-earth implementation action items that were both discovered and validated in several previous research studies related to the discipline of system dynamics and summarized in Braun (2002) reference.

In addition, as previously explained in the research methodology chapter, the usage of the classical grounded theory provides several distinguished benefits to the research journey of this DBA thesis. As a brief reminder, these distinguished benefits including, but not limited to, the following:

- Encouraging the researcher to sticking to and harnessing the power of the foundational pillars of the grounded theory, which include the emergence of concepts and relationship over preconception as well as the conceptualization over the plain description to discover a more insightful theory.
- Enabling and harnessing the power of the latent patterns discovery through the constant comparative analysis that helps the researcher going further steps into the expected conceptualization.
- Providing and harnessing the power of the wonderful freedom to select and use all relevant sources according to the main concern of the research topic as an explanatory and conceptual power in itself for the researcher. This produces a real actionable theory, which provides a good reflection on what is actually happening in the real social situation.
- Accommodating and harnessing the power of the researcher's previous training, learning, and experience. As an example, those who are trained to discover ideas underlining the surface within texts may have a better ability to conceptualize and abstract.

However, it is possible to go a further step in the all is data direction that is supported by the classical grounded theory. Although it can be somehow a debatable aspect but it is worth the discussion. As previously explained in the research methodology chapter, one of the most powerful aspects of the classical grounded theory is the all is data concept (Holton & Walsh, 2016), which indicates that good data is what enables the discovery of a good theory. More importantly, this concept prevents the typical mistake of overlooking the secondary data sources as valuable sources because analyzing secondary data can result in unexpected emergent of surprises that enrich the new theory (Holton & Walsh, 2016).

Hence, existing literature as a secondary data source can add great value too as long as the researcher is aware that s/he is not using this literature for finding researcher gaps for his own research project (Holton & Walsh, 2016). It is a very special type of the grounded data indeed.

This leads to the core point of the debate. Why may the researcher overlook an existing literature source that contains a valuable model from a totally different scientific discipline? This model is data, good data, secondary data, and so grounded in the real world. Actually, this cross-disciplines navigation agility can be considered as the key enabler for discovering what can be called a rupture theory that is totally away and different from the previously published incremental theories. Hence, capitalizing on a similar automatic upgrading process as well as the emergence, conceptualization, latent discovery, data selection freedom, cross-disciplines agility, and under the surface discovery ability based on researcher previous experience; the discovered theory can be upgraded to a better actionable and rapture theory by using a well-known and established theory about human psychology.

There are two orange boxes in Figure 105 that gives a clear impression that they can be merged into a single box or a higher-level concept by using this well-known and established theory about human psychology. Although it came from a totally different discipline, it fits greatly as will be explained in the following immediate paragraphs. This is the “Fogg Behavior Model Theory” invented by Fogg (2009) and is graphical representation appears in Figure 110.

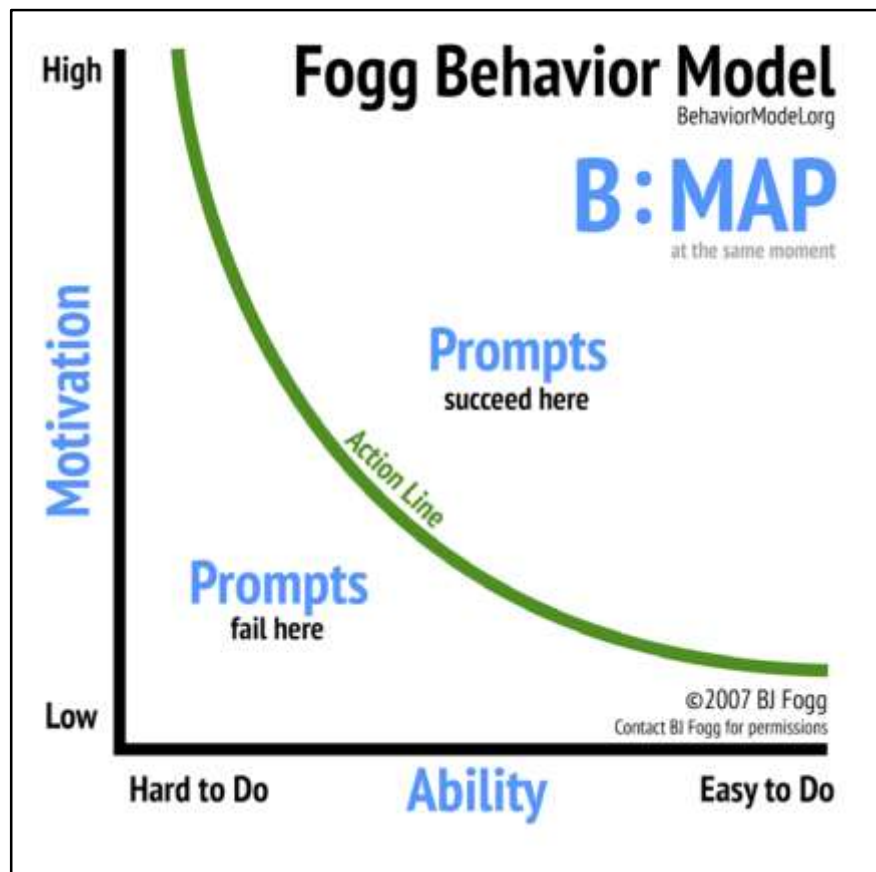


Figure 110: The Original Fogg behavior Model – Source: (Fogg, Fogg Behavior Model, 2020)

Simply, the Fogg behavior model describes what makes a certain human behavior to happen. The model indicates that there are three elements or components that should exist simultaneously for any behavior to happen. The first one is the motivation to do this behavior. The second element is the ability to do, while the third one is the trigger or prompt. Hence, it is called a behavior design model because being able to manage these three elements helps the decision-makers to design users' behavior. Giving an example on the topic of platform network effects, the desired behavior is to make users either joining the network or use the platform more. Hence, these users should be motivated to do so. In addition, these users should have the ability to join in the first place, and finally, there should be frequent triggers or prompts to ask them to join or reuse the platform.

Motivation can come from many factors that are tightly coupled to many strategic decision points in the discovered theory. For example, increasing the previously mentioned commissions can motivate users to join or reuse the platform. On the other hand, the ability can come from many other strategic decision points. For example, the previously mentioned decreasing membership fees can raise the ability to join or reuse the platform. However, the third element, which is the frequent triggers or prompts that come from the daily operations. For example, by using online Google or Facebook advertising, the platform operator can send these frequent triggers to the relevant user segments.

From these examples, it is clear that increasing motivation and ability needs strategic decisions that are being taken according to well-known business strategies, while the triggers are related to the daily operational decisions. Hence, both motivation and ability are more suitable to appear in a strategy-focused theory, while the triggers or prompts are not. This is exactly, what happened in the theory version shown in Figure 105. Hence, this derives some conclusions as follows:

- The first one is that successful simultaneous occurrence of the three elements position the situation in action area as shown in Figure 111, which appears above the action curve. In this area, the triggers or prompts succeed and the human behavior happens
- The second is that the failure to do position the situation in the opposite is of inaction area as shown in the same figure, which appears below the action curve. in this area, the triggers or prompts fail and the human behavior doesn't happen
- This leads to the third conclusion, which is the need for a proactive behavior change strategy to design the behavior and move the position of the situation from the lower left side of Figure 112 to the upper right side of the same figure. This is what makes a successful behavior design and this is exactly what the platform owners or operators should do

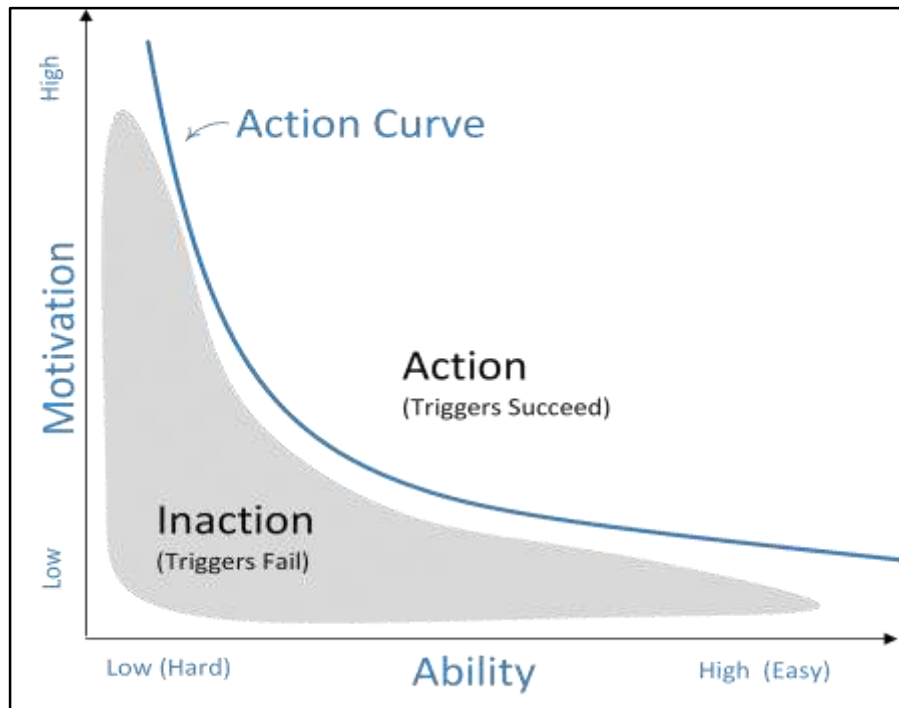


Figure 111: The Action Line, Action & In Action Areas in Fogg Model – Source: (Kjer, 2019)

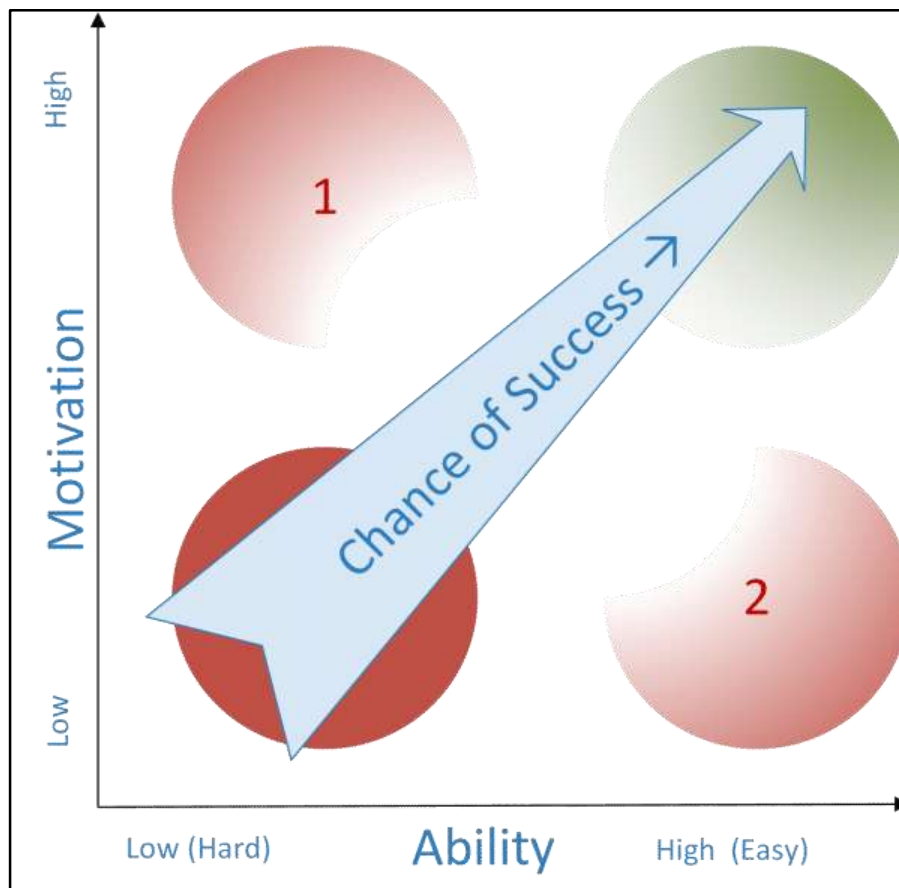


Figure 112: The Optimal Behavior Design of Success in Fogg Model – Source: (Kjer, 2019)

Hence, the initial version of the discovered full-grounded theory that was presented in Figure 105 can be modified by using the Fogg model to be as the final full version that is presented in Figure 113. Motivation and ability strategies are combined in a single behavior design strategies element. This presents a better more insightful version of the theory.

The advantages of this final version over the initial one is that it is denser with fewer elements and relationships, while providing a better insight about the strategic situation that the platform owner or operator face. This final version is reflecting the psychological dimension of the platform users as human being, which of course adds value to the discovered theory either on the practical and theoretical levels.

Practically, the decision-makers should be aware of the existence of this psychological dimension in the equation because this may lead them to try to understand this side more and more. On the other hand, from the theoretical point of view, this may open a novel research line for discovering the psychological dimension in the digital platform ecosystems research field.

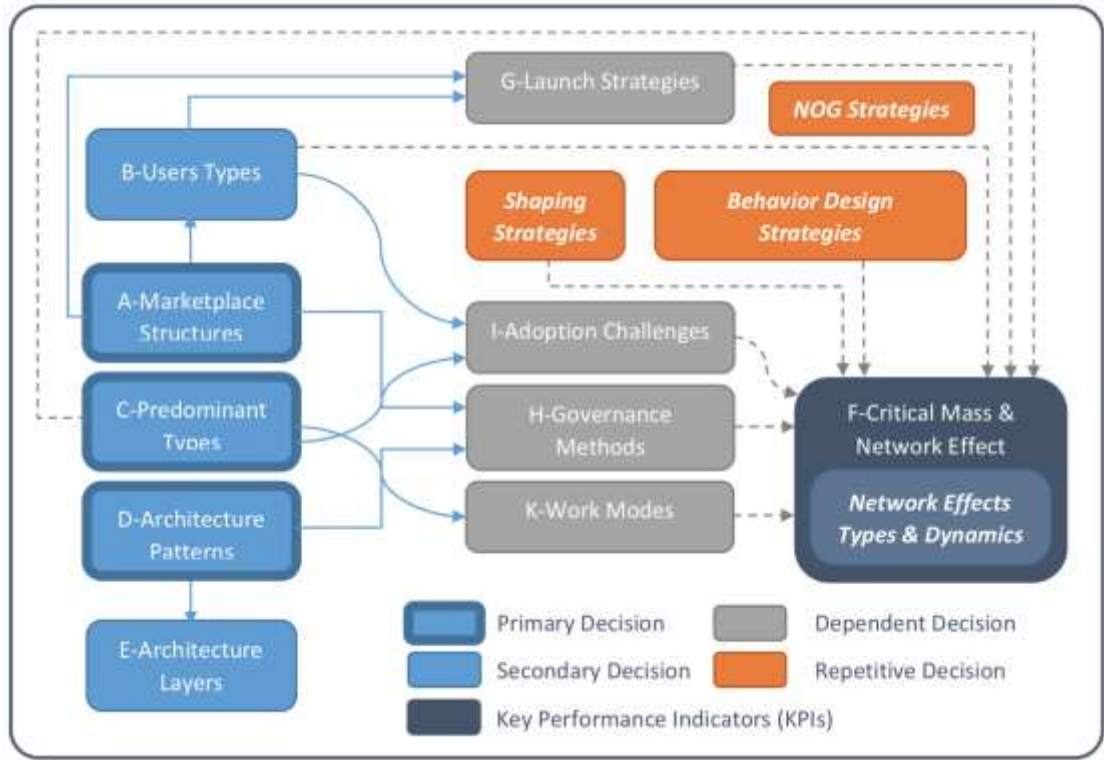


Figure 113: The Final Full Digital Platform Strategy as a General Classical Grounded Theory

After presenting and discussing final full version of the discovered classical grounded theory about the digital platform strategy, it is time to give important hints about the coding journey, coding system, and the final full data structure as well as the theory coverage.









*Figure 115: The Discovered Theory Wide Coverage as a Universal Strategy*

As exactly done when illustrating the Gioia’s method with sample instance and codes, the previous figure (Figure 115) try to illustrate how the discovered theory as a wide coverage to all schools of thought and research theme with sample data sources. These are the sources that were coded inside MAXQDA. This wide coverage is what was used in the theoretical contribution part to give the discovered strategy theory the name of the universal strategy.

## 10.17 The Modeling Scope and the Bridge to System Dynamics

As mentioned before that after drawing the theory conceptual diagram that includes relationships between the core category and the other concepts, another moment of emergence happened, which indicated that the relationships between the core category and some of the concepts are well-known patterns that were deeply understood in other domain of managerial studies and have some well-tested archetypes.

This is the system dynamics domain and casual loop diagrams (Braun, 2002). Hence, upgrading the theory conceptual diagram and migrating the discovered relationships to the other branch of management studies will produce more sound, reliable and rigorous conceptual diagram.

This was the taken decision to go for, however, with selecting what are the concepts that are suitable for this upgrade and migration. Figure 116 highlights, with colors, the focus elements of this report, which are the critical mass & network effect as the key performance indicator (KPI) of the digital platform strategy and the launching strategies, the adoption challenges, as well as the behavior design strategies. There is a reason for selecting these elements to be within the system dynamics model of the digital platform strategy and to exclude the other elements. The reason is that all of the excluded elements, either from the primary decisions category, the secondary decisions category, the dependent decisions, or the repetitive decisions category are discrete variables, which take a certain set of values and don't increase or decrease with the time.

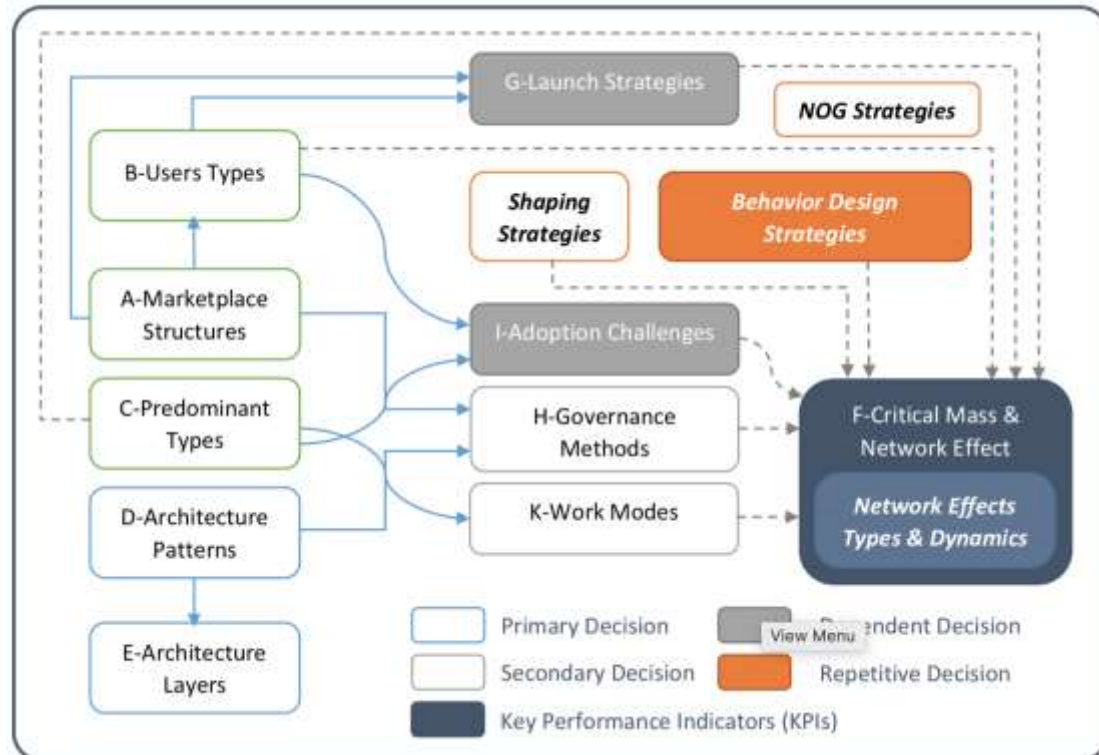


Figure 116: The Modeling Scope within the Digital Platform Strategy (Colored Elements)

As an example regarding the predominant types of the digital platforms, Hsieh and Wu (2019) provided a good insight about the simplest classifications, which are the internal platforms and external platforms to the organization. Furthermore, Hsieh & Wu (2019) referenced a more useful classification based on the overall functionality, which includes the innovation platforms, transaction platforms and the integration platforms. In addition, Aalst et. al. (2019) provided a more similar classification, which includes only two types, which are the transaction platforms and the technology platforms. Finally, another simple classification was mentioned by Parker and Alstyne (2014), which included only the product platforms and network platforms. It is easy to discover that the last two types are just using different titles to the previously mentioned internal and external types.

## 10.18 The Discovered Grounded Theory, System Dynamics

### Archetypes and Selection Rationale

Braun (2002) presented the archetypes family tree that connects the common archetypes and their relationships based on the work done by Michael Goodman and Art Klien published in *The Systems Thinker*. These archetypes became relevant based on the major concern of the strategist, who is either focuses on growth or focuses on fixing problems as well as the rationale behind the situation. One archetype may lead to the other. The following subsections are going to present the selected archetypes and the rationale behind these selections, the causal loop diagram of each archetype, and the overall causal loop diagram of the interacted archetypes within the digital platform strategy model.

Based on the model scoping section, the digital platform strategy model is going to describe the dynamics of reaching the critical mass/network effect of the digital platform strategy based on the platform strategist concerns. The focus on the different launching strategies is, by definition, trying to achieve the required growth for the digital platform from the first day, while the focus on different adoption challenges is, by definition, trying to Fix the Problems that are facing the platform and may prevent this growth. The behavior design strategies have elements from both sides. Figure 117 shows five selected archetypes that will be combined together to form the dynamic model of the digital platform strategy. Three archetypes explain the dynamics of the growth, which are the “Tragedy of the Commons”, the “Attractiveness Principle” and the “Growth and Underinvestment” (Braun, 2002). In addition, there are two archetypes that explain the dynamics of the effort done to fix the problems, which are the “Fixes that Fail” and the “Eroding Goals” (Braun, 2002).

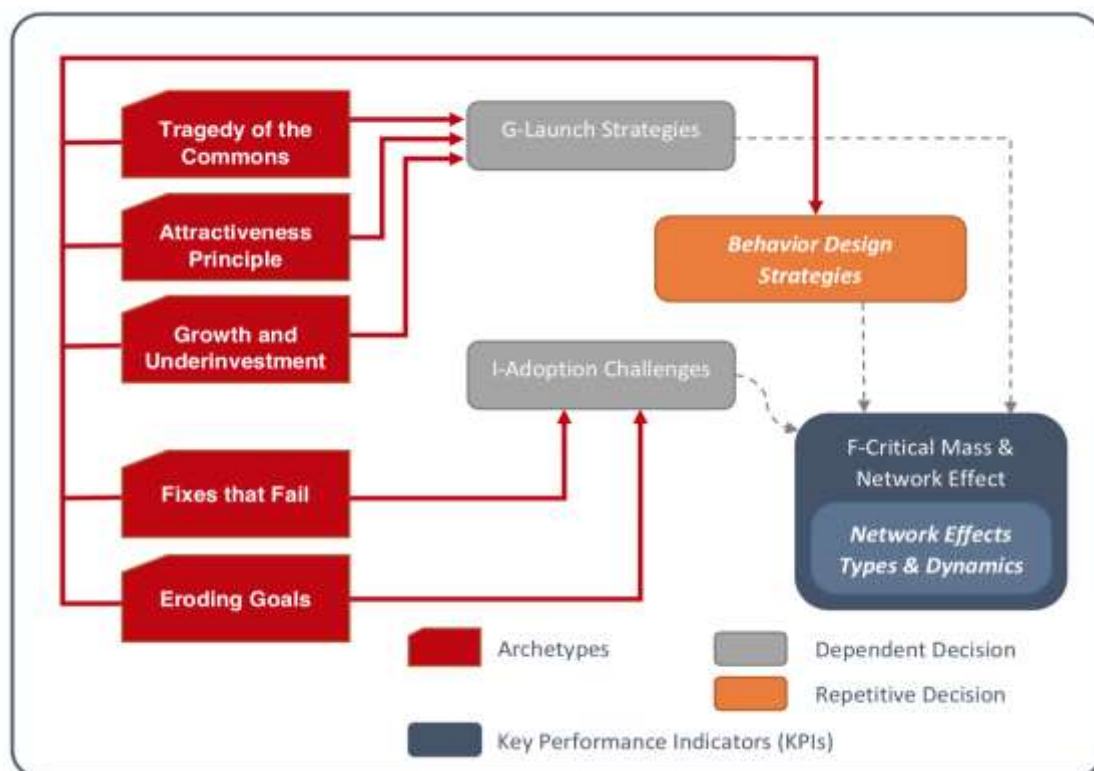


Figure 117: The Modeling Scope with the Selected Archetypes

Regarding the growth concern, and as indicated by Braun (2002), there is nothing that grows forever and it is logical to assume that there are some forces that are going to oppose the efforts done to grow. Hence, the “Limits to Growth” archetype seems to be a good candidate. However, due to the typical natural complexity of the topic of the digital platform strategy, it is more logical to assume that there are many factors that make this opposition and limits the growth. Braun (2002) explained that the “Attractiveness Principle” archetype has strong similarity to the “Limits to Growth” archetype, but with the support of multiple slowing actions. Hence, the “Attractiveness Principle” archetype has a better fit than the limits to growth one to describe this situation.

Furthermore, there is no digital platform that works in isolation in the marketplace without any competition. Hence, it is typical to assume that the digital platform and its competitors are fighting towards the same limit/common, which is the same customer base in this case. This makes the “Tragedy of the Commons” archetype (Braun, 2002) is applicable. However, although the typical situation that relates to the “Tragedy of the Commons” archetype, explained by Braun (2002), was related to internal commons, this report focused on the external commons in which more than one organization or platform within the same market are competing to attract. Finally, as indicated by Braun (2002), there is no growth without considerable capital investment, especially while maintaining fixed performance standards that do not erode with time due to other pressures that force the digital platform strategist to accept lower levels of performance. This makes the “Growth and Underinvestment” archetype, with fixed standards, suitable to describe this situation.

Regarding the fixing problems concern, and as indicated by Braun (2002), quick fixes, even if they were selected due to intensive investigation, provide pain relief in the short-term but can come back and haunt the digital platform strategist and act against his strategic interests in the long-term. Hence, it applies to any and every business strategist, which makes the “Fixes that Fail” archetype a basic building block to appear in the model. Finally, as indicated by Braun (2002), the failure to achieve the required goals with time may increase the pressure on the digital platform strategist to accept lower levels of performance and to relax the original vision goals. This makes the “Eroding Goals” archetype suitable to describe this situation.

So far, the previous paragraphs provided the logic to exclude the “Limits to Growth” archetype. However, there are other archetypes that were excluded such as the “Success to the Successful”, the “Accidental Adversary”, the “Escalation”, and the “Shifting the Burden” archetypes. Here comes the logic behind the exclusion decision. The “Success to the Successful” archetype may be applied if we examine the situation of digital platforms conglomerate, in which the owner/strategist is the same for several platforms. In this case, s/he may direct the rare capital towards the more successful platform. The “Accidental Adversary” archetype may fit within this area too if the management board of two sister platforms agreed to cooperate, but ended up with mistrust. However, both of these cases are beyond the scope of this report and may be examined in a future different study.

The remaining two excluded archetypes, which are the “Escalation” and the “Shifting the Burden” archetypes, were excluded for a totally different reason.

As the business of the digital platform is not an easy one, it may be logical to assume that the digital platform strategist is not going to make naïve mistakes either by engagement in blind competition, where the “Escalation” archetype applies, nor going to accept superficial solutions without careful investigation to the problems, where the “Shifting the Burden” archetype applies. The following sub-sections will explain each archetype with its casual loop diagram drawn using KUMU (2020) tool.

## 10.19 Digital Platform's Competition Dynamics: The Tragedy of the Commons Archetype

The “Tragedy of the Commons” archetype, as shown in Figure 118 explains how the digital platform and its competitors are fighting towards the same limit/common, which is the same customer base or the market pie. Of course, this applies to the digital platforms that target the same customer segment only.

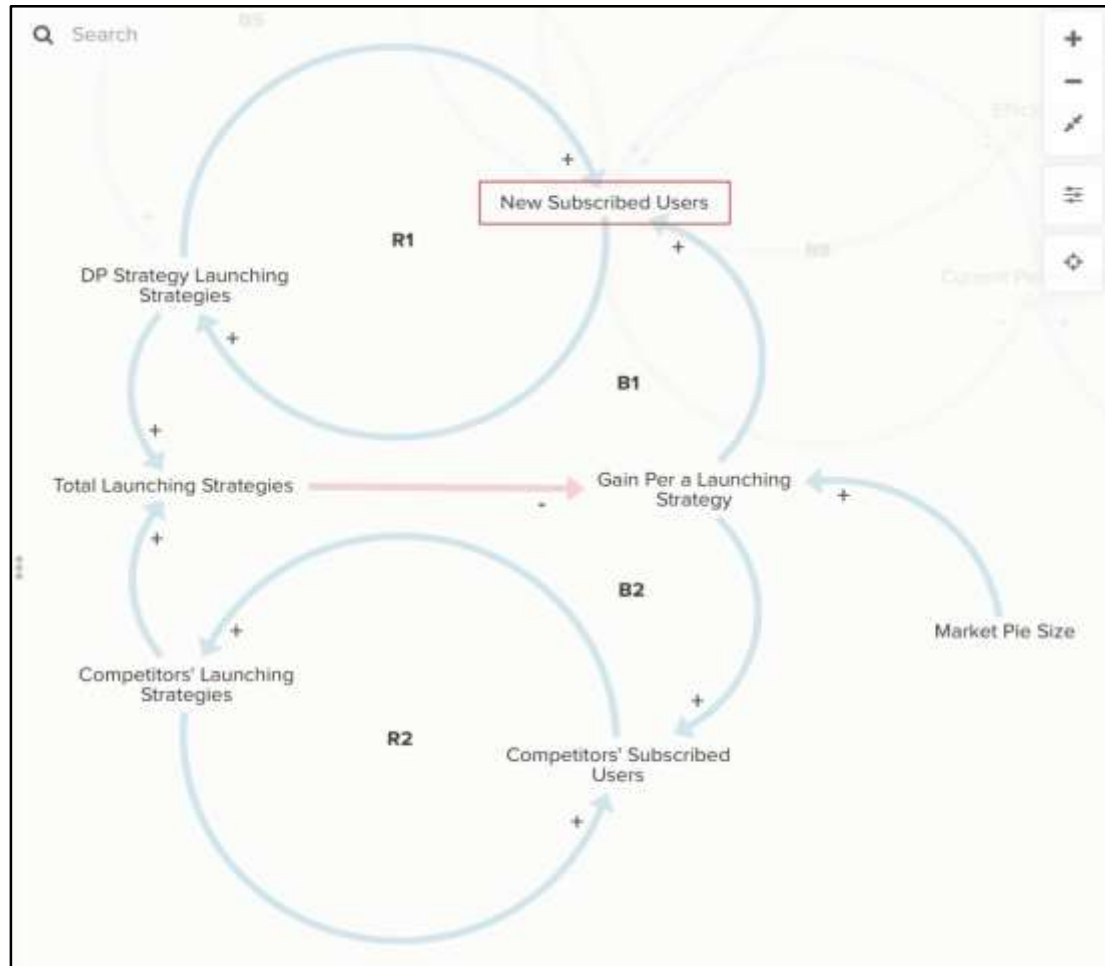


Figure 118: Digital Platform's Competition Dynamics: The Tragedy of the Commons Archetype

This archetype indicates that although the typical digital platform launching strategies (Parker & Alstyne, 2014) followed by the digital platform strategist will result in increasing the number of the newly subscribed users, the gain per a launching strategy is going to decrease due to the total launching strategies done by this platform and its competitors, but may increase if the market pie increased by developing the customers base (Figure 118). Typical promotional campaigns are a clear example in this case. This archetype appears clearly in the discovered general substantive classical grounded theory.

A clear example for where this archetype can be found within the discovered classical grounded theory from the first substantive area (i.e. literature as secondary data) is the “Continuous Controllable Variable-CCV” called store activities that appeared before in Figure 96. This variable is related to the last-minute discounts that retail stores can offer for the products and goods close to their expiration dates to encourage customers to buy before expiration (Mullick, Raassens, Haans, & Nijssen, 2020). Mullick et. al. (2020) indicted, even without using system dynamics, that more activities from this type doesn’t increase customers’ purchases. Of course, this result seems so logical in accordance to this archetype too. On contrary, regarding the discovered classical grounded theory from the second substantive area (i.e. UBER case study), this element and archetype were totally absent as previously shown in Figure 108.



## 10.20 Digital Platform's Priorities Dynamics: The Attractiveness Principle Archetype

The “Attractiveness Principle” archetype, as shown in Figure 119, explains how multiple slowing factors are cooperating to set a limit to the intended growth of the digital platform. this archetype indicates that acquiring the new subscribed users raises the willing of the digital platform strategist to raise both the effectiveness and the efficiency of the digital platform as competing priorities, which both are aggregating to enhance the limited problem solving capability as shown in Figure 119. The other elements in the causal loop diagram of the archetype were selected under the influence of the consulting firm example explained by Braun (2002) in the corresponding section. Growing the knowledge base vs. Increasing the IT capabilities is a clear example in this case, which both appear as constants in this model (*i.e. no connections and/or loops are affecting them*). However, in case this model was expanded in the future, these constants may become variables that are being manipulated by other archetypes.

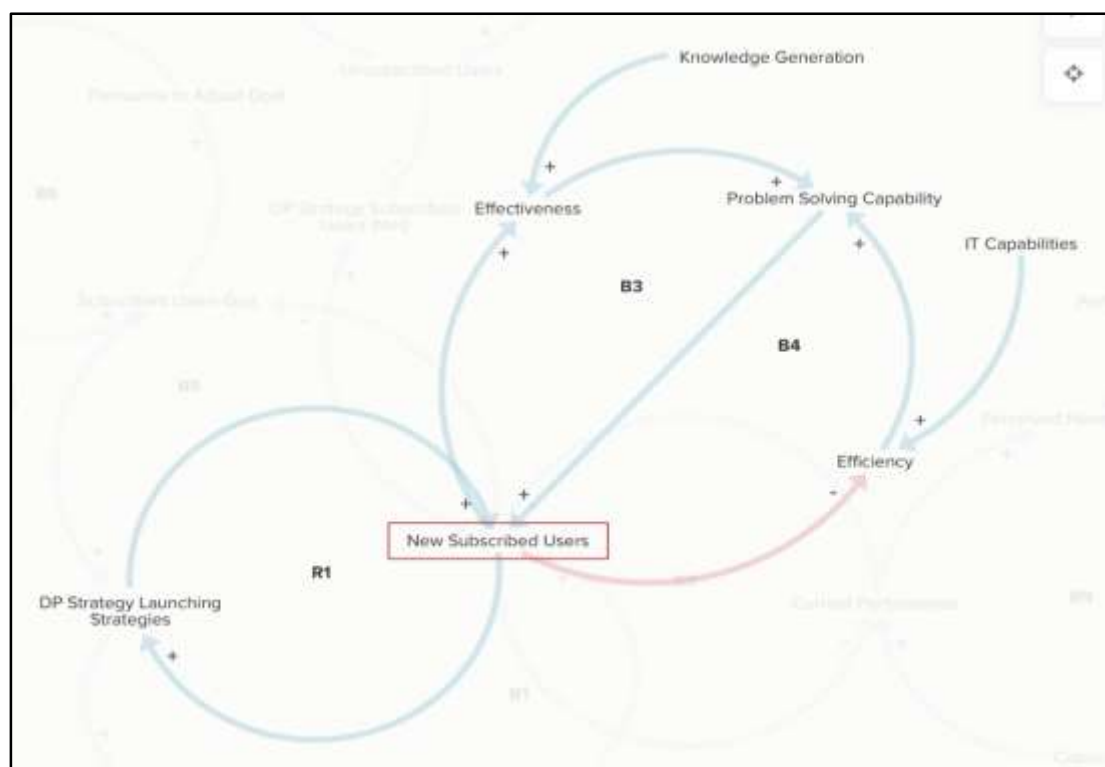


Figure 119: Digital Platform's Priorities Dynamics: The Attractiveness Principle Archetype

This archetype appears clearly in the discovered general substantive classical grounded theory. However, a clear example for where this archetype can be found within the discovered classical grounded theory from the first substantive area (*i.e. literature as secondary data*) is the “Continuous Controllable Variable-CCV” called service innovation that appeared before in Figure 104. This variable is related to the slowing factors that make certain types of innovation became either ineffective or inefficient with time due to the evolution of the life cycle stage of the digital platform (Fu, Wang, & Zhao, 2017).

Fu et. al. (2017) indicted, even without using system dynamics, that the platform decision-makers should consciously add additional innovative capabilities that match the evolved stage of the platform to overcome the slowing factors and achieve the intended growth of the platform. Of course, this result seems so logical in accordance to this archetype too. Furthermore, regarding the discovered classical grounded theory from the second substantive area (i.e. UBER case study), this archetype appears as the “Continuous Controllable Variable-CCV” called service innovation that too as previously shown in Figure 107. Actually, this archetype and the innovation example follow the same logic in both cases.

## 10.21 Digital Platform's Capital Planning Dynamics: The Growth and Underinvestment Archetype

The “Growth and Underinvestment” archetype, as shown in Figure 120, explains how the digital platform strategist needs to focus on capital investment to enhance its capabilities and core competencies to overcome the typical limits to growth. This archetype indicates that acquiring the new subscribed users as a growth activity is going to be limited by the current performance limits determined by the capabilities and core competencies of the digital platform. This raises the perceived need to invest in cooperation with the predetermined performance standards, which leads to an increase in the investment in capacity and therefore the digital platform capacity itself.



*Figure 120: Digital Platform's Capital Planning Dynamics: The Growth and Underinvestment Archetype*

This archetype appears clearly in the discovered general substantive classical grounded theory. However, a clear example for where this archetype can be found within the discovered classical grounded theory from the first substantive area (i.e. literature as secondary data) is the “Continuous Controllable Variable-CCV” called complementary investment that appeared before in Figure 96. This variable is related to the investments that is being carried out by the platform to enhance complementary offerings enhance the attractiveness of the platform as good choice for the customers as well as raising the switching costs (Dzhain, Nykanen, Penttinen, & Saarinen, 2015).

Furthermore, Dzhain et. al. (2015) indicted, even without using system dynamics, that the platform decision-makers should contiously add additional investment in the complementry capacity to atchive intended growth of the platform. Of course, this result seems so logical in accordance to this archetype too. On contrary, regarding the discovered classical grounded theory from the second substantive area (i.e. UBER case study), this archetype and the “Continuous Controllable Variable-CCV” called complementary investment were totally absent as previossly shown in Figure 107.

## 10.22 Digital Platform's Problem Solving Dynamics: The Fixes that Fail Archetype

The “Fixes that Fails” archetype, as shown in Figure 121, explains how quick fixes may provide pain relief to the pressing problems in the short-term, but come back and act against the strategist interests in the long-term.

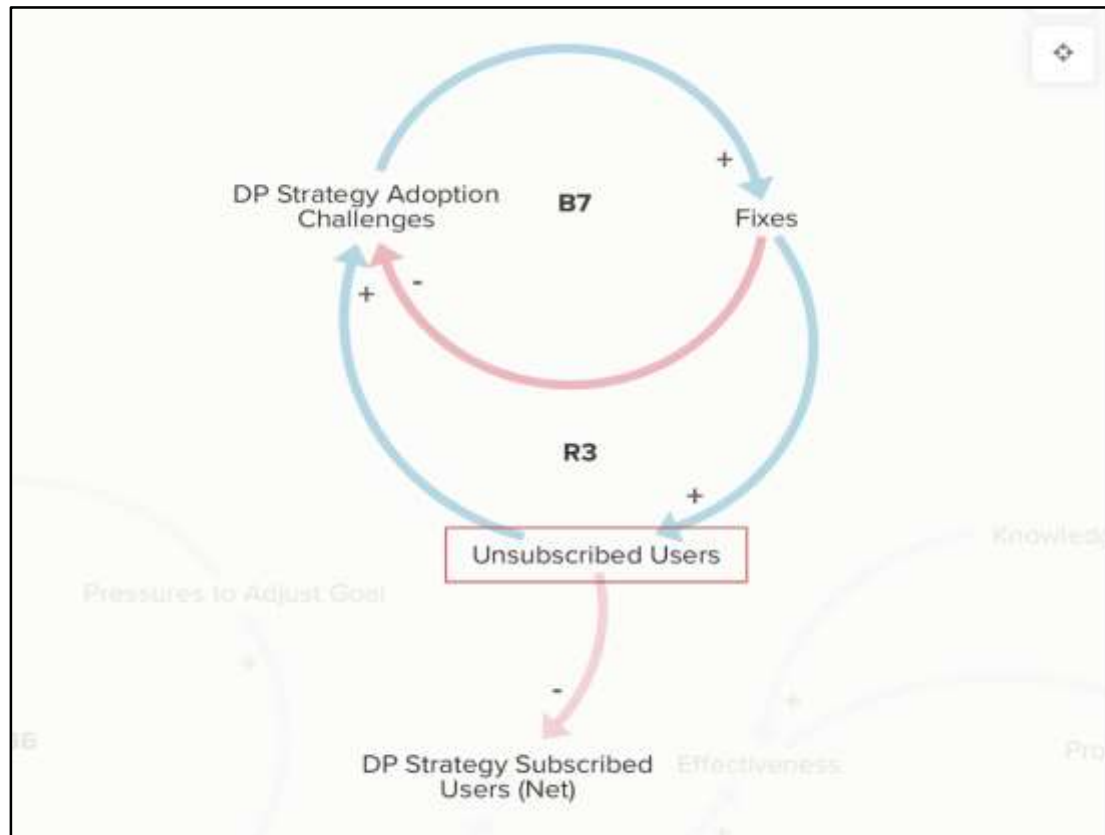


*Figure 121: Digital Platform's Problem Solving Dynamics: The Fixes that Fail Archetype*

This archetype indicates that the selected and implemented fixes can reduce the digital platform adoption challenges such as offering stand-alone value, attracting marquee users, reducing users' risks and ensuring the compatibility with legacy systems (Edelman, 2015) in the short-term. However, may act against the strategic interests of the digital platform strategist and push the current platform user to unsubscribe (i.e. the unsubscribed users' element in the causal loop diagram in Figure 121). It is worth mentioning that the net number of subscribed users in the digital platform is the resulted number of subtracting the unsubscribed users from the new subscribed users. A clear example for this case can be found in social media marketing strategies. Sometimes, organizations cut corners to increase the number of followers and/or subscribers by publishing not totally appropriate contents that do not match the brand identity. Although numbers may increase in the short-term, definitely will decrease in the long-term.

This archetype appears clearly in the discovered general substantive classical grounded theory. However, a clear example for where this archetype can be found within the discovered classical grounded theory from the first substantive area (i.e. literature as secondary data) is the “Continuous Controllable Variable-CCV” called diffusion inhibitors that appeared before in Figure 104. This variable is related to many factors that slow or even prevent the achievement of the network effects (Wallbach, Coleman, Elbert, & Benlian, 2019). Wallbach et. al. (2019) indicted, even without using system dynamics, that the platform decision-makers should continuously monitoring at least 21 factors as well as trying to effectively fixing them to achieve the intended growth of the platform. Of course, this result seems so logical in accordance to this archetype too. On contrary, regarding the discovered classical grounded theory from the second substantive area (i.e. UBER case study), this element and archetype were totally absent as previously shown in Figure 108.

## 10.23 Digital Platform's Vision Focus Dynamics: The Eroding Goals Archetype

The “Eroding Goals” archetype, as shown in Figure 122, explains that the failure to achieve the required goals with time may increase the pressure on the digital platform strategist to accept lower levels of performance and to relax the original vision goals. This archetype indicates that the failure to acquire the required number of the new subscribed users with time will increase subscribed users gap between the vision goals and actual numbers, which may represent pressures to adjust goals exerted on the digital platform strategist as shown in Figure 122.



Figure 122: Digital Platform's Vision Focus Dynamics: The Eroding Goals Archetype

This archetype appears clearly in the discovered general substantive classical grounded theory. However, a clear example for where this archetype can be found within the discovered classical grounded theory from the first substantive area (i.e. literature as secondary data) is the “Continuous Controllable Variable-CCV” called pricing strategy that appeared before in Figure 104. This variable is related to the impact and effects of the employed pricing strategies and their relation to the platform success and the network effects (Dou & He, 2017).

Dou & He (2017) indicted, even without using system dynamics, that the platform decision-makers should continuously adjust the effective pricing strategies to achieve the intended growth of the platform. Of course, this result seems so logical in accordance to this archetype too. Furthermore, regarding the discovered classical grounded theory from the second substantive area (i.e. UBER case study), this archetype appears as the “Continuous Controllable Variable-CCV” called pricing strategy too as previously shown in Figure 107. Actually, this archetype and the pricing strategy example follow the same logic in both cases.

## 10.24 Digital Platform's Full Strategy Dynamics: The Co-existing Archetypes

The overall causal loop diagram appears in Figure 123 for the digital platform strategy model combines the previously explained archetypes in a single diagram which shows and describe the overall dynamics of reaching the critical mass & network effect of the digital platform strategy as key performance indicators “KPIs” based on the platform strategist concerns to either focus on growth or focus fixing problems. As mentioned before, the Net Number of Subscribed Users, which is the metric of achieving the critical mass & network effect KPIs in the digital platform, is the resulted number of subtracting the unsubscribed users from the new subscribed users. The unsubscribed users are being affected by the single “Fixes that Fail” archetype. However, on the other hand, the number of the new subscribed users is being affected by the other remaining four archetypes, which are the “Tragedy of the Commons”, the “Attractiveness Principle”, the “Growth and Underinvestment”, and the “Eroding Goals” as shown in Figure 123.

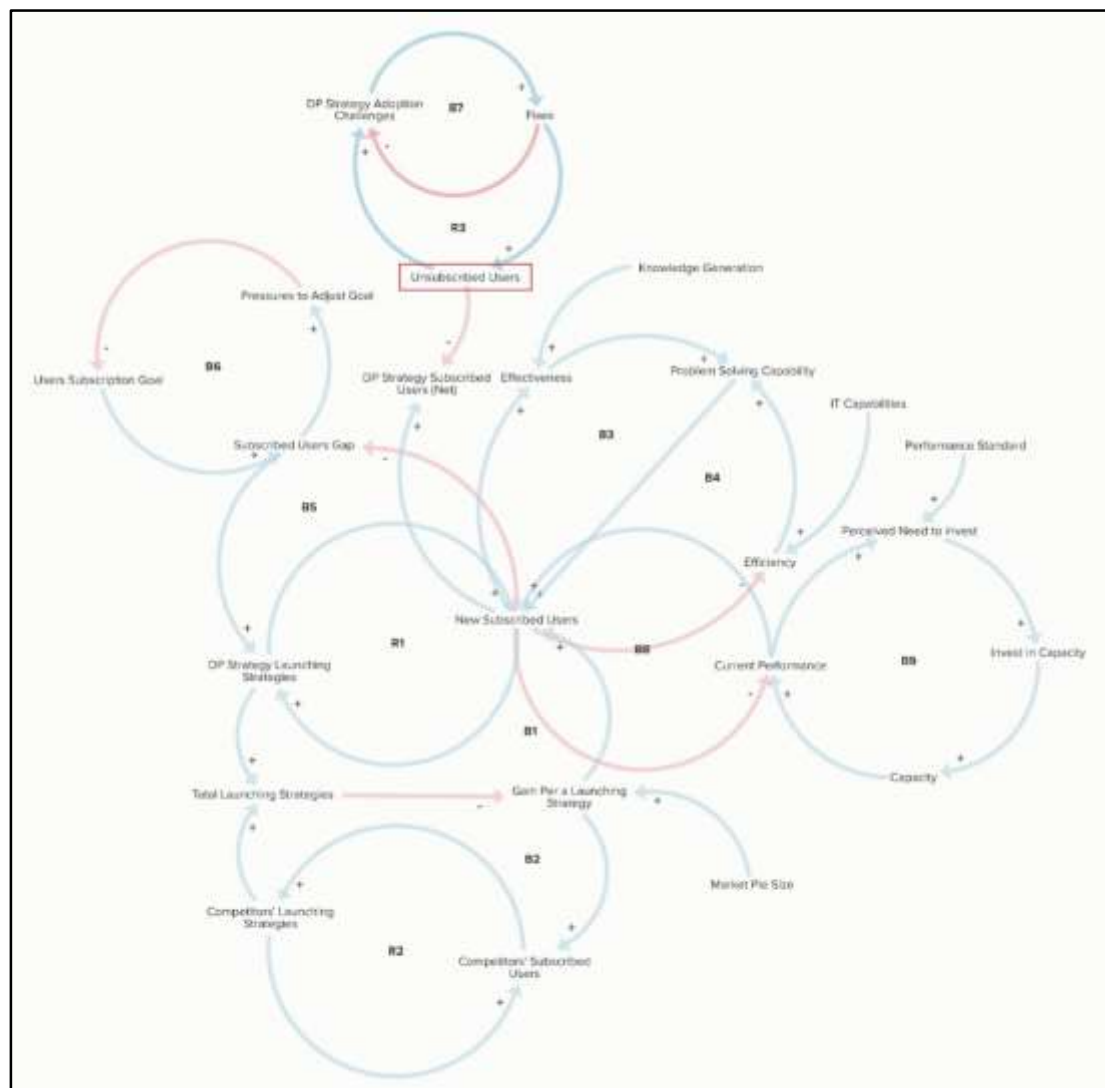


Figure 123: Digital Platform's Full Strategy Dynamics: The Co-existing Archetypes



The overall causal loop diagram contains only four constants in this model (i.e. no connections and/or loops are affecting them), which are the Knowledge generation, IT capabilities, performance standards and market pie size. However, as mentioned before, in case this model was expanded in the future in a separate dedicated study, these constants may become other dynamic variables that are being manipulated by one or more other archetypes. Finally, in its current version, the model contains 25 elements (i.e. variables and constants), 12 causal loops, and 36 connections. The full model shown in Figure 123 can be browsed online at my account on KUMU modeling tool (Kumu.io, 2020) at : <https://kumu.io/aselshikh/dps#dps>

## 10.25 Positioning the Discovered Platform Strategy Dynamics Theory

After completing the explanation of the discovered classical grounded theory as well as the discovering journey, it time to try to position this theory both within the platform research field and within the strategy research filed field as well. Hence, the following paragraphs are going to explain these positioning approaches starting with positioning within the platform research field and then followed by the other one.

Usually, in their attempt to correctly position their scientific research in general or the platform research specifically, the researcher adds a set of keywords to their publications when they submit to journals or conferences. These added keywords help both the publishers and the reader to correctly identify the suitable relevance of the research study. Hence, a better understanding of the frequently used keywords and the evaluation of this usage over time may give accurate information on how this relevance changed with time and where the discovered theory in this DBA fits. Using the typical “Keywords Co-Occurrence Bibliometrics Analysis” in VOSviewer, with the usual default automatic thresholds strategy, resulted in the keywords co-occurrence map that is shown in Figure 124 can help achieve this target.

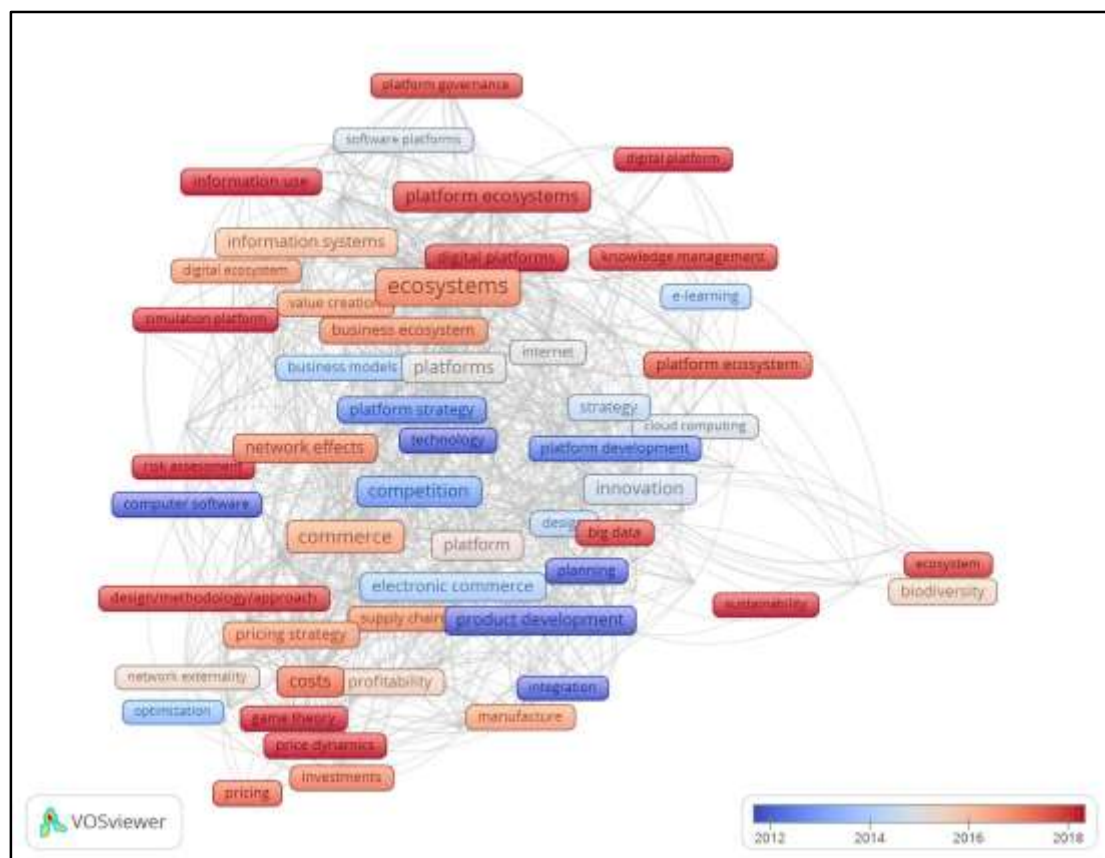


Figure 124: The Evaluation of “Platform Research” With Keywords Co-occurrence (Emphasized Keywords)

This map also uses the typical cold-hot colors to distinguish the relative newness of the used keywords. As indicated in Figure 124, the majority of keywords in platform research fit within the time from year 2012 and up to 2018. Hence, in this analysis, five ranges and/or intervals will be used as follows:

- Before and around 2012 (Dark Blue Keywords).
- Around 2014 (Light Blue or Cyan Keywords).
- In between 2014 and 2016 (Almost White Keywords).
- Around 2016 (Light Red or Orange Keywords).
- Finally, around 2018 and up till now (Dark Red Keywords).

As Figure 124 shows, the frequently used keywords during the first interval, which is before and around 2012 that appears with the dark blue color, included computer software, product development, technology,...etc. These keywords give the impression about the research tendency that is focused around the software applications and their development technologies in the field of platforms in this period of time.

During the second interval, which is around 2014 that appears with the light blue or cyan color, the frequently used keywords included business models, electronic commerce, e-learning...etc. These keywords give the impression about the research tendency that is focused around the business modeling especially for the electronic online businesses in the field of platforms in this period of time.

During the third interval, which is between 2014 and 2016 that appears with the almost white color, the frequently used keywords included platforms, internet, cloud computing...etc. These keywords give the impression about the research tendency that is focused around the platforms nature and the underlining hosting technology in the field of platforms in this period of time.

During the fourth interval, which is around 2016 that appears with the light red color, the frequently used keywords included ecosystems, network effects, value creation...etc. These keywords give the impression about the research tendency that is focused around the value creation in ecosystems and the success indicators/network effects in the field of platforms in this period of time.

During the fifth interval, which is around 2018 and up until now that appears with the dark red color, the frequently used keywords included digital platforms, platform ecosystems, big data & information use...etc. These keywords give the impression about the research tendency that is focused around the digital platform-based ecosystem and data usage as a strategic asset within the field of platforms in this period of time.

These five consecutive intervals and their related frequently used keywords show how the researcher's focus has changed and evolved towards more integrated and comprehensive topics. For example, from 2018 upwards, the keywords started to compile the digital business wave related to the platform-enabled ecosystems with focusing on the key success indicators (i.e. the Network Effects) as well as the new oil, which is the big data and information.

This leads to easily positioning the discovered theory in this DBA thesis. This strategy is focusing exactly on the digital business wave related to the platform-enabled ecosystems and with focusing on the key success indicators (i.e. the Network Effects). However, without focusing on managing the big data as a strategic asset or the strategic advantage that can be gained from the information use. Maybe this comes in the future work studies. Hence, this theory is on the right track and fits well with the latest current tendency in the field of platforms research, but with a typical partial coverage. However, this is as normal as no single research project can handle all tendencies in a scientific field at once.

Shifting the discussion towards the positioning within the strategy research field, Reeves et. al. (2015) can be used to accomplish this target. Reeves et. al. (2015) explained that there are five “Meta-Approaches For Strategizing” in general and introduced a useful positioning typology for any type of strategy as shown in Figure 125. The presented typology depends on three dimensions, which are the unpredictability of the environment, the malleability of the strategic situation, and finally the harshness of this strategic situation. According to these three variables, a suitable strategic approach or a certain strategy position can be determined.

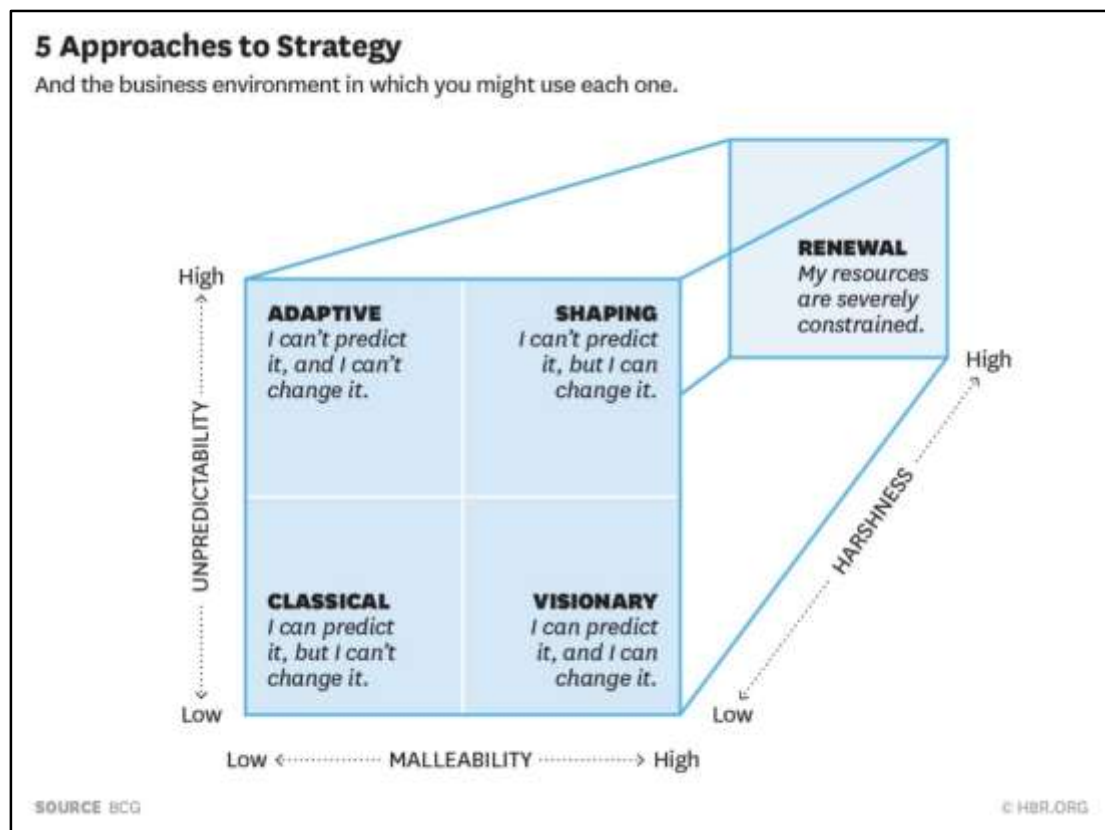


Figure 125: The Approaches to Strategy Typology - Source: (Reeves, Haanaes, & Sinha, 2015)

Taking the platform's strategy as an example, this is high-technology enabled strategies that evolve in a highly turbulent economic age. Hence, there is no room to talk about predictability, and the platforms compete within the extreme unpredictability.

On the other hand, platform owners are usually pioneers and the history proved that they are able to create new worlds and economic conditions with their platforms. Apple, Amazon, Google, Facebook, and Alibaba are so clear examples of these disruptors. Hence, the platform's strategic situation has high malleability by definition. However, it is not that harsh or a little harshness. Typically, it is not a matter of survival, unless the platform owner had already entered the market, locked inside, being attacked, and is not able to either safely exit or successfully surviving.

All these conditions lead the platform strategies to be within the shaping quadrant in Reeves et. al. (2015) strategy typology and approaches as shown in Figure 126. Then, it is fair to assume that the typical position of the discovered theory in this DBA thesis is on the extreme of the shaping quadrant. It is a strategy that can deal with both high unpredictability and malleability in the current digital economy to shape the future.

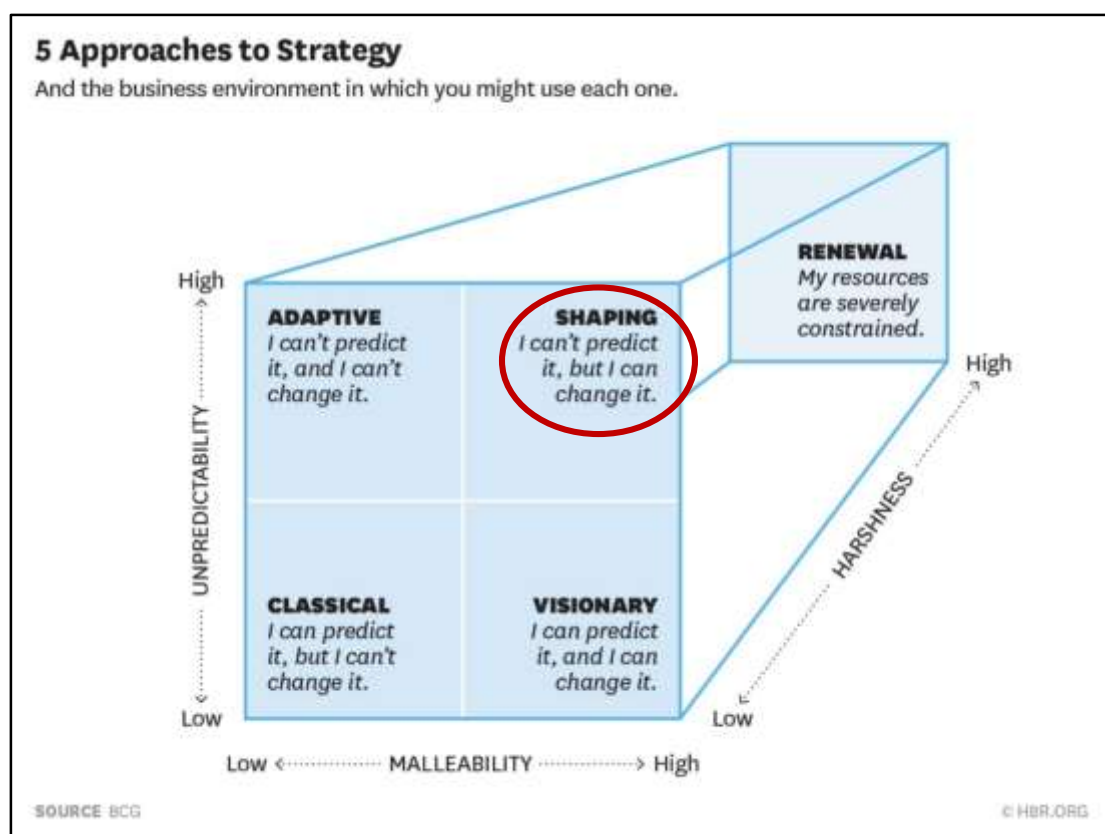


Figure 126: Positioning the Platform Strategy Dynamics within Approaches to Strategy Typology

## **10.26 Retrospective on the Research Question, Contributions, and the Managerial Implications**

This chapter was focusing on explaining in detail how the thin theory, which was shaped and integrated into the first place, was conceptualized into a full general substantive classical grounded theory and then upgraded through the use of the system dynamics into a prescriptive theory. These previous sections and subsections of this chapter have discussed the following in detail:

- The open coding stage and the emerged core category.
- The conceptualized theory outcome.
- Summarized overview for the digital platform strategy dynamics, or how it works.
- The currently partial unsaturated selective coding.
- The further selective and theoretical coding in two substantive areas.
- The different approaches to check the theoretical saturation.
- The different steps for the theoretical sorting.
- The modeling scope and the bridge to system dynamics.
- Digital platform strategy's grounded theory and system dynamics archetypes.
- The rationale for selecting archetypes for the digital platform strategy dynamics.
- Description of each archetype and the collective system.
- Positioning the discovered platform strategy dynamics.

After completing this detailed explanation, it is time to go through a retrospective discussion to examine how the discovered classical grounded theory was able to provide theoretical and practical contributions as well as how this theory can help managers and decision-makers to take the suitable decisions when dealing with the challenge of designing and operating the digital services platforms. Finally, this section is going to double-check how the discovered classical grounded theory was able to answer the original research question.

Starting with the theoretical contributions and beyond the typical addition to human knowledge by creating new knowledge and discovering a new theory, this DBA started a novel research line that had some special features such as focusing on employing the classical grounded theory as a holistic research methodology to the field of the digital platforms that enable and provide services to the digital ecosystems. Furthermore, it was able to utilize mixed methods and techniques for data collection and analysis (Walsh, 2015) that enriched the research design and experience as well as enhanced the ability to discover new theory following the philosophy of the classical grounded theory that “All is Data” (Holton & Walsh, 2016).

All is data was a so pivotal concept that played a major role in this DBA thesis. In addition, the discovered classical grounded theory in this DBA thesis about the digital services platform strategy was considered as a universal strategy that has coverage to the overall previously produced academic knowledge and previously gained practical business experience known so far during the past three decades, which is the overall lifetime of this research filed. Furthermore, the discovered theory is a universal one because it incorporates all the published historical research schools of thought and all the published emergent research themes, which are related to the network effects as a dominant KPI.

On the other hand, this discovered strategy theory in this DBA thesis can be considered as a meta-strategy that is defining as well as containing many other business and management strategies that should be taken by the platform owner and/or operator. This meta-strategy contains a huge number of decision points that have been conceptualized in the four decision categories, which are the primary, secondary, dependent, and repetitive decisions as was explained in detail. Up to our knowledge and up to the date of this DBA thesis, there is no other comparable or similar published strategies before in the field of digital services platform strategies. This proves that the previously stated goal for producing a rupture classical grounded theory has been successfully achieved.

On the methodological level, this DBA thesis suggests a change to the steps followed during the different coding stages to build the coding system of the discovered classical grounded theory. In this DBA thesis, a software tool support was used to find some relevant incidents to support checking saturation as well as to find any missed valuable incidents that were overlooked by mistake, which was called a semi-automatic coding mechanism that improves the richness of the discovered theory.

Switching the focus of the retrospective discussion towards the practical contributions, the explained discovered theory was able to help decision-makers and practitioners to succeed in navigating one of the most challenging strategic missions in the era of the digital economy and especially, the digital ecosystems economy. This mission is the strategy formulation and implementation for designing and operating the digital services platforms that enable a full digital ecosystem. Decision-makers and practitioners are currently able to navigate a series of complex and interdependent strategic choices that, without this framework, may appear so challenging.

Furthermore, the discovered classical grounded theory was able to provide a readymade out-of-the-box scenario for the challenges that will face the decision-makers, owners, and/or the operators of the digital platform and how to deal with them with a group to down-to-earth action items that have clear set of proven managerial implications. In addition, the discovered theory in this DBA can be considered a rehearsal enabling strategy that can help each decision-maker to make some trials and errors in the test lap before being attacked by the real market situations. This added value is gained through using the system dynamics models as an embedded element in the theory structure. In other words, in this DBA thesis, system dynamics has been used proactively.

Making the second shift in the discussion towards how this theory can help managers and decision-makers to take the suitable managerial decisions when dealing with the challenge of designing and operating the digital services platforms, the discovered theory was able to provide the anticipated depth (Beaulieu & Kalika, 2020), which helps to change the managerial practices, achieve real-life impact, and help managers do better business. The managers and decision-makers were given a clear structure for the strategy and its related decisions, decisions' categories, and the optimum sequence for taking them as well as the degrees of freedom in each decision. Furthermore, the interrelationships and interdependences of these decisions will be given too. Finally, the impact of these decisions on the key performance indicators "KPIs" will be clear helping them plan for this success.

Furthermore, the discovered theory about strategy formulation and implementation was a complete formwork for designing and operating digital services platforms, which started from the most primitive strategic choices to the most detailed prescriptive strategic actions, which linked the initial optimistic sky-limited visions to the most daunting down-to-earth implementation action items through a logical well-rationalized framework that contained categories of interlinked and interdependent strategic choices/decisions that have a complex dynamic supportive and limiting effects.

The discovered strategy theory identified the critical mass & network effect as the most important key performance indicators "KPIs" for measuring the digital service platform's success. What makes these KPIs unique is that any competitor, who is able to achieve the network effects, can gain many superior business benefits such as overcoming competitions, higher growth and expansion, and even market domination and reshaping. Over and above, all of the previous superior results have the long-term sustainability. Furthermore, these KPIs were represented in the discovered system dynamics and its causal loop diagrams model with a single strategic metric, which is the net number of subscribed users to the platform that can be calculated by subtracting the unsubscribed users variable from the new subscribed users variable. According to the discovered classical grounded theory, this can be achieved by following the chronological intuitive strategizing process, which includes four logical and timely stages. These stages include taking the primary decisions that have the maximum degree of freedom, then taking the secondary decisions that came after the primary decisions in the timeline, but still have the same maximum degree of freedom.

Then the third stage is to take the dependent decisions that came after the primary and secondary decisions in the timeline and have the lower degree of freedom because they are tightly coupled and affected by the choices in the primary and secondary decisions. Then the fourth stage is to continuously and endlessly take the following repetitive decisions that came after the three previous decision categories in the timeline and still have the minimum degree of freedom. However, some of these decisions can be fine-tuned because they are depending on continuous variables that can be continuously adjusted. With the aid of the designed and built systems dynamics models in this DBA thesis, the obtained results of the model determined a set of the daunting down-to-earth implementation action items that should be taken during the implementation of the strategy. Starting from the simplest one, reducing, minimize or at least controlling the number of the unsubscribed users, which is being affected by the single "Fixes that Fail" archetype, the digital platform strategists and/or the decision-makers should examine their problems solving techniques thoroughly.



Shifting the focus to the more complex side of the equation, increasing or even maximizing the number of the newly subscribed users, which is being affected by the other remaining four archetypes (i.e. the “Tragedy of the Commons”, the “Attractiveness Principle”, the “Growth and Underinvestment”, and the “Eroding Goals”), the digital platform strategists and/or the decision-makers should take care of their Launching Strategies thoroughly, which is affecting the “Tragedy of the Commons” archetype. Then, they should examine their improvement plans & strategies thoroughly, which is being affected by the “Attractiveness Principle” archetype.

Then, they should examine their capital planning & strategies thoroughly, which is being affected by the “Growth and Underinvestment” archetype. Then, the digital platform strategists and/or the decision-makers should stay focused on strategic vision firmly, which is being affected by the “Eroding Goals” archetype.

In addition to the previously mentioned and presented Implementation action items that were recommended based on the built system dynamics model, there were many other implementation action items that were recommended based on the other types of the discovered theory elements, which have direct relationships to the network effects including the other “Discrete Controllable Variables-DCVs”. Furthermore, and to enrich the set of recommendations that can be given to the decision-makers based on the discovered theory, there are three elements that should be closely and continuously monitored to achieve the digital platform success and reaching the network effect, which include monitoring continuously the uncontrollable continuous and discrete variables to gain sufficient and adequate situational awareness about the overall strategic situation especially due to the highly unpredictable environment that surrounds the digital platforms.

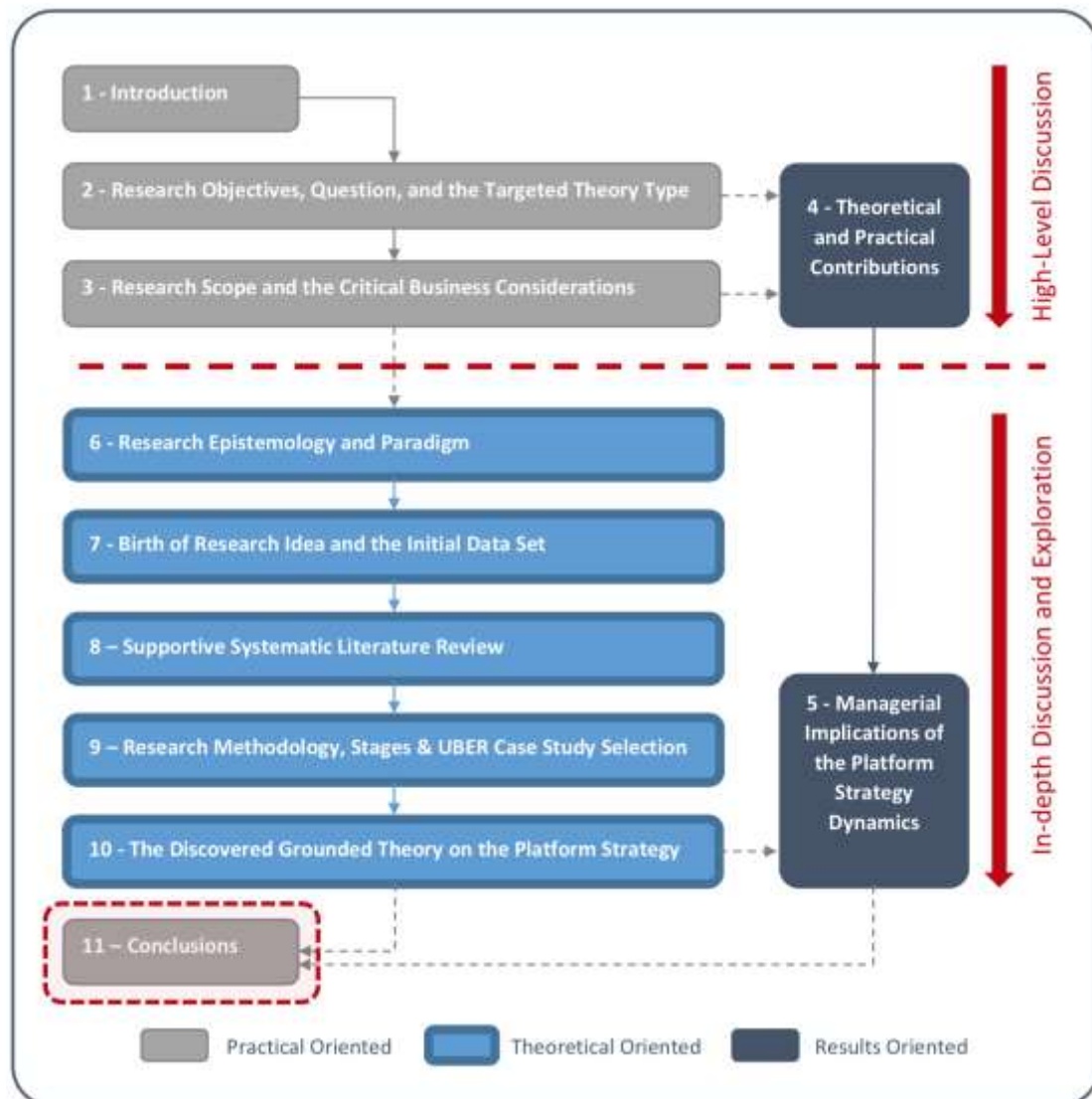
Furthermore, monitoring continuously the users’ behavioral psychology as a critical dimension of the platform success especially that this dimension can be considered as totally new for the management and business research related to the digital platforms field. Finally, and based on the discovered theory, there is one additional element, which is the non-organic growth-NOG, that should be repetitively managed to achieve the digital platform success and reaching the network including to repetitively manage the possible strategic partnerships as a critical and special dimension of the platform success as well as to repetitively manage the possible synergetic acquisitions as a critical dimension of the platform success that can result in a continuous reshaping of the platforms competition landscape as well as it may even support the ambitious vision mentioned before related to the platform of platforms or even to the extreme dream of the ecosystem of ecosystems.

Hence, and finally, hence, it seems logical to assume that the discovered theory in this DBA thesis was able to comprehensively answer the original research question that was:

***“What is the strategy for designing and operating a digital services platform, which helps the platform to both survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy?”***

# CHAPTER-11

## CONCLUSIONS



## **11. CONCLUSIONS**

This chapter is going to explain and discuss the “**Conclusions**” of this research project and this DBA thesis. The following subsections will present the major related aspects including the following:

**11.1 Research Constraints and the Empirical Limitations**

**11.2 Further Research Opportunities and the Possible Future Work**

**11.3 General Discussion and the Final Conclusions**

## 11.1 Research Constraints and the Empirical Limitations

Any research project usually has some constraints and empirical limitations that are typically related to the circumstances of conducting the research project itself as well as the timing of the research project. Typical types of limitations may include raw data limitations, data sources limitations, sources of evidence limitations, and software tools limitations. The raw data limitations mean the limitations related to the availability of the raw data records as well as the accessibility of this data. Data sources limitations may include limitations related to the accessibility of these sources and how the data can be exported from these sources to facilitate further analysis. The sources of evidence limitations are related to the case studies, availability, and accessibility of evidence of the related facts about these cases studies. Finally, the software tools limitations may appear if the usage of the tools was not that easy or some functionality that is needed is absent or limited. The following paragraphs are going to highlight some of these empirical limitations related to the research project of this DBA thesis, which include online data sources limitations, literature as secondary data limitation, and the case studies sources of evidence limitations.

The first type of constraints and limitations was the limitations of the online databases. As mentioned before during explaining how the data was collected for the literature review, the usage of the bibliometrics techniques and their existing support software tools wasn't going to take off without overcoming a critical roadblock, which is the ability to obtain the raw data in the suitable required formats. Currently, this roadblock had been overcome with different degrees through the support of the different available online databases such as Web of Science and Scopus. These online sources usually provide an export function, which enables the researcher to export the search results in different standard formats. This enables the software tool to understand and import this data for further analysis. However, some online sources provide better-exported data than others, which, of course, enables the higher complex analysis to derive better insight.

Typically, all exported formats include the basic references data that supports the VOSviewer to carry out the “Co-authoring and Keywords Co-occurrence analysis” (Waltman & Van Eck, 2014). However, and on the other hand, as an example, the Web of Science enables the researchers to export the full list of the cited references at the end of the found references with this basic data. This, for example, enables the three additional higher-order bibliometrics analysis techniques, which are “Citation Analysis, Co-citation Analysis-CCA, and Bibliographic Coupling Analysis-BCA” as explained by Waltman & Van Eck (2014). These three advanced techniques are the ones that were used in the literature review chapter of the DBA thesis especially that they represent a considerable amount of the collected references from all online resources (i.e. 297 from the total 928 references).

However, on the other hand, it is impossible to include references from other online sources due to this technical limitation of the export function that does not provide the full list of the cited references in each found reference. However, there is a hope that these online databases may improve their export function to add the full list of cited references in the near future.

The second type of constraints and limitations is the literature as secondary data limitation. Actually, the results of this DBA thesis can be considered as a valuable milestone and solid foundation for future research that can benefit from the discovered theory and insight. Furthermore, according to Holton & Walsh (2016) based on Glaser (1992) on original work, one of the four quality criteria of any discovered (good) classical grounded theory is its modifiability when new data is found and collected and/or new insight is discovered from the analysis of this data. For the discovered theory of this DBA, this theory can be updated regularly when new academic knowledge is produced and practical business experience is gained. However, of course, this will be limited by the speed of published knowledge and gained experience around the core concern of this DBA thesis, which is the key performance indicators-KPIs or simply the network effects. This speed is going to be the actual bottleneck towards this future modifiability.

The third type of constraints and limitations is the case studies' sources of evidence limitations. After the typical first step of selecting the suitable case studies of the research project in hand, the direct next step is usually to identify the "Sources of Evidence" within the selected embedded unit of analysis in each case study. Actually, Yin (2009) explained in detail the six possible sources of evidence in case study research along with their related strengths and weaknesses as previously explained in detail in the research methodology chapter. In this DBA thesis, and due to the nature of the research project and the selected case studies, the first two sources, which are "Documentation and Archival Records" were used. The others typical sources were almost impossible. The reason is that some of the cases and their data are from the year 1992 to the year 2013. Hence, it is impossible to travel back in time and use any other method such as direct observation or participant observation. Even interviews seem almost impossible due to the same timing dilemma. Yin (2009) mentioned that the previous published formal studies and evaluations are a typical type under the documentations source, while "Public Use Organizational Records" are a typical type under the archival records source. Both documentations and archival records have the same weakness as indicated by Yin (2009). The "Retrievability and Accessibility" are two typical weaknesses that are expected to be faced in this DBA thesis. Hence, the public records were limited to the already used sources in these published references.

As a final clarification hint, there are two points that should be mentioned. First, this third type of constraints and limitations appeared when the multi-case studies design was used to check the saturation of the discovered classical grounded theory from the first substantive area related to the literature as secondary data. On the other hand, this third type of constraints and limitations did not appear or noticed when the single-case studies design was used to discover the classical grounded theory from the second substantive area related to the UBER case study. Second, this third type of limitations is somehow different from the previous two. Although there was a hope that the situation may improve in the first and second type of limitations, it is not the case in this third one.

## 11.2 Further Research Opportunities and the Possible Future Work

Being able to manage the scope of the research project is one of the most critical success factors for the project. Of course, this DBA is no exception. However, being able to determine what is in-scope means keeping many elements outside that scope. Some of these outside the scope elements may represent opportunities for future research projects. The following paragraphs are going to highlight some of the possible ideas for the future research.

The first and most intuitive possible idea for the future work is the continuous modifiability of the discovered general substantive classical grounded theory. As mentioned before and according to Holton & Walsh (2016) based Glaser (1992) on original work, one of the four quality criteria of any discovered (good) classical grounded theory is its modifiability when new data is found and collected and/or new insight is discovered from the analysis of this data. For the discovered theory of this DBA, this theory can be updated regularly when new academic knowledge is produced and practical business experience is gained. This new data may be related to new data records related to the substantive areas used in thesis DBA or related to newly identified substantive areas as well. In addition, the discovered classical grounded theory in this DBA thesis about the digital services platform strategy was considered as a “Universal Strategy” that accumulates the overall previously produced academic knowledge and previously gained practical business experience known so far during the past three decades, which is the overall lifetime of this research filed. Furthermore, the discovered theory is a universal one because it incorporates all the published historical research schools of thought and all the published emergent research themes, which are related to the network effects as a dominant KPI. Hence, the selection of these new substantive areas may be directed towards any new research theme that may emerge in the future years.

The second most intuitive possible idea for the future work is to switch the system dynamics part of this DBA thesis into a quantitative model instead of the qualitative one. Actually, as mentioned before, the discovered theory in this DBA was considered as rehearsals enabling strategy that can help each decision-maker to make some trials and errors in the test lap and examine his own strategies and decisions before being attacked by the real market situations. This added value is gained through using the system dynamics models as embedded element in the theory structure. Usually, system dynamics models are built to understand and deal with chronic wicked problems just after being affected by its negative consequences as well as failing to solve by intuitive simple solutions (Rittel & Webber, 1973). In other words, system dynamics try to solve the problems after the fact. However, in this DBA thesis, system dynamics have been used proactively. The added value of this Built-in System Dynamics Model within the discovered theory is that it can help decision-makers to save years in trials and errors with wrong decisions or directions along with the expected losses of million dollars or euro. The decision-makers can simply figure out the consequences of the decisions that should be taken in the first year, second year, or later years to come just before starting anything in the real world.

Furthermore, decision-makers will be confident that these obtained conclusions is as much accurate as possible because the strategizing framework or theory that is followed is accumulating long-term knowledge and experiences as discussion in a previous point as well as used this knowledge and experience to enable qualitative logical simulation of the decision consequences in the future. Of course, this power came from the well-tested and proved system dynamics archetypes as was explained before. What can be added in the future studies is to collect some numerical data (if possible) to calibrate the system dynamics model to produce numerical recommendations. As an example, how much capital investment in the technical capacities, as a percentage from the total invested financial assets in the digital platform, should be considered as a good percentage to achieve the required impact on the network effects?

The third possible idea for the future work is to upgrade the discovered general substantive classical grounded theory in this DBA to examine what may happen in the case of the situation of digital platforms conglomerate, in which the owner/strategist is the same for several platforms. As mentioned before, the “Success to the Successful” archetype may be applied if we examine the situation of digital platforms conglomerates. In this case, s/he may direct the rare capital towards the more successful platform. The “Accidental Adversary” archetype may fit within this area too if the management board of two sister platforms agreed to cooperate, but ended up with mistrust. Although both of these cases were beyond the scope of this DBA thesis, they may be examined in a future different study.

The fourth possible idea for the future work is to upgrade the discovered general substantive classical grounded theory in this DBA to examine what may happen in the case of the assumption that there are some constants was challenged. As mentioned before, the overall causal loop diagram contains only four constants in its model (i.e. no connections and/or loops are affecting them), which are the “Knowledge Generation”, “IT Capabilities”, “Performance Standards” and “Market Pie Size”. However, as mentioned before, in case this model was expanded in the future in a separate dedicated study, these constants may become other dynamic variables that are being manipulated by one or more other archetypes.

This fourth possible idea for future work can be developed further to discuss the topic of digital resilience (MIS Quarterly, 2020). The topic of digital resilience appeared as a hot research topic recently as a direct result of the COVID-19 worldwide pandemic (Rai, 2020). The COVID-19 is just a single example of the exogenous shocks in the healthcare sector. Other types of exogenous shocks can be found in the technological, political, economic, and social contexts. What makes this concept of digital resilience so critical is that these exogenous shocks are usually cross-industries by definition and usually affect a wide part of society (MIS Quarterly, 2020). Furthermore, they generate a great amount of uncertainty for an unknown time interval. However, despite its importance, it is out of the scope of this DBA thesis, by definition, as there is no research project that can handle every aspect related to digital platforms. However, actually, it is logical to assume that digital resilience is, by definition, related to the surviving part of the research question, which can be achieved in real-life through being able to achieve the network effect. Hence, it is implicitly addressed through the discovered CGT about the digital platform strategy dynamics. However, more explicit handling can be a so promising topic.

However, it is logical to assume that discussing this digital resilience should be limited to the already established digital platforms. These digital platforms are receiving exogenous shocks while it is already operating in the market, which is totally different from dealing with these exogenous shocks at the time of the launching of the start-up. As mentioned before, all start-up challenges were out of the scope, as they really related to a totally different entrepreneurship line of research. Hence, the digital resilience will touch and affect the digital platform strategizing process beyond the dependent decisions stage. This means that it is going to directly touch and affect the repetitive decisions fourth stage of the strategizing process. It is going to affect both the parts that can be modeled by the system dynamics and the other non-modeled parts as well.

Intuitively, different digital platforms can be more resilient than the others through their abilities to maintain/increase newly subscribed users and/or maintain/reduce the unsubscribed ones. However, the same parts of discovered meta-strategy theory about the strategy dynamics will be used in all strategies of these different digital platforms. A more focused discussion can focus on discussing the effect of the four archetypes constants mentioned above. Digital resilience means that the platform should be able to maintain the typical levels of these constants or alert these levels to absorb the received exogenous shocks. As an example, the digital platform should be able to either maintain the original IT capacities or to increase/decrease them in a flexible way if needed to absorb the changes in the demand due to these exogenous shocks.

These alterations in the levels of the assumed constants can represent a very good link that can represent a logical bridge between the discovered digital strategy dynamics and the topic of digital resilience. As an example, some organizations, such as ZOOM, were able to successfully increase their IT capacity during the COVID-19 pandemic in terms of the richness of the software features, which can't be considered as a constant anymore (Yuan, 2020). More importantly, ZOOM opened its digital platform for innovation by providing a software development toolkit (SDK) for software developers all over the world to integrate their software solutions with the ZOOM platform (Dean, 2020), which resulted in a complete ZOOM enabled marketplace for applications (Ittelson, 2021). Furthermore, its cloud-based business model or the software-as-a-Service (SaaS) added the needed flexibility to dramatically increase the infrastructure capacity. Hence, ZOOM can be considered as a candidate case study for this future research topic to examine how to turn the four archetypes constants or some of them into controllable variables to successfully navigate some of the anticipated exogenous shocks.

Of course, this future study can be enriched by examining the typical use of the system dynamics archetypes to make the platform more resilient. Furthered enriching can study the impact of the behavioral psychology part in which the decision-makers can use the motivation strategies and the abilities strategies to make the platform more resilient. Again, to increase the newly subscribed users and to reduce the unsubscribed ones. Finally, the market-shaping strategies and NOG-strategies can be used to deal with these exogenous shocks as well. As an example, increasing the number of the strategic partnerships can be used to become more resilient from the financial point of view by providing better cash flow terms between the strategic partners, which help makes the payment terms less aggressive and gives the digital platform the opportunity to prepare the required cash.



The fifth possible idea for the future work is to upgrade the discovered general substantive classical grounded theory into a formal classical grounded theory through the conceptual formalization process as explained by Holton & Walsh (2016). The conceptual formalization process requires collecting data from totally different substantive areas. As an example, instead of collecting data about digital platforms-based ecosystems that are cooperating around service delivery as in this DBA thesis, the future research project may collect data about digital platforms-based ecosystems that are cooperating around innovation. This means this future research project is going to first examine the digital innovation platforms-based ecosystems and then go through the conceptual formalization processes based on the results obtained around both the digital services platforms-based ecosystems and the digital innovation platforms-based ecosystems to produce a formal classical grounded theory about any type of the digital platforms-based ecosystems.

The sixth possible idea for the future work may be considered one of the hardest to achieve, which is modifying the discovered classical grounded theory with published research about the platforms that failed to achieve the network effect.

As mentioned before, and up to our knowledge up to the time of writing this DBA, there are no published studies that examined the platforms that failed to achieve the network effects empirically. Hence, and as previously mentioned, although this DBA research is going to start with the aim to discover a theory and describe things as they are, and from all the best, good, bad and worst practices, which matches the typical inductive perspective of the classical grounded theory (Holton & Walsh, 2016); the nature and type of the available cases studies were limited by default to include the best and good practices only or those who were successful only.

As a DBA researcher, the mindset was open to study any empirically proved failed case study if it was found. However, it is logical to assume that gaining access to field data of failure is much more difficult than the case of success. Usually, these platforms had gone out of business due to the previously mentioned winner-takes-all syndrome. Hence, if it is possible, the first stage should be to document some real-world failed case studies, and then the second stage is to modify the discovered theory with these failed case studies.

The seventh possible idea for the future work may be to investigate the role of managing the digital platform data as a strategic asset. As previously explained, starting from 2018 and up until now, the frequently used keywords, by researchers when they publish their peer-reviewed papers, included the big data and information use. These keywords give the impression of the research's tendency to focus on the data usage as a strategic asset within the field of platforms. However, how this affects the network effects can be considered as the legitimate future research question as nothing was published around this topic before.

Finally, the future work may focus on some of the previously excluded platforms based on the startup challenges and the digital maturity of the original owner's physical organization. Actually, it seems logical to examine the following scopes in future research:

- New digital services platforms that are being established as a new venture and suffering from the typical startups funding and managerial/technical skills unavailability and lack-of challenges.
- The impact of the original digital maturity of the owner/operator physical organization on the newly established digital platform such as what happens in the servitization business model.

### 11.3 General Discussion and the Final Conclusions

The digital platforms business model appeared several years ago, as a new business model, and then digital platforms became a catalyst for strategic success not only on the single organization level but also on the level of a full cooperating digital business ecosystem, in what is called the digital platform-based ecosystems. However, due to the winner-takes-all syndrome, this shifted the focus towards the strategy that was employed either behind the winner-takes-all success or behind the go-out-of-business failure.

This thesis introduced a rupture grounded theory that provides a holistic framework for strategy formulation and implementation. The discovered theory was a general substantive prescriptive theory, which is going to help practitioners and decision-makers navigate a series of strategic choices for designing and operating the digital platforms that orchestrating value dynamics in a whole enabled ecosystem. More precisely, the discovered rupture general substantive prescriptive classical grounded theory was the answer provided by the thesis to the originally stated research question at the beginning of the thesis, which is :

***“What is the strategy for designing and operating a digital services platform, which helps the platform to both survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy?”***

Furthermore, due to this discovered/generated explicit knowledge theory, the strategy formulation and implementation for designing and operating these digital services platforms are no longer going to be an ad-hoc nor a black box mission that depends on the tacit knowledge in the mind of platform owners or operators. Furthermore, they will be able to link the initial optimistic sky-limited visions and strategic choices to the most daunting down-to-earth implementation action items.

The scope of the DBA thesis was limited to establishing digital services platforms as a new venture, either by a well-established organization or by a well-funded project, which excludes typical entrepreneurship challenges. In addition, the research was conducted from the demonstrative-inductive approach/constructivism paradigm theoretical perspective, with the classical grounded theory as a holistic research methodology. Mixed methods were used for primary and secondary data collection including case studies along with suitable several data analysis techniques, such as “Gioia Method”. The DBA thesis capitalized on the latest state-of-the-art and the leading globally recognized case studies for a digital platform-based ecosystem, especially, the “UBER Technologies Inc.” case study empirically.

Regarding the literature review, there was no conducted extensive literature review up-front, however, and as recommended by the classical grounded theory, the literature review is used to support the emergence of the classical grounded theory around the emerged core category related to the initially determined core concern. In this DBA thesis, the emerged core category was the ability of the digital service platform to achieve the ultimate success key performance indicator (i.e. the network effect), while the initially determined core concern was the ability of the digital service platform to survive and thrive in the new upcoming generation of the digital platform-based ecosystems economy.

Of course, through a classical grounded theory about the strategy formulation and implementation that will be discovered in this DBA thesis.

In addition, this research project and the DBA thesis aimed to start a novel research line, which focuses on employing the classical grounded theory as a holistic research methodology to the field of the digital platforms, through a well-rationalized research design that utilizes mixed methods and techniques for data collection and analysis following the philosophy of the classical grounded theory that “All is Data”. Along the journey, the DBA thesis presented the obtained results to show the validity of the idea, including:

- The open coding stage and the emerged core category.
- The conceptualized theory outcome.
- Summarized overview for the digital platform strategy dynamics, or how it works.
- The currently partial unsaturated selective coding.
- The further selective and theoretical coding.
- The different approaches to check the theoretical saturation.
- The different steps for the theoretical sorting.
- The logic of increasing the conceptualized depth of the theory through two upgrading processes.
- The modeling scope and the bridge to system dynamics.
- Finally, elaborated descriptions of the obtained theory dynamics were given.

As a conclusion, this DBA thesis presented and discussed in detail all the aspects related to the design of this research study including the research objectives and question, the desired theory type for the discovered theory, the research scope, the expected theoretical and practical contributions, as well as the managerial implications. Then, the research epistemology and research paradigm were determined plus shedding some light on the birth of the research idea. This was followed by the detailed description of the research methodology, methods and techniques, and the research domains/substantive areas as well as a rationalized explanation about the role of the literature and literature review in the whole research project. Finally, the discovered theory classical grounded theory was explained in detail.

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## APPENDICES

### A. Appendix-A: Practical Screening Protocol for the Theoretical Importance

| Practical Screen Criterion               | Theoretical Importance                                                                                                                                           | Which criteria are applicable for my own literature review?                                                                                                                                                                                                                                                                                       |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Content</b>                           | Briefly describe the topic of the research study, emphasizing the scope of articles to search for                                                                | “Digital Platform Strategy” topic aims to scan what already appeared, discussed or suggested as a business strategy to build a digital platform in the digital enterprises. Strategy theory elements should be found and clearly described.                                                                                                       |
| <b>Unrelated content</b>                 | List here related or similar topics that are NOT to be considered within the scope of this study                                                                 | Business Models for The Digital Enterprise. The business models were excluded based on the feedback of TPQs1-3                                                                                                                                                                                                                                    |
| <b>Journal rankings</b>                  | Restrictions not usually justifiable on theoretical grounds                                                                                                      | No restrictions                                                                                                                                                                                                                                                                                                                                   |
| <b>Subject databases</b>                 | Should at least include all relevant content research fields, but should be as broad as is practical                                                             | The following database are going to be used during the search:<br>- Google Scholar: because it includes many open access articles<br>- Web of Science, Scopus, Springer Link, Science Direct, Emerald Insight, and SAGE Journals: because I have a full access to many articles as part of the Egyptian Knowledge Bank (EKB) subscription program |
| <b>Peer-reviewed vs. grey literature</b> | Restrictions might be counterproductive for TLRs and TCRs; might be justifiable for TTRs as an implicit quality screen; however, susceptible to publication bias | As the type of my TMR is TLR, grey literature is not excluded. Working papers and internal reports can have valuable insight                                                                                                                                                                                                                      |
| <b>Conference articles</b>               | Restrictions justifiable when journal publications are terminal publications; even then, recently published conference articles should be included               | Conference articles, especially from the past two years, will be included because the topic is relatively new and this type of articles can add value to know what is going on in this area of research                                                                                                                                           |

|                                                          |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Practitioner publications</b>                         | Inclusion could be valuable for TLRs and TCRs; usually inappropriate for TTRs                                 | <p>Practitioner publications will be included, especially what came from the big consulting firms as they are going to give insight about the practical point of view and because my TMR is TLR. Giving the priority to the articles from the big consulting firms can be considered as a simple intuitive form of the quality-appraisal as well.</p> <p>The search for these articles may not be a systematic search as these articles were collected during the past three years as part from my professional work during surfing the internet</p> |
| <b>Empirical versus conceptual studies</b>               | TLRs and TCRs should include conceptual studies; TTRs are restricted to empirical studies                     | No restrictions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Study setting</b>                                     | Restrictions of settings depend on boundary conditions of theory                                              | In case a sufficient number of studies were found, the TLR can be limited to either the financial sector and/or the higher education sector. Otherwise, no restrictions are going to be used                                                                                                                                                                                                                                                                                                                                                         |
| <b>Participants or subjects</b>                          | Restrictions of types of participants depend on boundary conditions of theory                                 | No restrictions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Program, intervention or means of data collection</b> | Nature or means of application of interventions or data collection may affect theory                          | No restrictions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Research design</b>                                   | Restrictions rarely justified on theoretical grounds                                                          | No restrictions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Quantitative versus qualitative studies</b>           | Depends on chosen synthesis approach                                                                          | No restrictions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Dates</b>                                             | Restrictions rarely justified on theoretical grounds; however, end dates of literature search should be noted | No restrictions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Publication language</b>                              | English studies are required; other languages also encouraged                                                 | English only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

|                                    |                                                      |                                                                                                                                               |
|------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Source of financial support</b> | Potential bias of studies should be noted            | Sources of financial support are going to be tracked carefully beside any other sources of bias such as corporate affiliations (if available) |
| <b>Authors</b>                     | Restrictions rarely justified on theoretical grounds | No restrictions                                                                                                                               |

## B. Appendix-B: Detailed Insight about the Collected Data

This appendix lists all found references through the previously explained practical screening protocol. This list was exported from the produced single integrated Zotero database that was explained in detail too. The citations format was selected and used because it provide a compact output format to list the large number of references, which is 928 references in just a few pages. Otherwise, exporting the same number of references with the bibliography format would result in 100+ pages, which of course not a manageable size or option.

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## C. Appendix-C: Detailed Insight about the Literature Review Dataset

This appendix lists all found references through the previously explained Web of Science dataset. This list was exported from the produced single integrated Zotero database that was explained in detail too. The citations format was selected and used because it provide a compact output format to list the large number of references, which is 297 references in just a few pages. Otherwise, exporting the same number of references with the bibliography format would result in 30+ pages, which of course not a manageable size or option.

**References:** (Alaimo et al., 2020; Altman & Tushman, 2017; Ando, 2018; Andryukhina et al., 2019; Arpin et al., 2016; Attour & Barbaroux, 2016; Au et al., 2020; Aulkemeier et al., 2019; Avdasheva & Korneeva, 2019; Barrett et al., 2016; Basu et al., 2019; Belleflamme & Lambert, 2016; Belleflamme & Peitz, 2018; Ben Letaifa et al., 2016; Bhargava et al., 2013, 2020; Bi et al., 2019; Blondel & Edouard, 2015; Bojic & Landika, 2016; K. Boudreau, 2010; K. J. Boudreau & Jeppesen, 2015; Breckenridge et al., 2011; Breidbach et al., 2014; P. Bridgewater, 2017; Peter Bridgewater et al., 2019; Brunswicker et al., 2019; Cai, 2019; Cao et al., 2019; CAREY, 1994; Ceccagnoli et al., 2012; Cen & Li, 2020; Cennamo & Santalo, 2019; L. Chen et al., 2016; P. Chen & Zheng, 2016; Xiqun Chen et al., 2020; Xueru Chen et al., n.d.; Y. Chen et al., 2019; Z. Chen et al., 2012; Chiam et al., 2009; Choi & Phan, 2012; Chou, 2006; Chu & Manchanda, 2016; Chyou, 2008; Ciborra, 1996; Cleland et al., 2013; Curchod et al., 2020; Dalle et al., 2017; de Melo et al., 2019; Demil et al., 2018; Dou et al., 2016, 2020; Dou & He, 2017; Doyle, 2015; Duan et al., n.d.; Dynner, 2000; Dzhain et al., 2015; Eason et al., 2009; Eckhardt et al., 2018; Evans & Schmalensee, 2010; Fang et al., n.d.; N. Feng et al., 2020; Y. Feng et al., 2020; Ferrari et al., 2020; Ferrer-Roca, 2015; Fitch & DeGegono, 2005; Foerderer, 2020; Fraccascia, 2020; Fu et al., 2017; Fukami et al., 2010; Fulgoni, 2015; Gao, 2014; Garcia-Swartz et al., 2019; Gawer & Cusumano, 2014; Giovanini et al., 2020; Goerg et al., 2016; Goldbach et al., 2018; Gong, 2016; Granjou et al., 2013; Guo & Dong, 2016; Guru et al., 2016; Hagi & Altman, 2017; He et al., 2014; Hein et al., 2019, 2020; Helfat & Raubitschek, 2018; Hilbolling et al., n.d.; Hong, 2015; Hracs & Webster, n.d.; L. Hu, 2017; L.-B. Hu et al., 2014; S. Hu & Geng, 2001; Y. Hu et al., 2017; Huang & Fan, 2007; Huber et al., 2017; Hurni et al., n.d.; Hyun, 2016; Inoue & Tsujimoto, 2018a, 2018b; Isckia et al., 2020; Isckia & Lescop, 2014; Jagstedt & Persson, 2019; Jansen & Cusumano, 2013; Jetzek, 2017; Jha et al., 2016; B. Jiang et al., 2011; J. Jiang et al., 2005; Jie et al., 2006; Johnson, 2019; Johnsson, 2013; Johnston, n.d.; Juan & Renren, 2015; Jullien, 2006; J. Jun et al., 2006; Y. Jun, 2016; Junker et al., 2020; Karandikar & Nidamarthi, 2007; Karpenko, 2018; D. Kim, 2012; J. Kim, 2018; K. Kim & Tse, 2011; Y. Kim et al., 2019; Knuutila & Nummela, 2000; X. Koufteros et al., 2005; X. A. Koufteros et al., 2002; Kretschmer et al., n.d.; Kristianto et al., 2010; Kristjansson & Hildre, 2004; Kuebler et al., n.d.; N. Kumar et al., 2018; V. Kumar et al., n.d.; Kung & Zhong, 2017; Lai, 2013; Lampon & Cabanelas, 2014; Larocque et al., 2014; J.-Y. Lee et al., 2018; Y. W. Lee et al., 2020; F. Li et al., 2019; H. Li & Deng, 2019; J. Li et al., 2020; R. Li et al., 2007; S. Li et al., 2010; X. Li et al., 2007; Lia & Penardb, 2014; Liberal-Ormaechea & Cabezuelo-Lorenzo, 2018; L. Lin & Daim, 2009; L. H. Lin et al., 2007; S. Lin, 2017; X. Lin et al., 2019, 2020; Lindquist et al., 2008; Linney et al., 2020; Lou & Liu, 2016; Lu et al., 2019; Ma et al., 2015; Maekinen et al., 2014; Markus & Loebbecke, 2013; Martin et al., 2019; Maruyama & Ohkita, 2011; May et al., 2018; McFarlane et al., 2013; McIntyre & Srinivasan, 2017;

McPhee et al., 2017; McPhee & Muegge, 2013; Meijerink & Keegan, 2019; Morrison, 2018; Muegge, 2011, 2013; Muffatto, 1999a, 1999b; Nambisan et al., 2019; Nelson, 2018; Ng et al., 2015; Niculescu et al., 2018; Nielsen & Aanestad, 2006; Numminen & Wrenne, 2009; Nygaard & Rickne, 2009; O'Mahony & Karp, n.d.; Omulo & Kumeh, 2020; Orekhova & Bausova, 2018; Orenstein & Groner, 2015; Ozalp et al., 2018; Pan et al., 2019; Panico & Cennamo, n.d.; Parker et al., 2017; Peiyi & Dandan, 2015; Pellizzoni et al., 2019; Penna & Guenzi, 2014; Pervin et al., 2019; Pi, 2014; Presenza et al., 2019; Pulkkinen et al., 2019; Qian, 2015; Qingjiao & Guangjin, 2016; Qingzhu et al., 2006; Qiu et al., 2017; Quintana Pujalte et al., 2018; Rao, 2016; Redford et al., 2012; Ren & Gu, 2014; Riasanow et al., n.d.; Rietveld et al., 2019, 2020; ROLING, 1994; Roma & Vasi, 2019; Romero et al., 2013; Rong et al., 2013, 2019; Rupcic et al., 2020; Ruzicka et al., 2016; Salomon, 2018; Santoso et al., 2019; Sattelberger, 2015; Sawhney, 1998; Schmeiss et al., 2019; Schmeller et al., 2017; Schmeller & Bridgewater, 2016; Scholten & Scholten, 2010; Seamans & Zhu, 2017; She et al., 2018; Shen & Ye, 2006; Shibata & Kodama, 2015; Skoeld & Karlsson, 2007; Snyder & Garcia-Garcia, 2016; Peijian Song et al., 2018; Ping Song et al., 2013; Sorensen et al., 2015; Srinivasan & Venkatraman, 2010; K. Staykova & Damsgaard, 2020; K. S. Staykova & Damsgaard, 2015; Q. Su & Liu, 2017; Y.-S. Su et al., 2018; L. Sun et al., 2020; X. Sun et al., 2020; Tallman & Pedersen, 2013; Tan & Reddy, 2020; Tang, 2010; Tee & Gawer, 2009; Teece, 2018; Teng et al., 2019; Tiwana, 2015; Trabucchi & Magistretti, 2020; Tucker, 2019; Ulonska & Welo, 2016; Vakeel et al., n.d.; Van Alstyne et al., 2016; Van den Broeke et al., 2018; Vickery et al., 2013; Viljainen & Kauppinen, 2013; Wallbach et al., 2019; Wan, 2016; Can-you Wang et al., 2019; Chengfu Wang et al., 2019; S. Wang et al., 2011; W. Wang & Lyu, 2020; X. Wang et al., 2016; Y. Wang et al., 2019; Z. Wang & Guo, 2018; Weinhardt et al., 2011; J. West, 2003; Joel West & Wood, 2013; Wu & Chen, 2016; Xiao, 2017; Xiaoyan et al., 2018; Xu, 2017; H. Yan et al., 2014; Y. Yan et al., 2019; C. Yang & Jiang, 2006; D. Yang, 2013; J. Yang & Shi, 2016; N. Yang et al., 2016; Youjin & Yingmei, 2008; J. Yu et al., 2018; Y. Yu et al., n.d.; Y. Yu & Huang, 2010; G. Zhang et al., 2009; L.-H. Zhang et al., 2017; N. Zhang & Wang, 2019; H. Zhao et al., 2010; W. Zhao, 2015; X. Zhao, 2016; Zhen et al., 2020; Zhong & Nieminen, 2015; Zhu & Cao, 2016; Zhu & Yuan, 2016; Zisenis, 2015a, 2015b)

## D. Appendix-D: The Used Literature as a Secondary Data Detailed Information (Group-1)

The following tables show the detailed information about the used literature as a secondary data source. This information was exported from the ZOTERO database for the selected references based on the previously explained criteria.

### 1. Competition in Two-sided Platform Markets with Direct Network Effect

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Jungsik Hyun                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Volume</b>      | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Issue</b>       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Pages</b>       | 331–377                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Publication</b> | SEOUL JOURNAL OF ECONOMICS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ISSN</b>        | 1225-0279                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Date</b>        | 2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Abstract</b>    | In light of recent trends in social networking services that encourage users of platforms to “share,” “recommend,” and “do activities” with others, this work analyzes platform competition in two-sided markets that exhibit direct (or within-) network effect in addition to conventional cross-network effect. Introduction of direct network effect to one group (buyer-side) in a two-sided market generates two counter-acting effects: demand-augmenting effect and demand-sensitizing effect. The former allows platforms to raise buyer-side price, thereby increasing the sum of prices charged to buyers and sellers, whereas the latter causes platforms to lower them. I show that demand-augmenting effect dominates demand-sensitizing effect under the monopoly plat-form, whereas introducing competition between platforms under sufficient direct network effect relatively strengthens the demand-sensitizing effect, which lowers the price charged to buyers. |
| <b>Date Added</b>  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>    | 12/26/2020, 1:52:42 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### 2. Digital Data, Platforms and the Usual [Antitrust] Suspects: Network Effects, Switching Costs, Essential Facility

|                    |                                                                                     |
|--------------------|-------------------------------------------------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                                                              |
| <b>Author</b>      | Catherine Tucker                                                                    |
| <b>Volume</b>      | 54                                                                                  |
| <b>Issue</b>       | 4, SI                                                                               |
| <b>Pages</b>       | 683–694                                                                             |
| <b>Publication</b> | REVIEW OF INDUSTRIAL ORGANIZATION                                                   |
| <b>ISSN</b>        | 0889-938X                                                                           |
| <b>Date</b>        | June 2019                                                                           |
| <b>DOI</b>         | <a href="https://doi.org/10.1007/s11151-019-09693-7">10.1007/s11151-019-09693-7</a> |
| <b>Language</b>    | English                                                                             |



|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Abstract</b>   | This paper asks whether the large amounts of digital data that are typically observed on large technology platforms such as Google, Facebook, Uber and Amazon typically give rise to structural conditions that would lead to antitrust concerns. In particular, I evaluate whether digital data augments or decreases concerns with regard to network effects and switching costs. I also evaluate whether data should be thought of as an essential facility'. |
| <b>Date Added</b> | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Modified</b>   | 12/26/2020, 1:54:14 PM                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### 3. Impact of network effects on service provider performance in digital business platforms

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Author</b>      | Khadija Ali Vakeel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>      | Edward C. Malthouse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>      | Aimei Yang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Publication</b> | JOURNAL OF SERVICE MANAGEMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>ISSN</b>        | 1757-5818                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Date</b>        | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>DOI</b>         | <a href="https://doi.org/10.1108/JOSM-04-2020-0120">10.1108/JOSM-04-2020-0120</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Abstract</b>    | <p><b>Purpose</b> Digital business platforms (DBPs) such as Alibaba and Google Shopping are partnership networks that use the Internet to bring service providers (e.g. retail vendors) and customers together. One of the benefits of DBPs is network effects, in which customers can purchase from multiple providers, giving rise to a unique network. However, few studies have explored which service providers benefit from network effects and which do not.</p> <p><b>Design/methodology/approach</b> Using the theories of transaction costs and network analysis, the authors apply network models to DBPs to understand which service providers benefit from network effects. Findings The authors identify three segments of service providers: (1) those with high prominence (connection to providers with high network centrality), (2) those with high network constraint (adjacent to isolated providers) and (3) those with low prominence and constraint. The authors find that segments (1) and (3) benefit from reciprocated customer exchanges, and thus benefit from network effects, while high constraint segment (2) providers do not benefit from reciprocated exchanges. Moreover, the authors find that for segments (2) and (3) future sales have a negative association with unreciprocated customer exchanges, while segment (1) has no significant association between unreciprocated exchanges and future sales.</p> <p><b>Research limitations/implications</b> The authors discuss implications for a multisided platform (MSP), as it decides which service providers to attract, promote and recommend. They can use this study's results to know which segments of providers will increase network effects to make the platform more valuable.</p> <p><b>Practical implications</b> This paper provides managers of service</p> |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | platforms with strategies for managing relations with their service providers. Social implications Service platforms are an important and disruptive business model. The authors need to understand how network effects operate to create efficient platforms. Originality/value This paper extends the literature on MSPs by quantifying network effects and showing not all service providers benefit equally on an MSP from network effects. Critical insights into network effects on the MSP are provided, including different ways it can impact provider sales. |
| <b>Date Added</b> | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Modified</b>   | 12/26/2020, 8:48:19 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

#### 4. Impact of Switching Costs and Network Effects on Selection of Mobile Platforms

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>              | <b>Conference Paper</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Author</b>            | Nikita Dzhain                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>            | Jussi Ilmari Nykanen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>            | Esko Penttinen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Author</b>            | Timo Saarinen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Editor</b>            | Bui, TX and Sprague, RH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Series</b>            | Proceedings of the Annual Hawaii International Conference on System Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Place</b>             | 10662 LOS VAQUEROS CIRCLE, PO BOX 3014, LOS ALAMITOS, CA 90720-1264 USA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Publisher</b>         | IEEE COMPUTER SOC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Pages</b>             | 1187–1196                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>ISBN</b>              | 978-1-4799-7367-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Date</b>              | 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>DOI</b>               | <a href="https://doi.org/10.1109/HICSS.2015.144">10.1109/HICSS.2015.144</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Language</b>          | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Abstract</b>          | We study the consumer selection of mobile platforms through switching costs and network effects. We operationalize switching costs using five dimensions (search cost, learning cost, contractual cost, complementary investments, brand relationship cost) and network effects using two dimensions (same and cross side network effects). We draw on four focus groups to empirically address the selection problem and our findings are three-fold. First, we show that complementary investments create strong switching costs through same and cross side network effects. Second, the selection of mobile platform seems to be moderated by brand relationships cost. Third, contractual costs in the form of contracts for carrier-device bundles exhibit strong switching cost for the duration of the contract. However, there is no indication of lasting effect for this switching cost after the contract term ends. |
| <b>Proceedings Title</b> | 2015 48TH HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCES (HICSS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Date Added</b>        | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Modified</b>          | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## 5. Indirect Network Effects and Platform Dominance in the Video Game Industry: A Network Perspective

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Arati Srinivasan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>      | N. Venkatraman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Volume</b>      | 57                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Issue</b>       | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Pages</b>       | 661–673                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Publication</b> | IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>ISSN</b>        | 0018-9391                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Date</b>        | November 2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>DOI</b>         | <a href="https://doi.org/10.1109/TEM.2009.2037738">10.1109/TEM.2009.2037738</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Abstract</b>    | Going beyond the traditional conceptualization of indirect network effects as the number of complements available, this study analyzes how the network positions of platforms and complementors explain platform dominance. We use data from the U. S. home video game industry between 2002 and 2006 to test our model of platform dominance. While the impact of degree of links with complementors representing the number of complements is significant, our study also finds that platform dominance is positively influenced by support from a greater breadth of titles by complementors and lesser degree of overlap with other platforms. We also find that ties with high-status complementors influence platform dominance, but this impact decreases with platform age. Our results suggest benefits to refine our conceptualization of indirect network effects from a network perspective. The managerial implications are that each platform provider needs to differentiate its platform by attracting high-status developers and by providing third-party developers with toolkits that encourage them to develop exclusive titles. |
| <b>Date Added</b>  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>    | 12/26/2020, 2:04:46 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 6. Indirect network effects, network quality and the success of a platform

|                 |                                                                                                                                                                                                                                                                                                                                      |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>     | <b>Conference Paper</b>                                                                                                                                                                                                                                                                                                              |
| <b>Author</b>   | F. Zhu                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>   | M. Iansiti                                                                                                                                                                                                                                                                                                                           |
| <b>URL</b>      | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84858422841&amp;partnerID=40&amp;md5=85d90b200ab392260b738fc973fec445">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84858422841&amp;partnerID=40&amp;md5=85d90b200ab392260b738fc973fec445</a>                                                                    |
| <b>Date</b>     | 2007                                                                                                                                                                                                                                                                                                                                 |
| <b>Language</b> | English                                                                                                                                                                                                                                                                                                                              |
| <b>Abstract</b> | Researchers debate whether indirect network effects or network quality (i.e., quality of the complementary applications and quality of the platform) drives the success of a platform in high-technology industries. We develop a dynamic model in which two platforms with different network quality compete under indirect network |

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|                          | effects. Our results indicate that indirect network effects dominate quality effect in determining the long-run market structure. When the strength of the indirect network effects is above a certain threshold, the market converges to a monopoly; a platform can improve its chance of dominating the market by increasing its network quality. When the strength is below the threshold, the market converges to an oligopoly; a platform with better network quality will always be the market leader. While it is well known that strong indirect network effects drive monopoly in the literature, our finding that under weak indirect network effects, a new platform could seize a significant market share even without superior quality is new and provides different managerial implications. We empirically analyze the competition between Xbox and PlayStation 2 consoles in the video game industry. We find game players and developers do not perceive significant quality difference between the two consoles. Consistent with our model predictions, the successful entry of Xbox is a result of weak indirect network effects in this market. |
| <b>Proceedings Title</b> | Academy of Management 2007 Annual Meeting: Doing Well by Doing Good, AOM 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date Added</b>        | 12/25/2020, 10:06:54 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>          | 12/25/2020, 10:06:54 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 7. INDIRECT NETWORK EFFECTS, USAGE EXTERNALITIES, AND PLATFORM COMPETITION

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Author</b>      | Paul A. Johnson                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Volume</b>      | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Issue</b>       | 2-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Pages</b>       | 283–297                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Publication</b> | JOURNAL OF COMPETITION LAW & ECONOMICS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ISSN</b>        | 1744-6414                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date</b>        | September 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>DOI</b>         | <a href="https://doi.org/10.1093/joclec/nhz014">10.1093/joclec/nhz014</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Abstract</b>    | Platforms, or two-sided markets, have become a topic of significant discussion in competition law over the past decade, culminating in the recent US Supreme Court decision in <i>Ohio v. American Express Co.</i> This note discusses externalities in platforms. Indirect network effects, one type of externality common on platforms, have been prominent in these discussions. However, the prominence of indirect network effects has obscured the importance of another externality that exists on platforms, a usage externality. This note argues that a near exclusive focus on indirect network effects has led to errors in identifying when a market should be analyzed as a platform. These errors implicate the identification of platforms like those at issue in <i>Ohio v. American Express Co.</i> as well as a wider set of platforms, such as ad-supported media platforms. |
| <b>Date Added</b>  | 12/25/2020, 10:06:23 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| <b>Modified</b> | 12/26/2020, 2:05:20 PM |
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### 8. Market coordination and network effects: the case of the European hydrogen and fuel cell technology platform

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|-------------------|--------------------------------------------------------------------------------------|
| <b>Type</b>       | <b>Book Section</b>                                                                  |
| <b>Author</b>     | Stian Nygaard                                                                        |
| <b>Author</b>     | Annika Rickne                                                                        |
| <b>Editor</b>     | Pogutz, S and Russo, A and Migliavacca, P                                            |
| <b>Place</b>      | THE LYPIATTS, 15 LANSDOWN RD, CHELTENHAM GL50 2JA, GLOS, ENGLAND                     |
| <b>Publisher</b>  | EDWARD ELGAR PUBLISHING LTD                                                          |
| <b>Pages</b>      | 169–181                                                                              |
| <b>ISBN</b>       | 978-1-84844-107-1                                                                    |
| <b>Date</b>       | 2009                                                                                 |
| <b>Language</b>   | English                                                                              |
| <b>Book Title</b> | INNOVATION, MARKETS AND SUSTAINABLE ENERGY: THE CHALLENGE OF HYDROGEN AND FUEL CELLS |
| <b>Date Added</b> | 12/25/2020, 10:06:23 PM                                                              |
| <b>Modified</b>   | 12/25/2020, 10:06:23 PM                                                              |

### 9. Multi-sided platform diffusion in competitive B2B networks: inhibiting factors and their impact on network effects

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Author</b>      | Soeren Wallbach                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Author</b>      | Katrin Coleman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Author</b>      | Ralf Elbert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Author</b>      | Alexander Benlian                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Volume</b>      | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Issue</b>       | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Pages</b>       | 693–710                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Publication</b> | ELECTRONIC MARKETS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>ISSN</b>        | 1019-6781                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Date</b>        | December 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>DOI</b>         | <a href="https://doi.org/10.1007/s12525-019-00382-7">10.1007/s12525-019-00382-7</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Abstract</b>    | Although multi-sided platforms (MSPs) and their diffusion in B2C contexts received heightened attention in recent literature, there is still a dearth of research on MSP diffusion inhibitors in competitive B2B networks. Using the air cargo hub in Frankfurt, Germany, as highly competitive B2B network which struggles with the acceptance of an MSP for over 10 years, we applied a grounded theory approach to identify key inhibitors to MSP diffusion. Based on several interviews with a diverse set of stakeholders and a systematic coding procedure, we identified 21 factors inhibiting MSP diffusion. The majority of these factors slows down or even thwarts positive network effects, typically occurring on MSPs. Furthermore, we derive a classification showing that the inhibiting |

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|                   | factors primarily hamper cross-side network effects in highly competitive B2B networks, and to a lesser degree also same-side and mixed-side network effects. Finally, implications of these results and future research directions are discussed. |
| <b>Date Added</b> | 12/25/2020, 10:06:23 PM                                                                                                                                                                                                                            |
| <b>Modified</b>   | 12/26/2020, 2:06:40 PM                                                                                                                                                                                                                             |

#### 10. Network effects in online two-sided market platforms: A research note

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Author</b>      | Shengli Li                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>      | Yipeng Liu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>      | Subhajyoti Bandyopadhyay                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Volume</b>      | 49                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Issue</b>       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Pages</b>       | 245–249                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Publication</b> | DECISION SUPPORT SYSTEMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>ISSN</b>        | 0167-9236                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Date</b>        | May 2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.dss.2010.02.004">10.1016/j.dss.2010.02.004</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Abstract</b>    | Many online platforms show characteristics whereby two groups of agents - the buyers and the sellers - come together and interact with one another via the enabling platform. The benefit that accrues to a member of either group depends on both the number of agents within each group and the extent of competition between the sellers for the buyers. We present a model to analyze such interactions. The results imply that if two platforms are relatively undifferentiated, trying to increase the cross-group network benefits for the buyers can be counterproductive. Instead, the platforms should first try to increase their relative differentiation, which then allows them to charge higher prices relative to the other platform. The results have particular significance in the online world, where the erstwhile strategy of many platforms that seem relatively undifferentiated from the consumers' perspective has been to increase the cross-group network benefits. (C) 2010 Elsevier B.V. All rights reserved. |
| <b>Date Added</b>  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Modified</b>    | 12/26/2020, 2:06:45 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### 11. Network effects on the iPhone platform: An empirical examination

|                    |                                               |
|--------------------|-----------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                        |
| <b>Author</b>      | Nan Feng                                      |
| <b>Author</b>      | Jianjian Chen                                 |
| <b>Author</b>      | Haiyang Feng                                  |
| <b>Author</b>      | Minqiang Li                                   |
| <b>Volume</b>      | 43                                            |
| <b>Publication</b> | ELECTRONIC COMMERCE RESEARCH AND APPLICATIONS |
| <b>ISSN</b>        | 1567-4223                                     |

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| <b>Date</b>       | October 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>DOI</b>        | <a href="https://doi.org/10.1016/j.elerap.2020.100990">10.1016/j.elerap.2020.100990</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Language</b>   | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Abstract</b>   | This study investigates a platform's decision on product-mix selection as well as its pricing strategy. We found that when a platform and third-party sellers offer different product mixes under a membership fee mechanism, the platform vendor should sell a low-end product mix in the following cases: (1) when the average profit ratio of a high-end to a low-end product mix is small and the network effect from sellers to consumers is weak, or (2) when the average profit ratio is large, the network effect from consumers to sellers is strong, and that from sellers to consumers is moderate. When third-party sellers are allowed to provide products in the same product mix as the platform's and first-party products have a large competitive advantage, equilibrium outcomes, in which the platform and third-party sellers offer the same product mix, are more likely to occur. Furthermore, a commission fee mechanism outperforms a membership fee mechanism if the network effect from sellers to consumers is moderate. Finally, if a platform adopts a commission fee mechanism, third-party sellers are more incentivized to sell a product mix that differs from the platform's. |
| <b>Date Added</b> | 12/25/2020, 10:06:05 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Modified</b>   | 12/26/2020, 2:08:25 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 12. Optimal product selection and pricing strategies for platform vendors under two-sided network effects

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Author</b>      | Nan Feng                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b>      | Jianjian Chen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>      | Haiyang Feng                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>      | Minqiang Li                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Volume</b>      | 43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Publication</b> | ELECTRONIC COMMERCE RESEARCH AND APPLICATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>ISSN</b>        | 1567-4223                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Date</b>        | October 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.elerap.2020.100990">10.1016/j.elerap.2020.100990</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Abstract</b>    | This study investigates a platform's decision on product-mix selection as well as its pricing strategy. We found that when a platform and third-party sellers offer different product mixes under a membership fee mechanism, the platform vendor should sell a low-end product mix in the following cases: (1) when the average profit ratio of a high-end to a low-end product mix is small and the network effect from sellers to consumers is weak, or (2) when the average profit ratio is large, the network effect from consumers to sellers is strong, and that from sellers to consumers is moderate. When third-party sellers are allowed to provide products in the same product mix as the platform's and first-party products have a large competitive |



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|                   | advantage, equilibrium outcomes, in which the platform and third-party sellers offer the same product mix, are more likely to occur. Furthermore, a commission fee mechanism outperforms a membership fee mechanism if the network effect from sellers to consumers is moderate. Finally, if a platform adopts a commission fee mechanism, third-party sellers are more incentivized to sell a product mix that differs from the platform's. |
| <b>Date Added</b> | 12/25/2020, 10:06:05 PM                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Modified</b>   | 12/26/2020, 2:08:25 PM                                                                                                                                                                                                                                                                                                                                                                                                                       |

### 13. Platform entry and homing as competitive strategies under cross-sided network effects

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b>      | C.-H. Wu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Author</b>      | N. Chamnisampan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>URL</b>         | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85096405708&amp;doi=10.1016%2fj.dss.2020.113428&amp;partnerID=40&amp;md5=864f53765def463c6a1072ce11e394f7">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85096405708&amp;doi=10.1016%2fj.dss.2020.113428&amp;partnerID=40&amp;md5=864f53765def463c6a1072ce11e394f7</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Volume</b>      | 140                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Publication</b> | Decision Support Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ISSN</b>        | 01679236                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Date</b>        | 2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.dss.2020.113428">10.1016/j.dss.2020.113428</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Abstract</b>    | In a competitive environment, determining when to enter the market and what homing policies should be adopted are crucial strategic decisions for platform-based businesses. In this study, we investigate the interactions between two platforms competing in two-sided markets with cross-sided network effects and determine their prices under different entry and homing strategies. We derive the equilibrium demands of two-sided markets for platforms and the equilibrium prices for two competing platforms. We further conduct a comparative analysis among scenarios with different combinations of homing and entry strategies. We find that early-entry platforms will preserve high margins in large early markets, where fierce price competition occurs once their rivals enter these markets. However, early entry is not always beneficial for platforms because the market-cannibalization effect emerges in the subsequent period. Furthermore, this effect will be amplified by the platforms' homing and entry strategies. In addition, cross-sided network effects lead buyers, sellers, and platforms to prefer a multi-homing policy, which is beneficial for society as a whole. Managerial insights are also provided for platform-based businesses. © 2020 Elsevier B.V. |
| <b>Date Added</b>  | 12/25/2020, 10:06:23 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Modified</b>    | 12/26/2020, 2:19:29 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



#### 14. Platform-based mobile payments adoption in emerging and developed countries: Role of country-level heterogeneity and network effect

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Author</b>      | V. Kumar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>      | Nandini Nim                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>      | Amit Agarwal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Publication</b> | JOURNAL OF INTERNATIONAL BUSINESS STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>ISSN</b>        | 0047-2506                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date</b>        | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>DOI</b>         | <a href="https://doi.org/10.1057/s41267-020-00346-6">10.1057/s41267-020-00346-6</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Abstract</b>    | Platform-based payment services such as mobile wallets (Mwallet) provide a unique value proposition to both customers and firms over other digital payment methods. Interestingly, the story of platform-based mobile payments adoption is unfolding differently across countries, with some emerging countries (China and India) outperforming developed countries. Using extant literature in International Business/International Marketing, industry reports, and qualitative interviews, we present a conceptual framework for mobile payments adoption at an aggregate level for customers and retailers. We present a set of hypotheses and derive the explanations using the literature on network effects and institutional theory. We test our framework on a diverse set of 30 countries and confirm the presence of network effects and the differential impact of perceived value, inertia, and culture on the adoption level of innovators and imitators. Importantly, we find a significant level of within- and between-country heterogeneity for mobile payment adoption, which provides further evidence for leapfrogging by emerging countries in the context of the mass adoption of mobile payments. These findings have significant implications for theory and practice in multinational organizations. |
| <b>Date Added</b>  | 12/25/2020, 10:06:23 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Modified</b>    | 12/26/2020, 8:47:46 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

#### 15. Platforms and network effects

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|------------------|-------------------------------------------------------------------------|
| <b>Type</b>      | <b>Book Section</b>                                                     |
| <b>Author</b>    | Paul Belleflamme                                                        |
| <b>Author</b>    | Martin Peitz                                                            |
| <b>Editor</b>    | Corchon, LC and Marini, MA                                              |
| <b>Place</b>     | GLENSANDA HOUSE, MONTPELLIER PARADE, CHELTENHAM GL50 1UA, GLOS, ENGLAND |
| <b>Publisher</b> | EDWARD ELGAR PUBLISHING LTD                                             |
| <b>Pages</b>     | 286–317                                                                 |
| <b>ISBN</b>      | 978-1-78811-278-9 978-1-78811-277-2                                     |
| <b>Date</b>      | 2018                                                                    |
| <b>Language</b>  | English                                                                 |

|                   |                                                                           |
|-------------------|---------------------------------------------------------------------------|
| <b>Book Title</b> | HANDBOOK OF GAME THEORY AND INDUSTRIAL ORGANIZATION, VOL II: APPLICATIONS |
| <b>Date Added</b> | 12/25/2020, 10:06:22 PM                                                   |
| <b>Modified</b>   | 12/25/2020, 10:06:22 PM                                                   |

#### 16. Quantifying Cross and Direct Network Effects in Online Consumer-to-Consumer Platforms

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>      | Junhong Chu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>      | Puneet Manchanda                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Volume</b>      | 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Issue</b>       | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Pages</b>       | 870–893                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Publication</b> | MARKETING SCIENCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>ISSN</b>        | 0732-2399                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Date</b>        | December 2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>DOI</b>         | <a href="https://doi.org/10.1287/mksc.2016.0976">10.1287/mksc.2016.0976</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Abstract</b>    | <p>Consumer-to-consumer (C2C) platforms have become a major engine of growth in Internet commerce. This is especially true in countries such as China, which are experiencing a big rush toward e-commerce. The emergence of such platforms gives researchers the unique opportunity to investigate the evolution of such platforms by focusing on the growth of both buyers and sellers. In this research, we build a utility-based model to quantify both cross and direct network effects on Alibaba Group's Taobao.com, the world's largest online C2C platform (based in China). Specifically, we investigate the relative contributions of different factors that affect the growth of buyers and sellers on the platform. Our results suggest that the direct network effects do not play a big role in the platform's growth (we detect a small positive direct network effect on buyer growth and no direct network effect on seller growth). More importantly, we find a significant, large and positive cross-network effect on both sides of the platform. In other words, the installed base of either side of the platform has propelled the growth of the other side (and thus the overall growth). Interestingly, this cross-network effect is asymmetric with the installed base of sellers having a much larger effect on the growth of buyers than vice versa. The growth in the number of buyers is driven primarily by the seller's installed base and product variety with increasing importance of product variety. The growth in the number of sellers is driven by buyer's installed base, buyer quality, and product price with increasing importance of buyer quality. We also investigate the nature of these cross-network effects over time. We find that the cross-network effect of sellers on buyers increases and then decreases to reach a stable level. By contrast, the cross-network effect of buyers on sellers is relatively stable. We discuss the policy implications of these findings for C2C platforms in general and Taobao in particular.</p> |

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| <b>Date Added</b> | 12/25/2020, 10:06:22 PM |
| <b>Modified</b>   | 12/26/2020, 2:01:42 PM  |

#### 17. Quantifying the direct network effect for online platforms supporting industrial symbiosis: an agent-based simulation study

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>      | Luca Fraccascia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Volume</b>      | 170                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Publication</b> | ECOLOGICAL ECONOMICS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>ISSN</b>        | 0921-8009                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Date</b>        | April 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.ecolecon.2019.106587">10.1016/j.ecolecon.2019.106587</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Abstract</b>    | This paper explores the direct network effect for online platforms supporting industrial symbiosis (IS), which is a recommended strategy to support the transition towards the circular economy. Through IS, companies can use wastes produced by other companies as inputs to production processes. Online platforms supporting companies in operating IS relationships can play a critical role in developing the IS practice. In this paper, an agent-based model is designed to simulate the emergence of IS relationships among companies located in a given geographical area. Companies can establish relationships traditionally (relying on face-to-face contacts) or by using a platform. Several scenarios, defined by different platform usage rates, are simulated. Results show that there is a minimum platform usage rate allowing companies to benefit from using the platform. If the platform usage rate is lower than this threshold, the platform does not contribute to generate further benefits for companies. When the platform usage rate is higher than the threshold, the individual benefits for users are higher the greater the number of other companies using the platform. Based on these results, implications on how to ensure a win-win approach for companies and platform owners can be provided, as well as implications for policymakers. |
| <b>Date Added</b>  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Modified</b>    | 12/26/2020, 2:01:31 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

#### 18. Reducing food waste through digital platforms: A quantification of cross-side network effects

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| <b>Type</b>   | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b> | S. Mullick                                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b> | N. Raassens                                                                                                                                                                                                                                                                                                                                           |
| <b>Author</b> | H. Haans                                                                                                                                                                                                                                                                                                                                              |
| <b>Author</b> | E.J. Nijssen                                                                                                                                                                                                                                                                                                                                          |
| <b>URL</b>    | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85092220533&amp;doi=10.1016%2fj.indmarman.2020.09.021&amp;partnerID=40&amp;md5=f4554800ace457ecd30ed07c7a9973ac">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85092220533&amp;doi=10.1016%2fj.indmarman.2020.09.021&amp;partnerID=40&amp;md5=f4554800ace457ecd30ed07c7a9973ac</a> |

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| <b>Publication</b> | Industrial Marketing Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ISSN</b>        | 00198501                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Date</b>        | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.indmarman.2020.09.021">10.1016/j.indmarman.2020.09.021</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Abstract</b>    | To fight food waste, retail stores have begun selling perishable food close to the expiration date at discounted prices. To render this form of last-minute discounting effective, digital platforms have been developed with the major aim to connect local retail stores and their consumers by sharing information about these discounts. To sustain digital platforms, platform leaders need to ensure both consumers and retail stores remain active on it. To provide platform leaders with advice on how to create a sustainable digital platform, we examine how retail store activity on the digital platform affects consumer activity, and vice versa (also known as cross-side network effects). By combining a PVAR model and an impulse response function, along with data from a digital platform aimed at food waste reduction, we find that the effect of consumer activity on retail store activity is stronger and more long-lasting than the effect of retail store activity on consumer activity. We discuss the implications of our findings for both retail stores and digital platform leaders. © 2020 Elsevier Inc. |
| <b>Date Added</b>  | 12/25/2020, 10:06:53 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Modified</b>    | 12/25/2020, 10:06:53 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### 19. Sequential product positioning on a platform in the presence of network effects

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Author</b>      | Wei Wang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Gaoyan Lyu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Volume</b>      | 229                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Publication</b> | INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>ISSN</b>        | 0925-5273                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Date</b>        | November 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.ijpe.2020.107779">10.1016/j.ijpe.2020.107779</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Abstract</b>    | We analyze in a game-theoretic framework the sequential product positioning problem of two asymmetric firms with different quality levels on a platform when network effects present, where the negative influences of product differentiation on product compatibility are explicitly considered. We obtain closed-form solutions to the positioning problem, and reveal that whether the traditional wisdom of positioning in the mass market is still optimal for the leader in our setting depends not only on whether it has a quality advantage over the follower, but also on the intensity of the network effects. For the follower, as the network effects increase or its quality advantage increases, its product positioning approaches the mass product; otherwise, the opposite is true. We also observe |

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|                   | that the optimal degree of differentiation has certain robustness with respect to the order of the positioning decisions. In addition, we find that the degree of product differentiation in the sequential positioning scenario is lower than in the simultaneous positioning scenario, while it is higher than in the social welfare maximization scenario. This research provides concrete guidelines for high-tech firms to make pertinent strategic decisions, and lays a foundation for platform managers to design policies to coordinate its members. |
| <b>Date Added</b> | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Modified</b>   | 12/26/2020, 2:00:52 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## 20. Strategic Intellectual Property Sharing: Competition on an Open Technology Platform Under Network Effects

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Author</b>      | Marius F. Niculescu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b>      | D. J. Wu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>      | Lizhen Xu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Volume</b>      | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Issue</b>       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Pages</b>       | 498–519                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Publication</b> | INFORMATION SYSTEMS RESEARCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>ISSN</b>        | 1047-7047                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date</b>        | June 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>DOI</b>         | <a href="https://doi.org/10.1287/isre.2017.0756">10.1287/isre.2017.0756</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Abstract</b>    | In this paper, we explore the strategic decision of an incumbent to open a proprietary technology platform to allow same-side co-opetition in a market characterized by network effects. We propose a game-theoretic model that analytically conceptualizes the interplay among the degree of same-side platform openness, the absorptive capacity of the entrant, and the intensity of network effects. Our analysis uncovers interesting new results. First, when entrant product quality is exogenous, under very strong network effects, the incumbent closes the technology. Moreover, we discuss various interesting open-platform co-opetition outcomes that arise under a fully covered market. When the entrant chooses the quality level and the incumbent is strategic in its platform opening decision, we find that intense network effects make new players shun the market, so intellectual property (IP) sharing is not possible in equilibrium. When the network effects are of intermediate intensity, the incumbent opens the technology to the entrants who have a sufficiently high absorptive capacity, calibrating the amount of sharing to the entrant's absorptive capacity level to ensure that the duopoly setting is mutually beneficial. Our key findings and insights are robust to several model extensions, including scenarios when the incumbent is uncertain of the entrant's absorptive capacity, or when the entrant incurs a general non-linear development cost structure. We also compare and contrast bounded versus unbounded market |

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|                   | scenarios. We further explore the ability of the incumbent to engineer the strength of network effects in the market and uncover non-trivial alternating-monotonicity patterns for the optimal intensity of network effects with respect to the entrant's absorptive capacity. We also show that a model with exogenous network effects could drastically underestimate the range of entrants' absorptive capacity values for which the incumbent should open its platform, causing the latter to miss valuable co-opetition opportunities. We also discuss various managerial implications of our theoretical framework. |
| <b>Date Added</b> | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Modified</b>   | 12/26/2020, 2:00:13 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 21. THE ECOSYSTEM OF SOFTWARE PLATFORM: A STUDY OF ASYMMETRIC CROSS-SIDE NETWORK EFFECTS AND PLATFORM GOVERNANCE

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Author</b>      | Peijian Song                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>      | Ling Xue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Author</b>      | Arun Rai                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Author</b>      | Cheng Zhang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Volume</b>      | 42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Issue</b>       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Pages</b>       | 121+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Publication</b> | MIS QUARTERLY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>ISSN</b>        | 0276-7783                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Date</b>        | March 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>DOI</b>         | <a href="https://doi.org/10.25300/MISQ/2018/13737">10.25300/MISQ/2018/13737</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Abstract</b>    | In the context of software platforms, we examine how cross-side network effects (CNEs) on different platform sides (app-side and user-side) are temporally asymmetric, and how these CNEs are influenced by the platform's governance policies. Informed by a perspective of value creation and capture, we theorize how the app-side and the user-side react to each other with distinct value creation/capture processes, and how these processes are influenced by the platform's governance policies on app review and platform updates. We use a time-series analysis to empirically investigate the platform ecosystem of a leading web browser. Our findings suggest that while the growth in platform usage results in long-term growth in both the number and variety of apps, the growth in the number of apps and the variety of apps only leads to short-term growth in platform usage. We also find that long app review time weakens the long-term CNE of the user-side on the app-side, but not the short-term CNE of the app-side on the user-side. Moreover, we find that frequent platform updates weaken the CNEs of both the user-side and the app-side on each other. These findings generate important implications regarding how a software platform may better govern its ecosystem with different participants. |

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| <b>Date Added</b> | 12/25/2020, 10:06:16 PM |
| <b>Modified</b>   | 12/26/2020, 1:59:16 PM  |

## 22. The influence of platform service innovation on value co-creation activities and the network effect

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>      | Wenhui Fu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Qiang Wang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Author</b>      | Xiande Zhao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Volume</b>      | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Issue</b>       | 2, SI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Pages</b>       | 348–388                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Publication</b> | JOURNAL OF SERVICE MANAGEMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ISSN</b>        | 1757-5818                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Date</b>        | 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>DOI</b>         | <a href="https://doi.org/10.1108/JOSM-10-2015-0347">10.1108/JOSM-10-2015-0347</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Abstract</b>    | <p><b>Purpose</b> - The purpose of this paper is to explore the properties of platform service innovation and its relationship to value co-creation activities and the network effect. This is done over the course of a platform's evolution through three stages: emergence, expansion and maturity. <b>Design/methodology/approach</b> - Based on grounded theory, this study adopts a multiple case study research design. An in-depth analysis of the case data is done using ATLAS. TI software. <b>Findings</b> - At the emergence stage, platform service innovations focus on building infrastructure. Platform owners stimulate the network effect directly via platform service innovations, rather than indirectly via value co-creation activities. At the expansion stage, the platform service innovations focus on building relationships among platform owner and different sides of participants. Platform owners stimulate the network effect indirectly, via value co-creation activities, rather than directly via platform service innovations. At the maturity stage, platform service innovations focus on building an environment for the platform ecosystem. Platform owners stimulate the network effect indirectly, via value co-creation activities rather than directly. <b>Originality/value</b> - This research contributes to the service innovation literature by exploring the properties of platform service innovation and its relationship to value co-creation activities and the network effect from a longitudinal perspective. The principal managerial implication is that platform managers need to consider the developmental stage of the platform, as a mismatching of stage of development (emergence/expansion/maturity) and focus (an orientation toward building infrastructure, relationships or environment) may lead to a failure to stimulate or enhance the network effect.</p> |
| <b>Date Added</b>  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Modified</b>    | 12/26/2020, 1:58:09 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |



### 23. The role of prices and network effects in the growth of the iPhone platform

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>      | Daniel D. Garcia-Swartz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b>      | Mensur Muhamedagic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Author</b>      | Diana Saenz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Volume</b>      | 147                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Pages</b>       | 110–122                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Publication</b> | TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>ISSN</b>        | 0040-1625                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Date</b>        | October 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.techfore.2019.06.020">10.1016/j.techfore.2019.06.020</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Abstract</b>    | In this paper we examine the roles played by prices, direct network effects, and indirect network effects in driving the growth of devices and apps on the iPhone platform. With long time series of high-frequency data, we estimate several econometric models and conduct various sensitivity exercises. Unlike prior studies on the subject, we model direct network effects in an explicit manner. The key conclusions we draw are: first, the three dimensions of the platform (prices, direct network effects, and indirect network effects) have had an impact in terms of encouraging the growth of iPhones and apps; and second, on the devices side, direct network effects and prices have been more important than indirect network effects, whereas on the apps side, indirect network effects have had a relatively stronger impact. In short, the impact of phones on apps has been relatively more substantial than the impact of apps on phones. |
| <b>Date Added</b>  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Modified</b>    | 12/26/2020, 1:57:43 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

### 24. The Role of Quantitative and Qualitative Network Effects in B2B Platform Competition

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                      |
| <b>Author</b>      | Zhiwen Lia                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>      | Thierry Penardb                                                                                                                                                                                                                                                                                                                             |
| <b>Volume</b>      | 35                                                                                                                                                                                                                                                                                                                                          |
| <b>Issue</b>       | 1                                                                                                                                                                                                                                                                                                                                           |
| <b>Pages</b>       | 1–19                                                                                                                                                                                                                                                                                                                                        |
| <b>Publication</b> | MANAGERIAL AND DECISION ECONOMICS                                                                                                                                                                                                                                                                                                           |
| <b>ISSN</b>        | 0143-6570                                                                                                                                                                                                                                                                                                                                   |
| <b>Date</b>        | January 2014                                                                                                                                                                                                                                                                                                                                |
| <b>DOI</b>         | <a href="https://doi.org/10.1002/mde.2602">10.1002/mde.2602</a>                                                                                                                                                                                                                                                                             |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                     |
| <b>Abstract</b>    | This article aims at investigating how quantitative and qualitative (indirect) network effects impact pricing and trading decisions on a Business- to- Business marketplace. Using an original data set collected on MFG.com, one of the most prominent B2B platforms in the U.S.A., we find that the market share of a marketplace depends |



|                   |                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | on both the quantity and quality of suppliers, but that quality effects tend to substitute for quantity effects as the size of the marketplace increases. These results suggest that while the quantity of suppliers on board is crucial during the early stage of a marketplace, supplier quality matters much more in the mature stage. Copyright (C) 2013 John Wiley & Sons, Ltd. |
| <b>Date Added</b> | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>   | 12/26/2020, 1:57:47 PM                                                                                                                                                                                                                                                                                                                                                               |

## 25. Unpaid crowd complementors: The platform network effect mirage

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Author</b>      | Kevin J. Boudreau                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Lars B. Jeppesen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Volume</b>      | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Issue</b>       | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Pages</b>       | 1761–1777                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Publication</b> | STRATEGIC MANAGEMENT JOURNAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>ISSN</b>        | 0143-2095                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date</b>        | December 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>DOI</b>         | <a href="https://doi.org/10.1002/smj.2324">10.1002/smj.2324</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Abstract</b>    | Platforms have evolved beyond just being organized as multi-sided markets with complementors selling to users. Complementors are often unpaid, working outside of a price system and driven by heterogeneous sources of motivation which should affect how they respond to platform growth. Does reliance on network effects and strategies to attract large numbers of complementors remain advisable in such contexts? We test hypotheses related to these issues using data from 85 online multi-player game platforms with unpaid complementors. We find that complementor development responds to platform growth even without sales incentives, but that attracting complementors has a net zero effect on on-going development and fails to stimulate network effects. We discuss conditions under which a strategy of using unpaid crowd complementors remains advantageous. Copyright (c) 2014 John Wiley & Sons, Ltd. |
| <b>Date Added</b>  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Modified</b>    | 12/26/2020, 1:58:35 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## E. Appendix-E: The Used Literature as a Secondary Data Detailed Information (Group-2)

The following tables show the detailed information about the used literature as a secondary data source. This information was exported from the Zotero database for the selected references based on the previously explained criteria.

### 1. A Two-Sided Market Platform Analysis For The Electric Vehicle Adoption: Firm Strategies And Policy Design

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Author</b>      | D.-C. Jang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Author</b>      | B. Kim                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Author</b>      | S.-Y. Lee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>URL</b>         | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046367434&amp;doi=10.1016%2fj.trd.2018.02.002&amp;partnerID=40&amp;md5=12e3b36208af7715c3af9f573a7cd7db">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046367434&amp;doi=10.1016%2fj.trd.2018.02.002&amp;partnerID=40&amp;md5=12e3b36208af7715c3af9f573a7cd7db</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Volume</b>      | 62                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Pages</b>       | 646–658                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Publication</b> | Transportation Research Part D: Transport and Environment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>ISSN</b>        | 13619209                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date</b>        | 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.trd.2018.02.002">10.1016/j.trd.2018.02.002</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Abstract</b>    | <p>This study explores how to facilitate the electric vehicle (EV) diffusion from a two-sided market platform competition. We develop a stylized model depicting the platform competition between electric and gasoline vehicles by combining indirect network effects of consumer and energy supplier sides as well as vehicle manufacturers' profits. The findings of this study provide several meaningful strategic and policy implications for EV manufacturers and policymakers who wish to enhance EV diffusion. First, EV sales are significantly influenced by indirect network effects from the energy supplier side to the consumer side, and vice versa. This implies that EV manufacturers who wish to boost EV diffusion should implement a strategy providing energy suppliers with incentives to willingly join the EV platform. Second, the dynamic nature of the effects of energy costs on platform competition might render counter-intuitive evidence that the drop in oil prices does not always negatively influence EV sales. This requires EV manufacturers to prepare a contingent strategy adjusting to such unexpected conditions. Third, governments should consider the energy supplier side as well as the consumer side in designing EV diffusion policies. When governments have a very challenging EV diffusion target, a balanced policy, which treats both gasoline and electric vehicle technologies fairly, may be more effective than a consumer subsidy policy. © 2018 Elsevier Ltd</p> |
| <b>Date Added</b>  | 12/25/2020, 10:06:30 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Modified</b>    | 12/26/2020, 1:50:59 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## 2. Cocreation Of Value In A Platform Ecosystem: The Case Of Enterprise Software

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Marco Ceccagnoli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>      | Chris Forman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Author</b>      | Peng Huang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Author</b>      | D. J. Wu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Volume</b>      | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Issue</b>       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Pages</b>       | 263–290                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Publication</b> | MIS QUARTERLY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>ISSN</b>        | 0276-7783                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Date</b>        | March 2012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Abstract</b>    | It has been argued that platform technology owners cocreate business value with other firms in their platform ecosystems by encouraging complementary invention and exploiting indirect network effects. In this study, we examine whether participation in an ecosystem partnership improves the business performance of small independent software vendors (ISVs) in the enterprise software industry and how appropriability mechanisms influence the benefits of partnership. By analyzing the partnering activities and performance indicators of a sample of 1,210 small ISVs over the period 1996-2004, we find that joining a major platform owner's platform ecosystem is associated with an increase in sales and a greater likelihood of issuing an initial public offering (IPO). In addition, we show that these impacts are greater when ISVs have greater intellectual property rights or stronger downstream capabilities. This research highlights the value of inter-operability between software products, and stresses that value cocreation and appropriation are not mutually exclusive strategies in interfirm collaboration. |
| <b>Date Added</b>  | 12/25/2020, 10:06:16 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>    | 12/25/2020, 10:06:16 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 3. Cocreation Of Valueina Platform Ecosystem : The Case Of Enterprise Software

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|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>   | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                  |
| <b>Author</b> | M. Ceccagnoli                                                                                                                                                                                                                                                                                                           |
| <b>Author</b> | C. Forman                                                                                                                                                                                                                                                                                                               |
| <b>Author</b> | P. Huang                                                                                                                                                                                                                                                                                                                |
| <b>Author</b> | D.J. Wu                                                                                                                                                                                                                                                                                                                 |
| <b>URL</b>    | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84859832893&amp;doi=10.2307%2f41410417&amp;partnerID=40&amp;md5=6261f879722d07a6822214270666cb6a">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84859832893&amp;doi=10.2307%2f41410417&amp;partnerID=40&amp;md5=6261f879722d07a6822214270666cb6a</a> |
| <b>Volume</b> | 36                                                                                                                                                                                                                                                                                                                      |
| <b>Issue</b>  | 1                                                                                                                                                                                                                                                                                                                       |
| <b>Pages</b>  | 263–290                                                                                                                                                                                                                                                                                                                 |

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| <b>Publication</b> | MIS Quarterly: Management Information Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>ISSN</b>        | 02767783                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Date</b>        | 2012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>DOI</b>         | <a href="https://doi.org/10.2307/41410417">10.2307/41410417</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Abstract</b>    | It has been argued that platform technology owners cocreate business value with other firms in their platform ecosystems by encouraging complementary invention and exploiting indirect network effects. In this study, we examine whether participation in an ecosystem partnership improves the business performance of small independent software vendors (ISVs) in the enterprise software industry and how appropriability mechanisms influence the benefits of partnership. By analyzing the partnering activities and performance indicators of a sample of 1,210 small ISVs over the period 1996-2004, we find that joining a major platform owner's platform ecosystem is associated with an increase in sales and a greater likelihood of issuing an initial public offering (IPO). In addition, we show that these impacts are greater when ISVs have greater intellectual property rights or stronger downstream capabilities. This research highlights the value of interoperability between software products, and stresses that value cocreation and appropriation are not mutually exclusive strategies in interfirm collaboration. |
| <b>Date Added</b>  | 12/25/2020, 10:06:51 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Modified</b>    | 12/25/2020, 10:06:51 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

#### 4. Crowdfunding Platforms And Actors Of Entrepreneurship Ecosystem: What Cooperations? What Business Models?

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|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Author</b>      | I. Calmé                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | S. Onnée                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | É.-A. Zoukhoua                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>URL</b>         | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994613547&amp;doi=10.3166%2frfg.2016.00080&amp;partnerID=40&amp;md5=fd291380a530ebed8a5baecf771b11c8">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994613547&amp;doi=10.3166%2frfg.2016.00080&amp;partnerID=40&amp;md5=fd291380a530ebed8a5baecf771b11c8</a>                                                                    |
| <b>Volume</b>      | 259                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Issue</b>       | 6                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Pages</b>       | 139–154                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Publication</b> | Revue Francaise de Gestion                                                                                                                                                                                                                                                                                                                                                                             |
| <b>ISSN</b>        | 03384551                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Date</b>        | 2016                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>DOI</b>         | <a href="https://doi.org/10.3166/rfg.2016.00080">10.3166/rfg.2016.00080</a>                                                                                                                                                                                                                                                                                                                            |
| <b>Language</b>    | French                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Abstract</b>    | This paper aims at studying strategies of cooperations implemented between actors support to business creation and crowdfunding platforms. We wonder the value proposition offered in these cooperations by identifying the resources and skills at stake. From a qualitative analysis based on semi structured interviews with actors of support in creation and crowdfunding platforms as well as on |

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|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | secondary data, our results show that these cooperations are determined by the willingness to improve their business model with the benefits of reinforced network effects. ©Lavoisier. |
| <b>Date Added</b> | 12/25/2020, 10:06:49 PM                                                                                                                                                                 |
| <b>Modified</b>   | 12/25/2020, 10:06:49 PM                                                                                                                                                                 |

### 5. Development Of Platform Strategy In The Network Context

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|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>              | <b>Conference Paper</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Author</b>            | Jerome Chih-Lung Chou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Editor</b>            | Chai, KH and Hang, CC and Xie, M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Place</b>             | 345 E 47TH ST, NEW YORK, NY 10017 USA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Publisher</b>         | IEEE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Pages</b>             | 556–560                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ISBN</b>              | 1-4244-0147-X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date</b>              | 2006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Language</b>          | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Abstract</b>          | The purpose of this research is to develop a framework for managing the development of platform strategy under the network context. By developing a strategy with the framework, the platform provider shall obtain competitive advantage based on network effects. The managerial framework is constructed based on network effects and conclusion of case studies on representative emerging platforms, including Microsoft NET, NTT DoCoMo i-mode, and Apple iTunes/iPod. These platforms constitute a new landscape of ICT industry, and they jointly can provide implications to platform strategy development. |
| <b>Proceedings Title</b> | 2006 IEEE INTERNATIONAL CONFERENCE ON MANAGEMENT OF INNOVATION AND TECHNOLOGY, VOLS 1 AND 2, PROCEEDINGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Date Added</b>        | 12/25/2020, 10:06:15 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>          | 12/26/2020, 1:54:10 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### 6. Difficult Business Models of Digital Business Platforms for Health Data: A Framework for Evaluation of the Ecosystem Viability

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| <b>Type</b>      | <b>Conference Paper</b>                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>    | T. Itala                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>    | H. Tohonen                                                                                                                                                                                                                                                                                                                  |
| <b>Editor</b>    | Theodoulidis B., Zaki M., Diaz D. Manolopoulos Y.                                                                                                                                                                                                                                                                           |
| <b>URL</b>       | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029405683&amp;doi=10.1109%2fCBI.2017.6&amp;partnerID=40&amp;md5=42043fe4cc4988a73d07c94829fb2617">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029405683&amp;doi=10.1109%2fCBI.2017.6&amp;partnerID=40&amp;md5=42043fe4cc4988a73d07c94829fb2617</a> |
| <b>Volume</b>    | 2                                                                                                                                                                                                                                                                                                                           |
| <b>Publisher</b> | Institute of Electrical and Electronics Engineers Inc.                                                                                                                                                                                                                                                                      |
| <b>Pages</b>     | 63–69                                                                                                                                                                                                                                                                                                                       |
| <b>ISBN</b>      | 978-1-5386-3034-1                                                                                                                                                                                                                                                                                                           |
| <b>Date</b>      | 2017                                                                                                                                                                                                                                                                                                                        |
| <b>DOI</b>       | <a href="https://doi.org/10.1109/CBI.2017.6">10.1109/CBI.2017.6</a>                                                                                                                                                                                                                                                         |

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|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Language</b>          | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Abstract</b>          | Cross-organizational platforms with a purpose to enable the exchange of data about their patients face not only technical challenges but also challenges for the viability of the business model of their ecosystem. Regional healthcare information systems (RHIS) have been evaluated from many aspects, like utility, process improvement, benefits to users and patients and cost savings. However these evaluations do not explain the problems in the viability of their ecosystems. This paper develops an ecosystem evaluation framework (EEF) based on platform theories and theory of constraints (TOC). It demonstrates how EEF is used in evaluation of a RHIS to explain its problems in viability. EEF is composed of a model and a method. The model defines the ecosystem: The platform, the producers and consumers, other stakeholders, the friction between the producers and consumers, the transactions reducing that friction, and the goals of the ecosystem and the goals of its stakeholders. The method applies following criteria: Does the platform serve its purpose in reducing the friction between producers and consumers, does the platform benefit every stakeholder in the ecosystem enabling them achieve more of their own goals, does the platform solve the chicken-and-egg problem, reach the critical mass, create network effects and does the improvement of the platform benefit every stakeholder. Using EEF in evaluation of RHIS reveals the inherent difficulties for digital business platforms, specifically when the ecosystem consists of both public and private organizations with mismatching goals. In the future EEF helps to address these problems early on. © 2017 IEEE. |
| <b>Proceedings Title</b> | Proceedings - 2017 IEEE 19th Conference on Business Informatics, CBI 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Date Added</b>        | 12/25/2020, 10:06:48 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Modified</b>          | 12/25/2020, 10:06:48 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 7. Digital Transformation of City Ecosystems: Platforms Shaping Engagement and Externalities across Vertical Markets

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b>      | N. Komninos                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>      | C. Kakderi                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>      | A. Collado                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>      | I. Papadaki                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>      | A. Panori                                                                                                                                                                                                                                                                                                                                         |
| <b>URL</b>         | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85090970810&amp;doi=10.1080%2f10630732.2020.1805712&amp;partnerID=40&amp;md5=31054d0d0524b09a6f8ecd65d8023ee8">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85090970810&amp;doi=10.1080%2f10630732.2020.1805712&amp;partnerID=40&amp;md5=31054d0d0524b09a6f8ecd65d8023ee8</a> |
| <b>Publication</b> | Journal of Urban Technology                                                                                                                                                                                                                                                                                                                       |
| <b>ISSN</b>        | 10630732                                                                                                                                                                                                                                                                                                                                          |
| <b>Date</b>        | 2020                                                                                                                                                                                                                                                                                                                                              |
| <b>DOI</b>         | <a href="https://doi.org/10.1080/10630732.2020.1805712">10.1080/10630732.2020.1805712</a>                                                                                                                                                                                                                                                         |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                           |

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|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Abstract</b>   | The paper focuses on the design of urban digital transformation strategies. It builds upon the lessons learned from the Digital Cities Challenge initiative, developed by the European Commission, designed to empower European cities to design and implement digital transformation strategies for the uptake of advanced digital services and the smart growth of city ecosystems. We study three cities that participated in the Digital Cities Challenge—Sofia, Granada, and Kavala—and provide an overview of the strategy designs they adopted. The results indicate that beside significant differences in context, sectors, and ecosystems targeted at those cities, common features shape the design of their digital transformation strategies based on digital platforms, such as opening markets for e-services, enhancement of local infrastructures, improving digital skills, and innovation funding mechanisms. We argue that creating digital platforms for ecosystem building is an essential strategy of digital transformation as it can produce network effects and externalities in digital space, similar to those deriving from spatial proximity in physical space. As a result, both spatial and digital network effects lead the development of externalities that play a key role in the formation, expansion, and sustainability of ecosystems. © 2020 The Society of Urban Technology. |
| <b>Date Added</b> | 12/25/2020, 10:06:42 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Modified</b>   | 1/17/2021, 3:24:19 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

#### 8. Entrance into a platform-dominated market: Virtue of an open strategy on the numerical computation market

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|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Author</b>      | Frederique Blondel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>      | Serge Edouard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Volume</b>      | 32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Issue</b>       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Pages</b>       | 177–188                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Publication</b> | CANADIAN JOURNAL OF ADMINISTRATIVE SCIENCES-<br>REVUE CANADIENNE DES SCIENCES DE L<br>ADMINISTRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ISSN</b>        | 0825-0383                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date</b>        | September 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>DOI</b>         | <a href="https://doi.org/10.1002/cjas.1320">10.1002/cjas.1320</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Abstract</b>    | Strategic and industrial analysis reveals it is extremely difficult to enter a market dominated by an existing platform. In fact, direct or indirect network effects give the established company's platform a considerable competitive edge. This is true of the numerical computation market and the Matlab + Simulink platform by MathWorks. The case study of Scilab Enterprises helps identify conditions of viability for breaking into such a market. We find that alone, the platform strategy is doomed to fail, but accompanied by an open strategy, entering a platform market becomes possible. We |

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|                   | hypothesize that a platform strategy is successful when associated with an open innovation process (integration of the open source community) and supported by a business ecosystem (a huge community of developers, users, and allies). Copyright (c) 2015 ASAC. Published by John Wiley & Sons, Ltd. Resume L'analyse strategique et industrielle montre qu'il est extremement difficile, pour un nouvel entrant, de penetrer un marche domine par une plateforme en place. C'est le cas du marche du calcul numerique avec la plateforme Matlab + Simulink de MathWorks. L'etude de cas de Scilab Entreprises permet, dans ce contexte particulier, d'identifier des conditions de viabilite d'une strategie d'entree sur un tel marche. En soi, la strategie de plateforme seule est vouee a l'echec. Accompagnee d'une strategie ouverte, cette entree devient possible. La strategie ouverte est definie ici comme une strategie de plateforme associee a un processus d'innovation ouverte (integration de la communaute open source) et s'appuyant sur un vaste ecosysteme d'affaires (vaste communaute de developpeurs, d'utilisateurs et d'allies). Copyright (c) 2015 ASAC. Published by John Wiley & Sons, Ltd. |
| <b>Date Added</b> | 12/25/2020, 10:06:11 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Modified</b>   | 12/26/2020, 1:56:07 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 9. Failure to Launch: Critical Mass in Platform Businesses

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b>      | David S. Evans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>      | Richard Schmalensee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Volume</b>      | 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Issue</b>       | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Publication</b> | REVIEW OF NETWORK ECONOMICS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>ISSN</b>        | 2194-5993                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Date</b>        | 2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>DOI</b>         | <a href="https://doi.org/10.2202/1446-9022.1256">10.2202/1446-9022.1256</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Abstract</b>    | Platform businesses add value by facilitating interactions between customers who are attracted in part by network externalities. Two-sided platform business with low costs of reversing participation status have become more important with the rise of the Internet. This essay is concerned with new businesses of this sort and the initial critical mass hurdle that they generally seem to face. In a very general model, we show how this hurdle depends on the nature of network effects, the dynamics of customer behavior, and the distribution of customer tastes. Weak, plausible assumptions about adjustment processes imply that platforms must get a sufficient number of members of both sides on board to launch successfully. |
| <b>Date Added</b>  | 12/25/2020, 10:06:04 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Modified</b>    | 12/26/2020, 1:56:42 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



## 10. Foundational Transformation Themes—Putting in Place Servitization and Platform Ecosystems

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|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>       | <b>Book Section</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>     | Hubert Tardieu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>     | David Daly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Author</b>     | José Esteban-Lauzán                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>     | John Hall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>     | George Miller                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>URL</b>        | <a href="http://link.springer.com/10.1007/978-3-030-37955-1_17">http://link.springer.com/10.1007/978-3-030-37955-1_17</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Place</b>      | Cham                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Publisher</b>  | Springer International Publishing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Pages</b>      | 179–187                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>ISBN</b>       | 978-3-030-37954-4 978-3-030-37955-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date</b>       | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Extra</b>      | DOI: 10.1007/978-3-030-37955-1_17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Accessed</b>   | 12/25/2020, 2:00:00 AM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Language</b>   | en                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Abstract</b>   | Servitization and platform ecosystems represent two different routes to business model transformation. Many businesses are already reaping the benefits of the first, which is essentially an evolution of traditional linear supply chain (pipeline) models. Creating a platform ecosystem demands a much more radical transformation that involves establishing and nurturing network effects within a multi-sided market. It requires an in-depth understanding of existing and potential market dynamics driven by mutual value creation and exchange. There are new roles to play; new challenges to overcome; and fundamental decisions to be made from the outset—not least of which is the decision of whether to take a lead in establishing an industry platform or participate in an existing ecosystem, addressing the issue of data multi-homing when this inevitably arises. |
| <b>Book Title</b> | Deliberately Digital                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date Added</b> | 12/25/2020, 10:07:02 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Modified</b>   | 1/16/2021, 6:33:29 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 11. Inciting networks effects through platform authority: A design theory for service platforms

|               |                                                                                                                                                                                                                                                                   |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>   | <b>Conference Paper</b>                                                                                                                                                                                                                                           |
| <b>Author</b> | U. Scholten                                                                                                                                                                                                                                                       |
| <b>Author</b> | C. Janiesch                                                                                                                                                                                                                                                       |
| <b>Author</b> | C. Rosenkranz                                                                                                                                                                                                                                                     |
| <b>URL</b>    | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84897767092&amp;partnerID=40&amp;md5=60ec24ccfb8ffdc03e887ead393fee9e">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84897767092&amp;partnerID=40&amp;md5=60ec24ccfb8ffdc03e887ead393fee9e</a> |
| <b>Volume</b> | 3                                                                                                                                                                                                                                                                 |
| <b>Pages</b>  | 2147–2167                                                                                                                                                                                                                                                         |
| <b>ISBN</b>   | 978-1-62993-426-6                                                                                                                                                                                                                                                 |
| <b>Date</b>   | 2013                                                                                                                                                                                                                                                              |

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| <b>Language</b>          | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Abstract</b>          | The provisioning of software has shifted towards a service model, where applications are hosted, metered, and billed through service platforms rather than being sold as on-premise software. These services can exhibit network effects, which are self-enforcing effects of value generation. They describe the interdependency of service or platform value, service consumption, and third party service provisioning. Service platforms need to be designed to incite these network effects. We propose a design theory which is based on the operator's platform authority as the key factor for controlling and influencing stakeholders in and around the service platform in different control modes. As a design method, we propose a conceptual modeling language which supports service platform design with staged areas of authority, process flows as well as control methods. We present the rationale behind the language, discuss its application, and propose testable hypotheses for an empirical evaluation. © (2013) by the AIS/ICIS Administrative Office. All rights reserved. |
| <b>Proceedings Title</b> | International Conference on Information Systems (ICIS 2013): Reshaping Society Through Information Systems Design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date Added</b>        | 12/25/2020, 10:06:54 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Modified</b>          | 12/25/2020, 10:06:54 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 12. Networks, Platforms, And Strategy: Emerging Views And Next Steps

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>      | David P. McIntyre                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Author</b>      | Arati Srinivasan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Volume</b>      | 38                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Issue</b>       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Pages</b>       | 141–160                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Publication</b> | STRATEGIC MANAGEMENT JOURNAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>ISSN</b>        | 0143-2095                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Date</b>        | January 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>DOI</b>         | <a href="https://doi.org/10.1002/smj.2596">10.1002/smj.2596</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Abstract</b>    | Research summary: A substantial and burgeoning body of research has described the influence of platform-mediated networks in a wide variety of settings, whereby users and complementors desire compatibility on a common platform. In this review, we outline extant views of these dynamics from the industrial organization (IO) economics, technology management, and strategic management perspectives. Using this review as a foundation, we propose a future research agenda in this domain that focuses the on the relative influence of network effects and platform quality in competitive outcomes, drivers of indirect network effects, the nature and attributes of complementors, and leveraging complementor dynamics for competitive advantage. Managerial summary: In many industries, such as social networks and video games, consumers |

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|                   | place greater value on products with a large network of other users and a large variety of complementary products. Such “ network effects” offer lucrative opportunities for firms that can leverage these dynamics to create dominant technology platforms. This article reviews current perspectives on network effects and the emergence of platforms, and offers several areas of future consideration for optimal strategies in these settings. Copyright c 2016 JohnWiley & Sons, Ltd. |
| <b>Date Added</b> | 12/25/2020, 10:06:09 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Modified</b>   | 12/26/2020, 2:06:51 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

### 13. New market development of platform ecosystems: A case study of the Nintendo Wii

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Author</b>      | Yuki Inoue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Author</b>      | Masaharu Tsujimoto                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Volume</b>      | 136                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Pages</b>       | 235–253                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Publication</b> | TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>ISSN</b>        | 0040-1625                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date</b>        | November 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.techfore.2017.01.017">10.1016/j.techfore.2017.01.017</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Abstract</b>    | The platform ecosystem could generate unlimited innovation with outside complementors and various consumers. Some researchers focused on the competition between two platform ecosystems in the same market and constructed theoretical models of indirect network effects between complementors and consumers. However, the implications from these researches might not adapt the platform ecosystem, which aims to explore new markets. This study focuses on a platform ecosystem-the Nintendo Wii-that explores a new market in the Japanese video game industry. We analyze why Wii rapidly declined in spite of its significant initial installed base. Our results show that the strength of indirect network effects for complementors' software provision became relatively small in the case of competition between new and existing markets. Software provision of complementors and software selection of consumers led to the concentration of consumer segments in the new market. Software purchases of consumers in the new markets were dependent on the provider's name and on seasonality and increased the risk for complementors. Consequently, complementors exited from the platform ecosystem of the Wii new market; as a result, more consumers could not participate in the platform ecosystem. Based on the findings, this study makes suggestions for platform ecosystem success. (C) 2017 The Authors. Published by Elsevier Inc. |
| <b>Date Added</b>  | 12/25/2020, 10:06:17 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Modified</b>    | 12/26/2020, 2:06:57 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

#### 14. Platform Strategies And User Stickiness In The Online Video Industry

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>      | Ke Rong                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b>      | Fei Xiao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Author</b>      | Xiaoyu Zhang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>      | Jingjing Wang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Volume</b>      | 143                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Pages</b>       | 249–259                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Publication</b> | TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>ISSN</b>        | 0040-1625                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Date</b>        | June 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.techfore.2019.01.023">10.1016/j.techfore.2019.01.023</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Abstract</b>    | In this paper, we explore determinants of user stickiness in the online video industry through platform theory. The online video industry mainly comprises two patterns of business model: the merchant platform and the two-sided platform. We build a theoretical model based on platform and Hotelling theories to explore the essential difference between the two kinds of business model. Then, we successfully verify the predictions of our theory using empirical analysis based on the data of the two most representative examples of the two models: IQiYi (merchant platform) and Bilibili (two-sided platform). We can draw the following conclusions: 1) the network effect is stronger in the two-sided platform than in the merchant platform, and an indirect network makes customers more multi-homing; 2) appropriability resources are essential for user stickiness in both models; and 3) price is not a significant influencing factor in user stickiness. |
| <b>Date Added</b>  | 12/25/2020, 10:06:07 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Modified</b>    | 12/26/2020, 2:20:03 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

#### 15. Platform Strategy

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|------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>      | <b>Book Section</b>                                                                                                         |
| <b>Author</b>    | Geoffrey Parker                                                                                                             |
| <b>Author</b>    | Marshall Van Alstyne                                                                                                        |
| <b>Editor</b>    | Mie Augier                                                                                                                  |
| <b>Editor</b>    | David J. Teece                                                                                                              |
| <b>URL</b>       | <a href="http://link.springer.com/10.1057/978-1-137-00772-8_435">http://link.springer.com/10.1057/978-1-137-00772-8_435</a> |
| <b>Place</b>     | London                                                                                                                      |
| <b>Publisher</b> | Palgrave Macmillan UK                                                                                                       |
| <b>Pages</b>     | 1290–1298                                                                                                                   |
| <b>ISBN</b>      | 978-0-230-53721-7 978-1-137-00772-8                                                                                         |
| <b>Date</b>      | 2018                                                                                                                        |
| <b>Extra</b>     | DOI: 10.1057/978-1-137-00772-8_435                                                                                          |
| <b>Accessed</b>  | 12/25/2020, 2:00:00 AM                                                                                                      |
| <b>Language</b>  | en                                                                                                                          |

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|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Abstract</b>   | This article summarizes the platform strategy literature and is organized around launch strategies, governance and competition. A platform strategy is the mobilization of a networked business platform to expand into and operate in a given market. A business platform, in turn, is a nexus of rules and infrastructure that facilitate interactions among network users. Platforms provide building blocks that serve as the foundation for complementary products and services. They also match buyers with suppliers, who transact directly with each other using system resources and are generally subject to network effects. |
| <b>Book Title</b> | The Palgrave Encyclopedia of Strategic Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date Added</b> | 12/25/2020, 10:07:01 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Modified</b>   | 1/16/2021, 6:22:55 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## 16. Platform Strategy

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| <b>Type</b>       | <b>Book Section</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>     | Geoffrey Parker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Author</b>     | Marshall Van Alstyne                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Editor</b>     | Mie Augier                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Editor</b>     | David J. Teece                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>URL</b>        | <a href="http://link.springer.com/10.1057/978-1-349-94848-2_435-1">http://link.springer.com/10.1057/978-1-349-94848-2_435-1</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Place</b>      | London                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Publisher</b>  | Palgrave Macmillan UK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Pages</b>      | 1–9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>ISBN</b>       | 978-1-349-94848-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date</b>       | 2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Extra</b>      | DOI: 10.1057/978-1-349-94848-2_435-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Accessed</b>   | 12/25/2020, 2:00:00 AM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Language</b>   | en                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Abstract</b>   | This article summarizes the platform strategy literature and is organized around launch strategies, governance and competition. A platform strategy is the mobilization of a networked business platform to expand into and operate in a given market. A business platform, in turn, is a nexus of rules and infrastructure that facilitate interactions among network users. Platforms provide building blocks that serve as the foundation for complementary products and services. They also match buyers with suppliers, who transact directly with each other using system resources and are generally subject to network effects. |
| <b>Book Title</b> | The Palgrave Encyclopedia of Strategic Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date Added</b> | 12/25/2020, 10:07:01 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Modified</b>   | 1/16/2021, 6:22:38 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## 17. Platform technologies and network goods: insights on product launch and management

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>      | Hemant K. Bhargava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>URL</b>         | <a href="http://link.springer.com/10.1007/s10799-014-0188-y">http://link.springer.com/10.1007/s10799-014-0188-y</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Volume</b>      | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Issue</b>       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Pages</b>       | 199–209                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Publication</b> | Information Technology and Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ISSN</b>        | 1385-951X, 1573-7667                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Date</b>        | September 2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>DOI</b>         | <a href="https://doi.org/10.1007/s10799-014-0188-y">10.1007/s10799-014-0188-y</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Accessed</b>    | 12/25/2020, 2:00:00 AM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Language</b>    | en                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Abstract</b>    | <p>Entrepreneurs of technology platforms and network goods face distinctive challenges in managing customer adoption, and in trading off growth and profitability. The firm has several levers of control including managing product design and the intensity of network effects, managing the timing of product announcement versus actual product release, selecting the target market for initial product launch, and whether to sell a single version or an expanded product line. Product line expansion is especially useful under network effects. A freemium approach can help the firm manage both growth (via the free product) and profitability (via the premium higher-priced version). However, expanding the product line carries substantial fixed costs (e.g., marketing cost, cost of additional plant, managing multiple sets of inventory, increased distribution cost). Firms are deterred from incurring these fixed costs when there is uncertainty about product success. Such uncertainty is particularly relevant for multi-sided networks—where the value from joining one network (e.g., users) depends on the size of the other side (e.g., developers)—because potential participants on each side may be uncertain about participation on the other side. Despite uncertainty, product line expansion can be attractive for both startups and established firms. Established firms face lower uncertainty about developer participation, and should expand when fixed costs of expansion are low (and do so early in the product’s life cycle). In contrast, startup firms face greater uncertainty in securing participation from third-party developers, and are more likely to benefit from a “wait and see” or deferred expansion strategy.</p> |
| <b>Short Title</b> | Platform technologies and network goods                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Date Added</b>  | 12/25/2020, 10:07:02 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Modified</b>    | 1/16/2021, 5:27:29 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 18. Platforms Versus Products: Observations from the Literature and History

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| <b>Type</b>       | <b>Book Section</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>     | Michael A. Cusumano                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Editor</b>     | Steven J. Kahl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Editor</b>     | Brian S. Silverman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Editor</b>     | Michael A. Cusumano                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>URL</b>        | <a href="https://0710bdthz-1104-y-https-doi-org.mplbci.ekb.eg/10.1108/S0742-3322(2012)0000029006">https://0710bdthz-1104-y-https-doi-org.mplbci.ekb.eg/10.1108/S0742-3322(2012)0000029006</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Series</b>     | Advances in Strategic Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Volume</b>     | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Publisher</b>  | Emerald Group Publishing Limited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Pages</b>      | 35–67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>ISBN</b>       | 978-1-78190-024-6 978-1-78190-025-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date</b>       | January 2012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Extra</b>      | DOI: 10.1108/S0742-3322(2012)0000029006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Accessed</b>   | 12/20/2020, 2:00:00 AM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Abstract</b>   | <p><b>Purpose</b> – This chapter discusses the difference between a product strategy and a platform strategy, relying on examples from the history of Apple and Microsoft in personal computers and other devices as well as Sony and Japan Victor Corporation in videocassette recorders. <b>Design/methodology/approach</b> – The chapter begins with a review of how the term “platform” has been used in the management literature and defines an industry-wide platform (as compared to an in-house company product platform) as a foundation technology (or service) that brings multiple parties in a market together for a common purpose. An industry-wide platform can generate powerful network effects between the platform and complementary products and services that make the platform increasingly valuable. Apple, with the Macintosh computer, and Sony with the Betamax VCR as well as other products, such as the Walkman media player, are examples of firms that developed excellent products but followed a product-first strategy and ended up losing in these markets or becoming niche players. They paid relatively little attention to opening up their technology to outside firms and cultivating an ecosystem of partners. Apple changed in the early 2000s with the iPod and iTunes, and then the iPhone and iPad, and has risen from near bankruptcy to become an enormously valuable and profitable platform leader. <b>Findings</b> – Historical examples suggest that, in a platform market, the winner is not the firm with the best product, but rather the firm with the best platform – that is, the foundation technology or service that is most open to outsiders and which stimulates development of the most compelling complements. <b>Originality/value</b> – This result extends the literature's understanding of platform strategy.</p> |
| <b>Book Title</b> | History and Strategy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date Added</b> | 12/25/2020, 10:07:00 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Modified</b>   | 12/25/2020, 10:07:00 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 19. Pricing and Service Strategies for Two-sided Platforms

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>      | Xiaogang Lin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Chuanying Chen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>      | Zhaozhan Lin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Yongwu Zhou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Volume</b>      | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Issue</b>       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Pages</b>       | 299–316                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Publication</b> | JOURNAL OF SYSTEMS SCIENCE AND SYSTEMS ENGINEERING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>ISSN</b>        | 1004-3756                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Date</b>        | June 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>DOI</b>         | <a href="https://doi.org/10.1007/s11518-019-5409-9">10.1007/s11518-019-5409-9</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Abstract</b>    | Nowadays, more and more transactions or interactions like online dating and shopping are completed on two-sided platforms involving two groups of agents. On these two-sided platforms, there often exist cross-network effects, i.e., the benefits that agents at one side receive are positively related to the number of agents at the other side, and vice versa. This paper considers such two-sided platforms, where the platforms offer a certain service to attract agents of both sides to join the platforms, and then charge agents who join the platforms a lump-sum fee to gain the profit. We present service and pricing strategies for both monopolistic and duopolistic platforms, respectively. We also investigate the impact of platforms' life cycle on their service and pricing strategies. Some managerial implications are shown. |
| <b>Date Added</b>  | 12/25/2020, 10:06:07 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Modified</b>    | 12/25/2020, 10:06:07 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 20. Pricing Model and Influential Factors Analysis of Drug Trade Service Platform

|                  |                                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>      | <b>Book Section</b>                                                                                                       |
| <b>Author</b>    | Penghu Wang                                                                                                               |
| <b>Author</b>    | Rui Zhang                                                                                                                 |
| <b>Author</b>    | Bingyong Tang                                                                                                             |
| <b>Author</b>    | Min Yuan                                                                                                                  |
| <b>Editor</b>    | Runtong Zhang                                                                                                             |
| <b>Editor</b>    | Zhenji Zhang                                                                                                              |
| <b>Editor</b>    | Kecheng Liu                                                                                                               |
| <b>Editor</b>    | Juliang Zhang                                                                                                             |
| <b>URL</b>       | <a href="http://link.springer.com/10.1007/978-3-642-40660-7_32">http://link.springer.com/10.1007/978-3-642-40660-7_32</a> |
| <b>Place</b>     | Berlin, Heidelberg                                                                                                        |
| <b>Publisher</b> | Springer Berlin Heidelberg                                                                                                |
| <b>Pages</b>     | 221–226                                                                                                                   |
| <b>ISBN</b>      | 978-3-642-40660-7                                                                                                         |
| <b>Date</b>      | 2015                                                                                                                      |



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| <b>Extra</b>      | DOI: 10.1007/978-3-642-40660-7_32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Accessed</b>   | 12/25/2020, 2:00:00 AM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Language</b>   | en                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Abstract</b>   | This paper analyzes that pricing model and influential factors of drug trade service platform based on the theory of two-sided markets. And it discusses the pricing issues from two cases of monopoly and competition. The result shows that the main factors affect the pricing model, including the level of market competition, the cross-side network effects between buyers and sellers, the positive same-side network effect among buyers, the negative same-side network effect among sellers and the marketing differentiation strategy of platforms. |
| <b>Book Title</b> | LISS 2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date Added</b> | 12/25/2020, 10:07:05 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Modified</b>   | 1/16/2021, 6:35:18 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 21. Research on pricing strategy of patent operation platform

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>              | <b>Conference Paper</b>                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Author</b>            | X.-F. Peng                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>            | J. Wu                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>            | Y.-X. Sheng                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>            | H.-G. Lei                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>URL</b>               | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85089944723&amp;doi=10.1109%2fECIT50008.2020.00088&amp;partnerID=40&amp;md5=4396c0d85ff79a42a2f63dcf88ff369b">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85089944723&amp;doi=10.1109%2fECIT50008.2020.00088&amp;partnerID=40&amp;md5=4396c0d85ff79a42a2f63dcf88ff369b</a>                                                                   |
| <b>Publisher</b>         | Institute of Electrical and Electronics Engineers Inc.                                                                                                                                                                                                                                                                                                                                                            |
| <b>Pages</b>             | 354–357                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ISBN</b>              | 978-1-72815-902-7                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Date</b>              | 2020                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>DOI</b>               | <a href="https://doi.org/10.1109/ECIT50008.2020.00088">10.1109/ECIT50008.2020.00088</a>                                                                                                                                                                                                                                                                                                                           |
| <b>Language</b>          | English                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Abstract</b>          | Based on the emerging patent operating platform, this paper introduced the unique characteristics of patent exclusivity and patent evaluation of platform service to the extended Hotelling model, and explored patent valuation, cross-network effect, and the patent conversion capability of buyers and other factors to affect the pricing strategy adopted by the platform for bilateral users. © 2020 IEEE. |
| <b>Proceedings Title</b> | Proceedings - 2020 International Conference on E-Commerce and Internet Technology, ECIT 2020                                                                                                                                                                                                                                                                                                                      |
| <b>Date Added</b>        | 12/25/2020, 10:06:25 PM                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Modified</b>          | 12/25/2020, 10:06:25 PM                                                                                                                                                                                                                                                                                                                                                                                           |

**22. Slicing the cake without baking it: Opportunistic platform entry strategies in digital markets**

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>      | K. Karhu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Author</b>      | P. Ritala                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>URL</b>         | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85082755380&amp;doi=10.1016%2fj.lrp.2020.101988&amp;partnerID=40&amp;md5=1d55e8059f38808c9dbf3a3450b5b7d5">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85082755380&amp;doi=10.1016%2fj.lrp.2020.101988&amp;partnerID=40&amp;md5=1d55e8059f38808c9dbf3a3450b5b7d5</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Publication</b> | Long Range Planning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ISSN</b>        | 00246301                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date</b>        | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.lrp.2020.101988">10.1016/j.lrp.2020.101988</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Abstract</b>    | The growth of digital platforms relies on the generative nature of digital resources and platforms' openness to complementary innovation. These features often generate strong network effects and winner-take-all dynamics that protect incumbents from competition. However, under certain conditions, these same features render incumbent platforms vulnerable to competitive strategic moves via entrant platforms wherein the entrants can capture value and simultaneously avoid upfront investments in value creation. In this study, we identify three such strategies: platform exploitation, platform injection, and platform pacing. These strategies allow the entrant platform to capture value using the incumbent ecosystem's resources by copying parts of the resources (exploitation), by following the development cycle of key boundary resources (pacing), or by placing itself inside the platform (injection). In this study, we employ an interpretative cross-case synthesis to both theorize these strategies as a new category of opportunistic platform competition and to reveal their distinctive characteristics. Overall, the study demonstrates the potential for unconventional and opportunistic platform competition strategies that extend beyond more traditional ones, such as quality, variety, and network size. © 2020 The Authors |
| <b>Date Added</b>  | 12/25/2020, 10:06:26 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Modified</b>    | 12/26/2020, 2:00:20 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**23. Success factors of platform leadership in web 2.0 service business**

|               |                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>   | <b>Journal Article</b>                                                                                              |
| <b>Author</b> | Sang M. Lee                                                                                                         |
| <b>Author</b> | Taewan Kim                                                                                                          |
| <b>Author</b> | Yonghwi Noh                                                                                                         |
| <b>Author</b> | Byungku Lee                                                                                                         |
| <b>URL</b>    | <a href="http://link.springer.com/10.1007/s11628-010-0093-3">http://link.springer.com/10.1007/s11628-010-0093-3</a> |
| <b>Volume</b> | 4                                                                                                                   |
| <b>Issue</b>  | 2                                                                                                                   |
| <b>Pages</b>  | 89–103                                                                                                              |

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|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Publication</b> | Service Business                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ISSN</b>        | 1862-8516, 1862-8508                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date</b>        | June 2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>DOI</b>         | <a href="https://doi.org/10.1007/s11628-010-0093-3">10.1007/s11628-010-0093-3</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Accessed</b>    | 12/25/2020, 2:00:00 AM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Language</b>    | en                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Abstract</b>    | The purpose of this study is to investigate the critical success factors of platform leadership in the Web 2.0 based service business environment. Because of the lack of theoretical foundation for this topic, we adopted relevant theory and case study analyses. Representative Web 2.0 firms which have developed platform leadership were chosen and analyzed on the basis of previous research on platform strategy through spider web analysis. This study shows that Web 2.0 firms such as Google, Flickr, and Salesforce.com differ in their competitive capabilities for platform leadership. The result of this research suggests that platform leadership in the Web 2.0 era depends on five interdependent dimensions: innovation ability, connectivity, complementarities, efficiency, and network effects. |
| <b>Date Added</b>  | 12/25/2020, 10:07:03 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Modified</b>    | 1/13/2021, 9:23:53 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### 24. Sustaining Complement Quality for Digital Product Platforms: A Case Study of the Philips Hue Ecosystem

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>      | Susan Hilbolling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Author</b>      | Hans Berends                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>      | Fleur Deken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b>      | Philipp Tuertscher                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Publication</b> | JOURNAL OF PRODUCT INNOVATION MANAGEMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>ISSN</b>        | 0737-6782                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Date</b>        | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>DOI</b>         | <a href="https://doi.org/10.1111/jpim.12555">10.1111/jpim.12555</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Abstract</b>    | Innovation in a digital world increasingly revolves around open platforms that consist of a core technology and a large variety of complementary products developed by an ecosystem of independent complementors. The platform ecosystem literature has mainly focused on indirect network effects arising from the quantity of complements, with little attention to the quality of complements, despite the importance of quality for the complementary value that drives platform ecosystems. Because digital products are malleable and dependent on the ever-evolving ecosystem, we advance a relational and dynamic conceptualization of complement quality. Drawing on a systematic, in-depth qualitative case study of the Philips Hue connected lighting platform and its complementary third-party apps, we study how and why complement quality is sustained over time. By analyzing apps and their updates, we |

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|                   | developed a process model that explains pathways through which complement quality is enhanced, maintained, or deteriorates. Changes in the platform core, changes in other ecosystem elements, and idiosyncratic connections by users result in expanding affordances, materializing glitches, and emerging obsolescence. Without further action, glitches and obsolescence lead to deteriorating quality. Joint action of complementors, platform owners, and users is needed to act upon affordances, glitches, and obsolescence, in order to maintain integrity and enhance functionality. This paper contributes to the literature on innovation in platform ecosystems by explaining the dynamic and relational nature of complement quality in a digital platform ecosystem and showing the interdependence of ecosystem members (the triad between platform owner, complementors, and users) in sustained development efforts. |
| <b>Date Added</b> | 12/25/2020, 10:06:20 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Modified</b>   | 1/17/2021, 1:16:56 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

**25. The impacts of technology platform openness on application developers' intention to continuously use a platform: From an ecosystem perspective**

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>      | G. Choi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Author</b>      | C. Nam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>      | S. Kim                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>URL</b>         | <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045332112&amp;doi=10.1016%2fj.telpol.2018.04.003&amp;partnerID=40&amp;md5=e71bee90865a07f25b84e2b3d813869b">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045332112&amp;doi=10.1016%2fj.telpol.2018.04.003&amp;partnerID=40&amp;md5=e71bee90865a07f25b84e2b3d813869b</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Volume</b>      | 43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Issue</b>       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Pages</b>       | 140–153                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Publication</b> | Telecommunications Policy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>ISSN</b>        | 03085961                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Date</b>        | 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>DOI</b>         | <a href="https://doi.org/10.1016/j.telpol.2018.04.003">10.1016/j.telpol.2018.04.003</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Abstract</b>    | With the development of information and communication technologies and Internet of things, the open-platform strategy has come into the spotlight. Opening a platform allows external firms or individuals to enter the platform ecosystem without any restrictions. A platform connects diverse products and services, and thus the aim of this study is to simultaneously investigate the effect of platform openness on multiple groups of products and services from an ecosystem perspective. This study specifically focuses on the manner in which Android's openness to both applications and devices influences the intentions of application developers to continuously participate in Android platform through the structural equation modeling. First, openness to applications directly influences the participation intention of application developers as well as the user |

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|                   | base of the platform. An increased user base leads to the enhanced participation intention of application developers through indirect network effects. Second, openness to devices contributes to increasing the user base, which in turn, positively influences the intention of application developers. Openness to a device also incurs coordination costs between applications and devices, and this has a partially negative effect on the participation of application developers. The contributions of the study include presenting an analytical model that offers a comprehensive understanding of the mechanisms of platform openness to external developers. © 2018 Elsevier Ltd |
| <b>Date Added</b> | 12/25/2020, 10:06:45 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Modified</b>   | 12/26/2020, 1:59:00 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 26. User preferences and strategic interactions in platform ecosystems

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b>      | Claudio Panico                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>      | Carmelo Cennamo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Publication</b> | STRATEGIC MANAGEMENT JOURNAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>ISSN</b>        | 0143-2095                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Date</b>        | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>DOI</b>         | <a href="https://doi.org/10.1002/smj.3149">10.1002/smj.3149</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Abstract</b>    | <p>Research summary User demand affects the emergence and growth of platform ecosystems through indirect network effects. But how do these effects play out in the strategies of platform providers and complementors as the ecosystem evolves? We study how user preferences for ecosystem innovativeness (complement novelty and quality) and ecosystem size (number of complementors/complements), and demand-based economies of scale, shape the strategic interactions between the platform provider and the complementors in the ecosystem. Using an analytical model, we identify the conditions that give rise to a trade-off between ecosystem innovativeness and size; when (and why) this trade-off generates a tension between value co-creation and appropriation among ecosystem participants; and the strategic implications for ecosystem competitiveness and for the different stages of the ecosystem's evolution. Managerial summary Managing complementors' incentives is critical for the success of a platform ecosystem. Such incentives may be offered not only for joining the platform, but also for contributing high-quality, innovative complements throughout the ecosystem's evolution. In this article, we show that demand-side economies of scale are the driving force of complementors' incentives, and hence the key success factor for platform strategies. The strength of user preferences ultimately determines whether a larger ecosystem can also be more innovative, in which case all ecosystem participants can gain; or if instead there is a trade-off between size and innovativeness, which could also lead</p> |

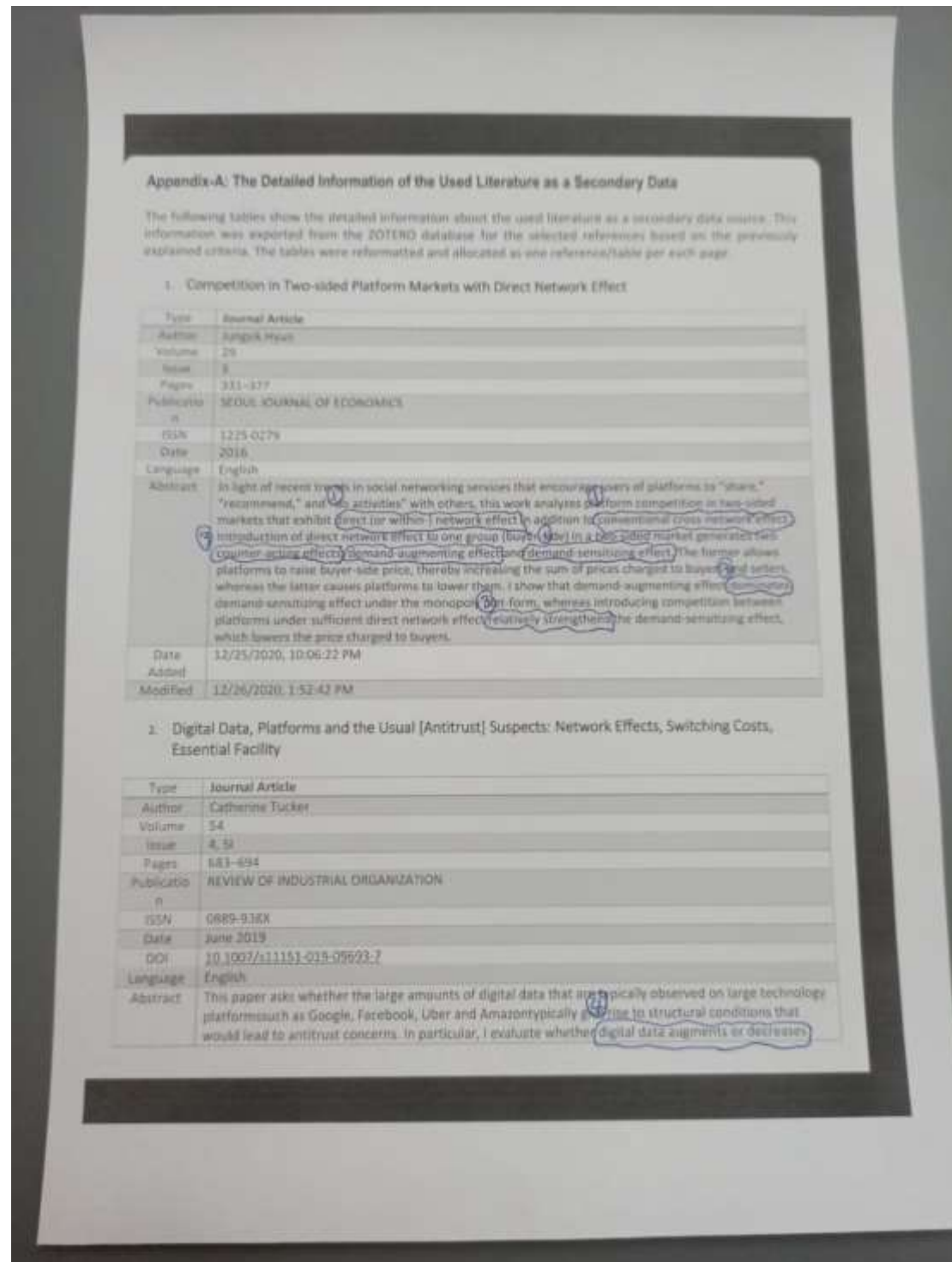
|                   |                                                                                                                                                                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | to a tension between value co-creation and appropriation among the platform provider and its complementors. The different stages of the evolution of a platform ecosystem call for different strategies that adapt to the evolution of user preferences. |
| <b>Date Added</b> | 12/25/2020, 10:06:19 PM                                                                                                                                                                                                                                  |
| <b>Modified</b>   | 1/17/2021, 1:16:38 PM                                                                                                                                                                                                                                    |

**27. Value-added service investing and pricing strategies for a two-sided platform under investing resource constraint**

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| <b>Type</b>        | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Author</b>      | Guowei Dou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>      | Ping He                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Volume</b>      | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Issue</b>       | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Pages</b>       | 609–627                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Publication</b> | JOURNAL OF SYSTEMS SCIENCE AND SYSTEMS ENGINEERING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>ISSN</b>        | 1004-3756                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Date</b>        | October 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>DOI</b>         | <a href="https://doi.org/10.1007/s11518-016-5319-z">10.1007/s11518-016-5319-z</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Language</b>    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Abstract</b>    | Investing on value-added service (VAS) amplifies users' participation and platform profit. However, the investing resource is usually limited in practice. This paper investigates VAS investing and pricing strategies for a two-sided platform under investing resource constraint. We reveal that with VAS investment, Subsidizing can still be done to enlarge users' demand, even when the investing cost becomes higher. For optimal pricing strategies, the network effect will be the dominating determinant if the gap between two marginal cross-side benefits (i.e. the benefit that users obtain when each new user join the other side of the platform) is large. Interestingly, we show that with the increase of the marginal investing cost, users might either be priced higher or lower. If the marginal investing cost increases to a high level, and the gap between the two marginal cross-side benefits is large, lowering the access fee for users possessing the higher cross-side network effect does not necessarily compensate more profit loss caused by higher cost. Moreover, after VAS is developed, raising the access fee for those whose marginal investing benefit is large does not necessarily generate more profit as well. The opposite strategy further enlarges users' utility, and promotes the investment to benefit more users. |
| <b>Date Added</b>  | 12/25/2020, 10:06:09 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Modified</b>    | 12/25/2020, 10:06:09 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## F. Appendix-F: The Detailed In-vivo Coding and Found Incidents (Group-1)

The following 13 images show the in-vivo incidents found during the open coding task for group-1 references.





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|            | concerns with regard to network effects and switching costs. I also evaluate whether data should be thought of as an essential facility. |
| Date Added | 12/25/2020, 10:06:22 PM                                                                                                                  |
| Modified   | 12/26/2020, 1:34:14 PM                                                                                                                   |

#### 3. Impact of network effects on service provider performance in digital business platforms

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| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Author      | Shadija Ali Yakout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Author      | Edward C. Mullins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Author      | Aimei Yang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Publication | JOURNAL OF SERVICE MANAGEMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ISSN        | 1757-5818                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Date        | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| DOI         | 10.1108/JOSM-04-2020-0120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Abstract    | <p>Purpose Digital business platforms (DBPs) such as Alibaba and Google Shopping are partnership networks that use the Internet to bring service providers (e.g. retail vendors) and customers together. One of the benefits of DBPs is network effects, in which customers can purchase from multiple providers, giving rise to a unique network. However, few studies have explored which service providers benefit from network effects and which do not. Design/methodology/approach Using the theories of transaction costs and network analysis, the authors apply network models to DBPs to understand which service providers benefit from network effects. Findings The authors identify three segments of service providers: (1) those with high prominence (connection to providers with high network centrality), (2) those with high network constraint (adjacent to isolated providers) and (3) those with low prominence and constraint. The authors find that segments (1) and (3) benefit from reciprocated customer exchanges and that benefit from network effects, while high constraint segment (2) providers do not benefit from reciprocated exchanges. Moreover, the authors find that for segments (2) and (3) future sales have a negative association with unreciprocated customer exchanges, while segment (1) has no significant association between unreciprocated exchanges and future sales. Research limitations/implications The authors discuss implications for a multisided platform (MSP), as it decides which service providers to attract, promote and recommend. They can use this study's results to know which segments of providers will increase network effects to make the platform more valuable. Practical implications This paper provides managers of service platforms with strategies for managing relations with their service providers. Social implications Service platforms are an important and disruptive business model. The authors need to understand how network effects operate to create efficient platforms. Originality/value This paper extends the literature on MSPs by quantifying network effects and showing not all service providers benefit equally on an MSP from network effects. Critical insights into network effects on the MSP are provided, including different ways it can impact provider sales.</p> |
| Date Added  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Modified    | 12/26/2020, 8:48:19 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### 4. Impact of Switching Costs and Network Effects on Selection of Mobile Platforms

|        |                      |
|--------|----------------------|
| Type   | Conference Paper     |
| Author | Nikita Dzheln        |
| Author | Jussi Ilmari Nykanen |
| Author | Esko Penttinen       |



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|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Author            | Timo Saarinen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Editor            | Rui, TX and Singapore, RH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Series            | Proceedings of the Annual Hawaii International Conference on System Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Place             | 10662 LOS VAQUEROS CIRCLE, PO BOX 3034, LOS ALAMITOS, CA 90720-1264 USA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Publisher         | IEEE COMPUTER SOC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Pages             | 1187-1196                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ISBN              | 978-1-4799-7367-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Date              | 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| DOI               | 10.1109/HICSS.2015.144                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Language          | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Abstract          | We study the consumer selection of mobile platforms through switching costs and network effects. We operationalize switching costs using five dimensions (search cost, learning cost, contractual cost, complementary investments, brand relationship cost) and network effects using two dimensions (same-side and cross-side network effects). We draw on four focus groups to empirically address the selection problem and our findings are three-fold. First, we show that complementary investments create strong switching costs through same and cross-side network effects. Second, the selection of mobile platform seems to be moderated by brand relationship cost. Third, contractual costs in the form of contracts for carrier-device bundles exhibit strong switching cost for the duration of the contract. However, there is no indication of lasting effect for this switching cost after the contract term ends. |
| Proceedings Title | 2015 48TH HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCES (HICSS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Date Added        | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Modified          | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

##### 5. Indirect Network Effects and Platform Dominance in the Video Game Industry: A Network Perspective

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Author      | Arati Srinivasan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Author      | N. Venkatraman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Volume      | 57                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Issue       | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Pages       | 661-673                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Publication | IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ISSN        | 0018-9391                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Date        | November 2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| DOI         | 10.1109/TEM.2009.2037738                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Abstract    | Going beyond the traditional conceptualization of indirect network effects as the number of complements available, this study analyzes how the network positions of platforms and complementors explain platform dominance. We use data from the U. S. home video game industry between 2002 and 2006 to test our model of platform dominance. While the impact of degree of link with complementors representing the number of complements is significant, our study also finds that platform dominance is positively influenced by support from a greater breadth of titles by complementors and lesser degree of overlap with other platforms. We also find that ties with high-status complementors influence platform dominance, but this impact decreases with platform age. Our results suggest benefits to refine our conceptualization of indirect network effects from a network perspective. The managerial implications are that each platform provider needs to differentiate its platform by attracting high-status developers and by providing third-party developers with toolkits that encourage them to develop exclusive titles. |

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#### 6. Indirect network effects, network quality and the success of a platform

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type              | Conference Paper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Author            | F. Zhu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Author            | M. Janssen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| URL               | <a href="https://www.scripps.com/inward/retrieve/uri/24210848422841&amp;partnerID=80&amp;mid=814906200&amp;v9215067181&amp;7156445">https://www.scripps.com/inward/retrieve/uri/24210848422841&amp;partnerID=80&amp;mid=814906200&amp;v9215067181&amp;7156445</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Date              | 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Language          | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Abstract          | <p>Researchers debate whether indirect network effects or network quality (i.e., quality of the complementary applications and quality of the platform) drives the success of a platform in high-technology industries. We develop a dynamic model in which two platforms with different network quality compete under indirect network effects. Our results indicate that indirect network effects dominate quality effects in determining the long-run market structure. When the strength of the indirect network effects is above a certain threshold, the market converges to a monopoly; a platform can improve its chance of dominating the market by increasing its network quality. When the strength is below the threshold, the market converges to an oligopoly; a platform with better network quality will always be the market leader. While it is well known that strong indirect network effects drive monopolies in the literature, our finding that under weak indirect network effects, a new platform could seize a significant market share even without superior quality is new and provides different managerial implications. We empirically analyze the competition between Xbox and PlayStation 2 consoles in the video game industry. We find game players and developers do not perceive significant quality difference between the two consoles. Consistent with our model predictions, the successful entry of Xbox is a result of weak indirect network effects in this market.</p> |
| Proceedings Title | Academy of Management 2007 Annual Meeting: Doing Well by Doing Good, ADM 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Date Added        | 12/25/2020, 10:06:54 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Modified          | 12/25/2020, 10:06:54 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

#### 7. INDIRECT NETWORK EFFECTS, USAGE EXTERNALITIES, AND PLATFORM COMPETITION

|             |                                                                                                                                                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                    |
| Author      | Paul A. Johnston                                                                                                                                                                                                                                                                                                                   |
| Volume      | 15                                                                                                                                                                                                                                                                                                                                 |
| Issue       | 2-3                                                                                                                                                                                                                                                                                                                                |
| Pages       | 283-297                                                                                                                                                                                                                                                                                                                            |
| Publication | JOURNAL OF COMPETITION LAW & ECONOMICS                                                                                                                                                                                                                                                                                             |
| ISSN        | 1744-6414                                                                                                                                                                                                                                                                                                                          |
| Date        | September 2019                                                                                                                                                                                                                                                                                                                     |
| DOI         | 10.1093/joc/lnz014                                                                                                                                                                                                                                                                                                                 |
| Language    | English                                                                                                                                                                                                                                                                                                                            |
| Abstract    | <p>Platforms, or two-sided markets, have become a topic of significant discussion in competition law over the past decade. Dominating in the recent US Supreme Court decision in <i>Ohio v. American Express Co.</i> This note discusses externalities in platforms, indirect network effects, and type of externality (common</p> |

on platforms, have been prominent in these discussions. However, the prominence of indirect network effects has obscured the importance of another externality that exists on platforms, escape externality. This note argues that a new exclusive focus on indirect network effects has led to errors in identifying when a market should be analysed as a platform. These errors implicate the identification of platforms like those at issue in *Ohio v. American Express Co.* as well as a wider set of platforms, such as job-solicited media platforms.

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Modified: 12/26/2020, 2:05:20 PM

8. Market coordination and network effects: the case of the European hydrogen and fuel cell technology platform

|            |                                                                                      |
|------------|--------------------------------------------------------------------------------------|
| Type       | Book Section <b>X</b>                                                                |
| Author     | Stian Nygaard                                                                        |
| Author     | Annika Rickne                                                                        |
| Editor     | Poguts, S and Russo, A and Migliavacca, P                                            |
| Place      | The LYPIATTS, 15 LANSDOWN RD, CHELTENHAM GL50 2JA, GLOS, ENGLAND                     |
| Publisher  | EDWARD ELGAR PUBLISHING LTD                                                          |
| Pages      | 169-181                                                                              |
| ISBN       | 978-1-84844-107-1                                                                    |
| Date       | 2009                                                                                 |
| Language   | English                                                                              |
| Book Title | INNOVATION, MARKETS AND SUSTAINABLE ENERGY: THE CHALLENGE OF HYDROGEN AND FUEL CELLS |
| Date Added | 12/25/2020, 10:06:23 PM                                                              |
| Modified   | 12/25/2020, 10:06:23 PM                                                              |

9. Multi-sided platform diffusion in competitive B2B networks: inhibiting factors and their impact on network effects

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Author      | Soeren Wallbach                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Author      | Katrin Coleman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Author      | Ralf Eibert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Author      | Alexander Benlian                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Volume      | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Issue       | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Pages       | 693-710                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Publication | ELECTRONIC MARKETS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ISSN        | 1019-6781                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Date        | December 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| DOI         | 10.1007/s12529-019-00382-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Abstract    | Although multi-sided platforms (MSPs) and their diffusion in B2C contexts received heightened attention in recent literature, there is still a dearth of research on MSP diffusion inhibitors in competitive B2B networks. Using the air cargo hub in Frankfurt, Germany, as highly competitive B2B network which struggled with the acceptance of an MSP for over 10 years, we applied a grounded theory approach to identify key inhibitors in MSP diffusion. Based on several interviews with a diverse set of stakeholders |

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | and a systematic coding procedure, we identified 23 factors inhibiting MSP diffusion. The majority of these factors stems from negative network effects, typically occurring on MSPs. Furthermore, we derive a classification showing that the inhibiting factors primarily hamper cross-side network effects in highly competitive B2B networks, and to a lesser degree also same-side and mixed-side network effects. Finally, implications of these results and future research directions are discussed. |
| Date Added | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Modified   | 12/26/2020, 2:06:40 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

#### 10. Network effects in online two-sided market platforms: A research note

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Author      | Sheng Li                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Author      | Yipeng Liu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Author      | Subhajyoti Bandyopadhyay                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Volume      | 49                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Issue       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Pages       | 245-249                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Publication | DECISION SUPPORT SYSTEMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| ISSN        | 0167-9238                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Date        | May 2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| DOI         | 10.1016/j.dss.2010.02.004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Abstract    | Many online platforms show characteristics whereby two groups of agents - the buyers and the sellers - come together and interact with one another via the enabling platform. The benefit that accrues to a member of either group depends on both the number of agents within each group and the extent of competition between the sellers for the buyers. We present a model to analyze such interactions. The results imply that if two platforms are relatively undifferentiated, trying to increase the cross-group network benefits for the buyers can be counterproductive. Instead, the platforms should first try to increase their relative differentiation, which then allows them to charge higher prices relative to the other platform. The results have particular significance in the online world, where the erstwhile strategy of many platforms that seem relatively undifferentiated from the consumers' perspective has been to increase the cross-group network benefits. (C) 2010 Elsevier B.V. All rights reserved. |
| Date Added  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Modified    | 12/26/2020, 2:06:45 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### 11. Network effects on the iPhone platform: An empirical examination

|        |                                                                                                                                                                                                                                                                                                                                       |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type   | Journal Article                                                                                                                                                                                                                                                                                                                       |
| Author | D.D. Garcia-Swartz                                                                                                                                                                                                                                                                                                                    |
| Author | F. Garcia-Vicente                                                                                                                                                                                                                                                                                                                     |
| URL    | <a href="https://www.scopus.com/inward/record.uri?uid=2-s2.0-84947261453&amp;doi=10.1016%2Ftel.2015.07.011&amp;partnerID=40&amp;md5=c1820564668710ad8eed53c46c048c8d">https://www.scopus.com/inward/record.uri?uid=2-s2.0-84947261453&amp;doi=10.1016%2Ftel.2015.07.011&amp;partnerID=40&amp;md5=c1820564668710ad8eed53c46c048c8d</a> |
| Volume | 39                                                                                                                                                                                                                                                                                                                                    |
| Issue  | 10                                                                                                                                                                                                                                                                                                                                    |
| Pages  | 877-895                                                                                                                                                                                                                                                                                                                               |

Publication: Telecommunications Policy

ISSN: 03085963

Date: 2015

DOI: 10.1016/j.telpol.2015.07.011

Language: English

Abstract

Smartphones are "systems," that is, collections of (hardware and software) components that work well with one another. They can also be viewed as multi-sided platforms that connect two or more distinct types of customers (users, application developers, handset manufacturers, network operators, and advertisers) and are characterized by the existence of indirect network effects: an extra customer on one side generates benefits for customers on the other side. In this study we focus on one specific aspect of the growth dynamics of Apple's iPhone: the feedback effects between users and application developers. After briefly tracing the history of the iPhone, we construct time series of users and apps. We then carry out cointegration analysis and estimate dynamic OLS (DOLS) and vector error correction models (VECM). We find evidence of indirect network effects of a substantial magnitude. © 2015 Elsevier Ltd.

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## 12. Optimal product selection and pricing strategies for platform vendors under two-sided network effects

Type: Journal Article

Author: Nan Feng

Author: Jianjian Chen

Author: Haiyang Feng

Author: Mingqiang Li

Volume: 43

Publication: ELECTRONIC COMMERCE RESEARCH AND APPLICATIONS

ISSN: 1567-4223

Date: October 2020

DOI: 10.1016/j.elerap.2020.100990

Language: English

Abstract: This study investigates a platform's decision on product-mix selection as well as its pricing strategy. We found that when a platform and third-party sellers offer different product mixes under a membership fee mechanism, the platform vendor should sell a low-end product mix in the following cases: (1) when the average profit ratio of a high-end to a low-end product mix is small and the network effect from sellers to consumers is weak, or (2) when the average profit ratio is large, the network effect from consumers to sellers is strong, and that from sellers to consumers is moderate. When third-party sellers are allowed to provide products in the same product mix as the platform's and first-party products have a large competitive advantage, equilibrium outcomes, in which the platform and third-party sellers offer the same product mix, are more likely to occur. Furthermore, a commission fee mechanism outperforms a membership fee mechanism if the network effect from sellers to consumers is moderate. Finally, if a platform adopts a commission fee mechanism, third-party sellers are more incentivized to sell a product mix that differs from the platform's.

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### 13. Platform entry and homing as competitive strategies under cross-sided network effects

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Author      | C.-H. Wu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Author      | N. Chamsasampan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| URI         | 10.1016/j.dss.2020.113428<br>10.1016/j.dss.2020.113428&partnerID=80&md5=88453750d946316e1072ce11e3946                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Volume      | 140                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Publication | Decision Support Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| ISSN        | 0167-9236                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Date        | 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| DOI         | 10.1016/j.dss.2020.113428                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Abstract    | <p>In a competitive environment, determining when to enter the market and what homing policy should be adopted are crucial strategic decisions for platform-based businesses. In this study, we investigate the interactions between two platforms competing in two-sided markets with cross-sided network effects and determine their prices under different entry and homing strategies. We derive the equilibrium demands for two-sided markets for platforms and the equilibrium prices for two competing platforms. We further conduct a comparative analysis among scenarios with different combinations of homing and entry strategies. We find that early-entry platforms will preserve high margins in large early markets, where fierce price competition occurs once their rivals enter these markets. However, early entry is not always beneficial for platforms because the market cannibalization effect emerges in the subsequent period. Furthermore, this effect will be amplified by the platforms' homing and entry strategies. In addition, cross-sided network effects lead buyers, sellers, and platforms to prefer a multi-homing policy, which is beneficial for society as a whole. Managerial insights are also provided for platform-based businesses. © 2020 Elsevier B.V.</p> |
| Date Added  | 12/25/2020, 10:06:23 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Modified    | 12/25/2020, 2:19:29 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### 14. Platform-based mobile payments adoption in emerging and developed countries: Role of country-level heterogeneity and network effects

|             |                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                |
| Author      | V. Kumar                                                                                                                                                                                                       |
| Author      | Nandini Nini                                                                                                                                                                                                   |
| Author      | Amit Agarwal                                                                                                                                                                                                   |
| Publication | JOURNAL OF INTERNATIONAL BUSINESS STUDIES                                                                                                                                                                      |
| ISSN        | 0047-2506                                                                                                                                                                                                      |
| Date        | 2020                                                                                                                                                                                                           |
| DOI         | 10.1057/441267-020-00346-6                                                                                                                                                                                     |
| Language    | English                                                                                                                                                                                                        |
| Abstract    | Platform-based payment services such as mobile wallets (Mwallet) provide a unique value proposition to both customers and firms over other digital payment methods. Interestingly, the story of platform-based |



mobile payments adoption is unfolding differently across countries, with some emerging countries (China and India) outperforming developed countries. Using extant literature in International Business/International Marketing, industry reports, and qualitative interviews, we present a conceptual framework for mobile payments adoption at an aggregate level for customers and retailers. We present a set of hypotheses and derive the explanations using the literature on network effects and institutional theory. We test our framework on a diverse set of 30 countries and confirm the presence of network effects and the differential impact of perceived value, inertia, and culture on the adoption level of innovators and imitators. Importantly, we find a significant level of heterogeneity between (country) for mobile payment adoption, which provides further evidence for leapfrogging by emerging countries in the context of the mass adoption of mobile payments. These findings have significant implications for theory and practice in multinational organizations.

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Modified: 12/26/2020, 8:47:46 PM

#### 15. Platforms and network effects

|            |                                                                           |
|------------|---------------------------------------------------------------------------|
| Type       | Book Section                                                              |
| Author     | Paul Belleflamme                                                          |
| Author     | Martin Peitz                                                              |
| Editor     | Carrigan, LC and Martin, MA                                               |
| Place      | GLENSANDA HOUSE, MONTPELLIER PARADE, CHELTENHAM GL50 1UA, GLOS, ENGLAND   |
| Publisher  | EDWARD ELGAR PUBLISHING LTD                                               |
| Pages      | 186-217                                                                   |
| ISBN       | 978-1-78811-278-9 978-1-78811-277-2                                       |
| Date       | 2018                                                                      |
| Language   | English                                                                   |
| Book Title | HANDBOOK OF GAME THEORY AND INDUSTRIAL ORGANIZATION, VOL II: APPLICATIONS |
| Date Added | 12/25/2020, 10:06:22 PM                                                   |
| Modified   | 12/25/2020, 10:06:22 PM                                                   |

#### 16. Quantifying Cross and Direct Network Effects in Online Consumer-to-Consumer Platforms

|             |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                              |
| Author      | Jinhong Chu                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Author      | Puneet Manchanda                                                                                                                                                                                                                                                                                                                                                                                                             |
| Volume      | 35                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Issue       | 6                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Pages       | 870-893                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Publication | MARKETING SCIENCE                                                                                                                                                                                                                                                                                                                                                                                                            |
| ISSN        | 0732-2399                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Date        | December 2016                                                                                                                                                                                                                                                                                                                                                                                                                |
| DOI         | 10.1287/mksc.2016.0976                                                                                                                                                                                                                                                                                                                                                                                                       |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Abstract    | Consumer-to-consumer (C2C) platforms have become a major engine of growth in internet commerce. This is especially true in countries such as China, which are experiencing a big rush toward e-commerce. The emergence of such platforms gives researchers the unique opportunity to investigate the evolution of such platforms by focusing on the growth of both buyers and sellers. In this research, we build a utility- |

based model to quantify both <sup>①</sup>cross and <sup>②</sup>direct network effects on Alibaba Group's Taobao.com, the world's largest online C2C platform (based in China). Specifically, we investigate the relative contributions of different factors that affect the growth of buyers and sellers on the platform. Our results suggest that the direct network effects do not play a big role in the platform's growth (we detect a small positive direct network effect on buyer growth and no direct network effect on seller growth). More importantly, we find a significant, large and positive cross-network effect on both sides of the platform. In other words, the installed base of either side of the platform has propelled the growth of the other side (and thus the overall growth). Interestingly, this cross-network effect is asymmetric with the installed base of sellers having a much larger effect on the growth of buyers than vice versa. <sup>③</sup>Moreover, the number of buyers is driven primarily by the seller's installed base and <sup>④</sup>product variety, with increasing importance of product variety. The growth in the number of sellers is driven by <sup>⑤</sup>buyer's installed base, <sup>⑥</sup>buyer quality and <sup>⑦</sup>product price, with increasing importance of buyer quality. We also investigate the nature of these cross-network effects over time. We find that the cross-network effect of sellers on buyers increases and then decreases to reach a stable level. By contrast, the cross-network effect of buyers on sellers is relatively stable. We discuss the policy implications of these findings for C2C platforms in general and Taobao in particular.

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## 12. Quantifying the direct network effect for online platforms supporting industrial symbiosis: an agent-based simulation study

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|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Author      | Luca Fraccascia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Volume      | 170                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Publication | ECOLOGICAL ECONOMICS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| n           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ISSN        | 0921-8009                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Date        | April 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| DOI         | 10.1016/j.ecolecon.2019.106587                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Abstract    | <p>This paper explores the <sup>①</sup>direct network effect for online platforms supporting industrial symbiosis (IS), which is a recommended strategy to support the transition towards the circular economy. Through IS, companies can use wastes produced by other companies as inputs to production processes. Online platforms supporting companies in operating IS relationships can play a critical role in developing the IS practice. In this paper, an agent-based model is designed to simulate the emergence of IS relationships among companies located in a given geographical area. Companies can establish relationships <sup>②</sup>traditionally (relying on face-to-face contacts) or by using a platform. Several scenarios, defined by different <sup>③</sup>platform usage rates, are simulated. Results show that there is a minimum platform usage rate allowing companies to benefit from using the platform. If the platform usage rate is lower than this threshold, the platform does not contribute to generate further benefits for companies. When the platform usage rate is higher than the threshold, the individual benefits for users are higher the greater the number of other companies using the platform. Based on these results, implications on how to ensure a win-win approach for companies and platform owners can be provided, as well as implications for policymakers.</p> |
| Date Added  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Modified    | 12/26/2020, 2:01:31 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |



18. Reducing food waste through digital platforms: A quantification of cross-side network effects

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|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Author      | S. Mullick                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Author      | N. Raassens                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Author      | H. Haans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Author      | E.J. Nissen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| URL         | <a href="https://www.sciopus.com/record/report.uri?uid=342085092220533&amp;doi=10.1016/j.indmarman.2020.09.021&amp;partnerID=40&amp;merS=f4554800a457e0d30ed07c7a9973ac">https://www.sciopus.com/record/report.uri?uid=342085092220533&amp;doi=10.1016/j.indmarman.2020.09.021&amp;partnerID=40&amp;merS=f4554800a457e0d30ed07c7a9973ac</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Publication | Industrial Marketing Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ISSN        | 00198501                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Date        | 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| DOI         | 10.1016/j.indmarman.2020.09.021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Abstract    | <p>To fight food waste, retail stores have begun selling perishable food close to the expiration date at discounted prices. To render this form of last-minute discounting effective, digital platforms have been developed with the major aim to connect local retail stores and their consumers by sharing information about these discounts. To sustain digital platforms, platform leaders need to ensure both consumers and retail stores remain active on it. To provide platform leaders with advice on how to create a sustainable digital platform, we examine how retail store activity on the digital platform affects consumer activity, and vice versa (also known as cross-side network effects). By combining a PVAR model and an impulse response function, along with data from a digital platform aimed at food waste reduction, we find that the effect of consumer activity on retail store activity is stronger and more long-lasting than the effect of retail store activity on consumer activity. We discuss the implications of our findings for both retail stores and digital platform leaders. © 2020 Elsevier Inc.</p> |
| Date Added  | 12/25/2020, 10:06:53 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Modified    | 12/25/2020, 10:06:53 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

19. Sequential product positioning on a platform in the presence of network effects

|             |                                               |
|-------------|-----------------------------------------------|
| Type        | Journal Article                               |
| Author      | Wei Wang                                      |
| Author      | Gaoyan Lyu                                    |
| Volume      | 129                                           |
| Publication | INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS |
| ISSN        | 0925-5273                                     |
| Date        | November 2020                                 |
| DOI         | 10.1016/j.ijpe.2020.107779                    |
| Language    | English                                       |

**Abstract** We analyze in a game-theoretic framework the sequential product positioning problem of two asymmetric firms with different quality levels on a platform when network effects present, where the negative influences of product differentiation on product compatibility are explicitly considered. We obtain closed-form solutions to the positioning problem, and reveal that whether the traditional wisdom of positioning in the mass market is still optimal for the leader in our setting depends not only on whether it has a quality advantage over the follower, but also on the intensity of the network effects. For the follower, as the network effects increase or its quality advantage increases, its product positioning approaches the mass product; otherwise, the opposite is true. We also observe that the optimal degree of differentiation has certain robustness with respect to the order of the positioning decisions. In addition, we find that the degree of product differentiation in the sequential positioning scenario is lower than in the simultaneous positioning scenario, while it is higher than in the social welfare maximization scenario. This research provides concrete guidelines for high-tech firms to make pertinent strategic decisions, and lays a foundation for platform managers to design policies to coordinate its members.

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## 20. Strategic Intellectual Property Sharing: Competition on an Open Technology Platform Under Network Effects

| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Author      | Marius F. Niculescu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Author      | D. J. Wu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Author      | Lizhen Xu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Volume      | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Issue       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Pages       | 498-519                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Publication | INFORMATION SYSTEMS RESEARCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ISSN        | 1047-7047                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Date        | June 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| DOI         | 10.1287/isre.2017.0756                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Abstract    | <p>In this paper, we explore the strategic decision of an incumbent to open a proprietary technology platform to allow same-side co-opetition in a market characterized by network effects. We propose a game-theoretic model that analytically conceptualizes the interplay among the degree of same-side platform openness, the absorptive capacity of the entrant, and the intensity of network effects. Our analysis uncovers interesting new results. First, when entrant product quality is exogenous, under very strong network effects, the incumbent closes the technology. Moreover, we discuss various interesting open-platform co-opetition outcomes that arise under a fully covered market. When the entrant chooses the quality level and the incumbent is strategic in its platform opening decision, we find that intense network effects make new players shun the market, so intellectual property (IP) sharing is not possible in equilibrium. When the network effects are of intermediate intensity, the incumbent opens the technology to the entrants who have a sufficiently high absorptive capacity, calibrating the amount of sharing to the entrant's absorptive capacity level to ensure that the duopoly setting is mutually beneficial. Our key findings and insights are robust to several model extensions, including scenarios when the incumbent is uncertain of the entrant's absorptive capacity, or when the entrant incurs a general non-linear development cost structure. We also compare and contrast bounded versus unbounded market scenarios. We further explore the ability of the incumbent to engineer the strength of network effects in the market and uncover non-trivial alternating-monotonicity patterns for the optimal intensity of network effects with respect to the entrant's absorptive capacity. We also show that a model with</p> |

exogenous network effects could drastically underestimate the range of entrants' absorptive capacity values for which the incumbent should open its platform, causing the latter to miss valuable co-opetition opportunities. We also discuss various managerial implications of our theoretical framework.

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## 21. THE ECOSYSTEM OF SOFTWARE PLATFORM: A STUDY OF ASYMMETRIC CROSS-SIDE NETWORK EFFECTS AND PLATFORM GOVERNANCE

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|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Author      | Peijian Song                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Author      | Ling Xue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Author      | Atish Rai                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Author      | Cheng Zhang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Volume      | 42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Issue       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Pages       | 121+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Publication | MIS QUARTERLY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ISSN        | 0276-7783                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Date        | March 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| DOI         | 10.23300/MISQ/2018/23737                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Abstract    | <p>In the context of software platforms, we examine how cross-side network effects (CNEs) on different platform sides (app-side and user-side) are temporally asymmetric, and how these CNEs are influenced by the platform's governance policies. Informed by a perspective of value creation and capture, we theorize how the app-side and the user-side react to each other with distinct value creation/capture processes, and how these processes are influenced by the platform's governance policies on app review and platform updates. We use a time-series analysis to empirically investigate the platform ecosystem of a leading web browser. Our findings suggest that while the growth in platform usage results in long-term growth in both the number and variety of apps, the growth in the number of apps and the variety of apps only leads to short-term growth in platform usage. We also find that long app review time weakens the long-term CNE at the user-side of the app-side, but not the short-term CNE of the app-side on the user-side. Moreover, we find that frequent platform updates weaken the CNEs of both the user-side and the app-side on each other. These findings generate important implications regarding how a software platform may better govern its ecosystem with different participants.</p> |
| Date Added  | 12/25/2020, 10:06:16 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Modified    | 12/26/2020, 1:59:16 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## 22. The influence of platform service innovation on value co-creation activities and the network effect

|        |                 |
|--------|-----------------|
| Type   | Journal Article |
| Author | Wenhui Fu       |
| Author | Qiang Wang      |
| Author | Xiande Zhao     |
| Volume | 28              |
| Issue  | 2, 51           |
| Pages  | 348-388         |

Publication JOURNAL OF SERVICE MANAGEMENT

ISSN 1757-5818

Date 2017

DOI 10.1108/JOSM-10-2015-0347

Language English

**Abstract** Purpose - The purpose of this paper is to explore the properties of platform service innovation and its relationship to value co-creation activities and the network effect. This is done over the course of a platform's evolution through three stages: emergence, expansion and maturity. Design/methodology/approach - Based on grounded theory, this study adopts a multiple case study research design. An in-depth analysis of the case data is done using ATLAS.TI software. Findings - At the emergence stage, platform service innovations focus on building infrastructure. Platform owners stimulate the network effect directly via platform service innovations, rather than indirectly via value co-creation activities. At the expansion stage, the platform service innovations focus on building relationships among platform owner and different sides of participants. Platform owners stimulate the network effect indirectly, via value co-creation activities, rather than directly via platform service innovations. At the maturity stage, platform service innovations focus on building an environment for the platform ecosystem. Platform owners stimulate the network effect indirectly, via value co-creation activities rather than directly. Originality/value - This research contributes to the service innovation literature by exploring the properties of platform service innovation and its relationship to value co-creation activities and the network effect from a longitudinal perspective. The principal manager implication is that platform managers need to consider the developmental stage of the platform as a mismatching of stage of development (emergence/expansion/maturity) and focus (an orientation toward building infrastructure, relationships or environment) may lead to a failure to stimulate or enhance the network effect.

Date Added 12/25/2020, 10:06:22 PM

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### 23. The role of prices and network effects in the growth of the iPhone platform

Type Journal Article

Author Daniel D. Garcia-Swartz

Author Mansur Muhammedagic

Author Diana Saenz

Volume 147

Pages 110-122

Publication TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE

ISSN

0040-1625

Date October 2019

DOI 10.1016/j.techfore.2019.06.020

Language English

**Abstract** In this paper we examine the roles played by prices, direct network effects and indirect network effects in driving the growth of devices and apps on the iPhone platform. With long time series of high-frequency data, we estimate several econometric models and conduct various sensitivity exercises. Unlike prior studies on the subject, we model direct network effects in an explicit manner. The key conclusions we draw are: first, the three dimensions of the platform (prices, direct network effects, and indirect network effects) have had an impact in terms of encouraging the growth of iPhones and apps; and second, on the devices side, direct network effects and prices have been more important than indirect network effects.

whereas on the apps side, indirect network effects have had a relatively stronger impact. In short, the impact of phones on apps has been relatively more substantial than the impact of apps on phones.

Date Added: 12/25/2020, 10:06:22 PM

Modified: 12/26/2020, 1:57:43 PM

#### 24. The Role of Quantitative and Qualitative Network Effects in B2B Platform Competition

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Author      | Zhearn, L.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Author      | Thierry Parlaroli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Volume      | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Issue       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Pages       | 1-19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Publication | MANAGERIAL AND DECISION ECONOMICS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| n           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ISSN        | 0143-6570                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Date        | January 2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| DOI         | 10.1002/mde.2602                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Abstract    | This article aims at investigating how quantitative and qualitative (indirect) network effects impact pricing and trading decisions on a Business-to-Business marketplace. Using an original data set collected on IMAG.com, one of the most prominent B2B platforms in the U.S.A., we find that the market structure of marketplace depends on both the quantity and quality of suppliers, but that quality effects tend to substitute for quantity effects as the size of the marketplace increases. These results suggest that while the quantity of suppliers on board is crucial during the early stage of a marketplace, supplier quality matters much more in the mature stage. Copyright (C) 2013 John Wiley & Sons, Ltd. |
| Date Added  | 12/25/2020, 10:06:22 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Modified    | 12/26/2020, 1:57:47 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

#### 25. Unpaid crowd complementors: The platform network effect mirage

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type        | Journal Article                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Author      | Kevin J. Boudreau                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Author      | Lars R. Jeppesen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Volume      | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Issue       | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Pages       | 1761-1777                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Publication | STRATEGIC MANAGEMENT JOURNAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| n           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| ISSN        | 0143-2095                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Date        | December 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| DOI         | 10.1002/smj.2324                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Language    | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Abstract    | Platforms have evolved beyond just being organized as multi-sided markets with complementors selling to users. Complementors are often unpaid, working outside of a price system and driven by heterogeneous sources of motivation which should affect how they respond to platform growth. Does reliance on network effects and strategies to attract large numbers of complementors remain advisable in such contexts? We test hypotheses related to these issues using data from 85 online multi-player game |

platforms with limited complementarity. We find that complementarity development responds to platform growth even without sales incentives, but that attracting complementarity has a net zero effect on ongoing development. Last, to mitigate network effects, we discuss conditions under which a strategy of some rapid initial complementarity remains advantageous. Copyright © 2014 John Wiley & Sons, Ltd.

Date  
Added  
Modified

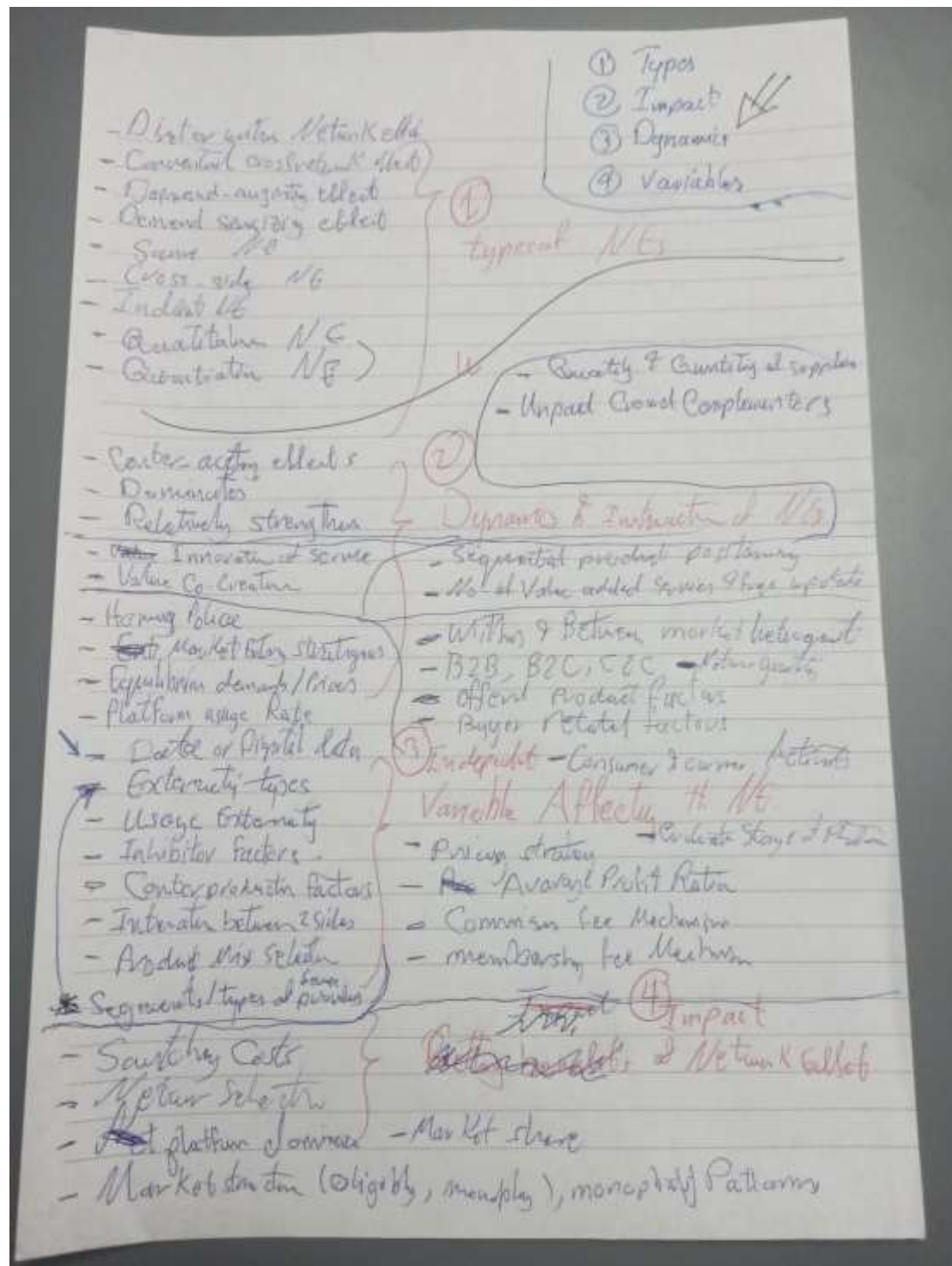
12/25/2020 11:45:22 PM  
12/26/2020 3:56:35 PM

4



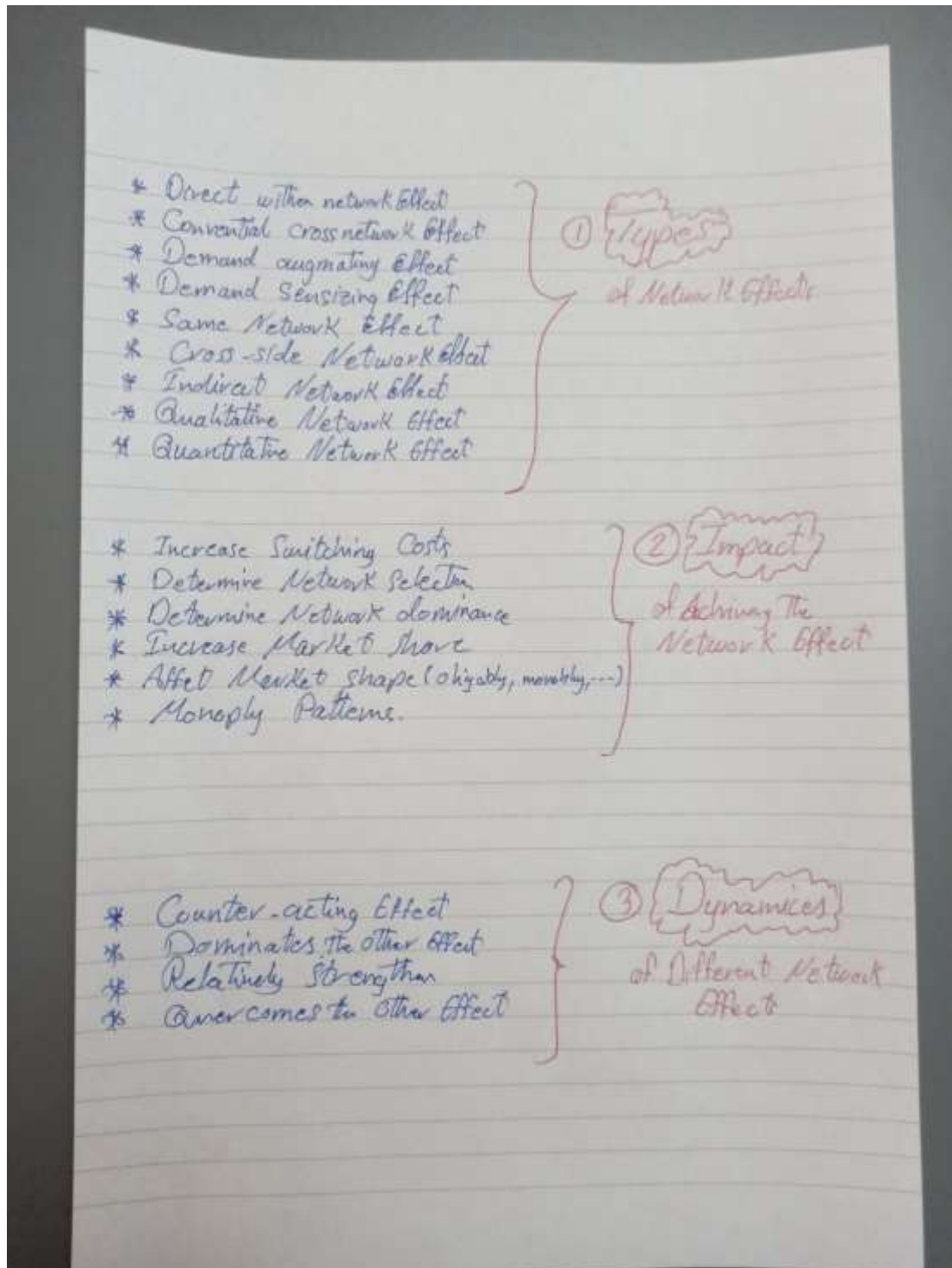
## G. Appendix-G: The “Memo” Created Along the Process of Conceptualization

The following image show the “Memo” used during the conceptualization process.



## H. Appendix-H: Incidents to Conceptualized Categories Mapping

The following two images show the **incidents to conceptualized categories mapping** conducted after the open coding task. The first image contains three categories and the second one contains the 4<sup>th</sup> one.





- \* Digital Data
- \* Externality types
- \* Usage Externality
- \* Inhibitor factors
- \* Counterproductive factors
- \* Interaction between Sides
- \* Product Mix Selection
- \* Segments/Types of service Providers
- \* Homing Policy
- \* Market Entry Strategies
- \* Equilibrium demand
- \* Equilibrium Price
- \* Platform usage rate
- \* Pricing strategy
- \* Average Profit Ratio
- \* Commission fee Mechanism
- \* Membership fee Mechanism
- \* Evolution Stage of Platform
- \* Sequential Product Positioning
- \* No. of Services Provided
- \* Frequency of Apps Update
- \* Within & Between Market heterogeneity
- \* Network Quality
- \* Relation type (B2B, B2C, C2C, ... etc.)
- \* Product Sectors
- \* Buyer related factors
- \* Consumer & Owner Activities
- \* Quality & Quantity of Suppliers
- \* Unpaid Crowd Complementors

④ Independent Variables

That Affect Achieving The Network Effects

## I. Appendix-I: Selected Case Studies on Empirical Network Effects Research

The following tables show the detailed information about the selected cases studies on the empirical network effects research. This information was exported from the Zotero database for the selected references based on the previously explained criteria.

### 1. Adoptions and orphans in the early microcomputer market

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b>          | Neil Gandal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Author</b>          | Shane Greenstein                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Author</b>          | David Salant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Volume</b>          | 47                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Issue</b>           | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Pages</b>           | 87–105                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Publication</b>     | The Journal of Industrial Economics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Date</b>            | 1999                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Extra</b>           | Publisher: Wiley Online Library                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Abstract</b>        | In this paper we examine the development of the microcomputer market in the early 1980s. CP/M, a widely-adopted operating system, was orphaned by the user and the development communities. A new operating system, DOS, and a new hardware platform, the IBM PC, became the predominant industry standard. We examine the statistical relationship between data that reflects hardware and software sales for the competing platforms. We conclude that the economic processes underlying the development of DOS differed from those underlying CP/M and that many of these differences related to the role of software development. |
| <b>Date Added</b>      | 1/28/2021, 6:01:17 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Modified</b>        | 2/17/2021, 8:11:24 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### 2. Adoption of technologies with network effects: an empirical examination of the adoption of automated teller machines

|                        |                                                                                                                                                                                                                                                                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Report</b>                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b>          | Garth Saloner                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b>          | Andrea Shepard                                                                                                                                                                                                                                                                                                                               |
| <b>Date</b>            | 1992                                                                                                                                                                                                                                                                                                                                         |
| <b>Institution</b>     | National Bureau of Economic Research                                                                                                                                                                                                                                                                                                         |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                               |
| <b>Abstract</b>        | The literature on networks suggests that the value of a network is positively affected by the number of geographically dispersed locations it serves (the "network effect") and the number of its users (the "production scale effect"). We show that as a result a firm's expected time until adoption of technologies with network effects |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | declines in both users and locations. We provide empirical evidence on the adoption of automated teller machines by banks that is consistent with this prediction. Using standard duration models, we find that a bank's date of adoption is decreasing in the number of its branches (a proxy for the number of locations and hence for the network effect) and the value of its deposits (a proxy for number of users and hence for production scale economies). The network effect is the larger of the two effects. |
| <b>Short Title</b> | Adoption of technologies with network effects                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Date Added</b>  | 1/28/2021, 5:58:33 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Modified</b>    | 2/17/2021, 8:17:49 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### 3. Competition between networks: A study of the market for yellow pages

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>          | Marc Rysman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Volume</b>          | 71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Issue</b>           | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Pages</b>           | 483–512                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Publication</b>     | The Review of Economic Studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Date</b>            | 2004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Extra</b>           | Publisher: Wiley-Blackwell                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Abstract</b>        | This paper estimates the importance of network effects in the market for Yellow Pages. I estimate three simultaneous equations: consumer demand for usage of a directory, advertiser demand for advertising and a publisher's first-order condition (derived from profit-maximizing behavior). Estimation shows that advertisers value consumer usage and that consumers value advertising, implying a network effect. I find that internalizing network effects would significantly increase surplus. As an application, I consider whether the market benefits from monopoly (which takes advantage of network effects) or oligopoly (which reduces market power). I find that a more competitive market is preferable. |
| <b>Short Title</b>     | Competition between networks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Date Added</b>      | 1/28/2021, 9:33:46 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Modified</b>        | 1/28/2021, 9:34:26 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### 4. Empirical analysis of indirect network effects in the market for personal digital assistants

|               |                        |
|---------------|------------------------|
| <b>Type</b>   | <b>Journal Article</b> |
| <b>Author</b> | Harikesh Nair          |
| <b>Author</b> | Pradeep Chintagunta    |
| <b>Author</b> | Jean-Pierre Dubé       |
| <b>Volume</b> | 2                      |
| <b>Issue</b>  | 1                      |
| <b>Pages</b>  | 23–58                  |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Publication</b>     | Quantitative Marketing and Economics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Date</b>            | 2004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Extra</b>           | Publisher: Springer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Abstract</b>        | <p>We present a framework to measure empirically the size of indirect network effects in high- technology markets with competing incompatible technology standards. These indirect network effects arise due to inter-dependence in demand for hardware and compatible software. By modeling the joint determination of hardware sales and software availability in the market, we are able to describe the nature of demand inter-dependence and to measure the size of the indirect network effects. We apply the model to price and sales data from the industry for personal digital assistants (PDAs) along with the availability of software titles compatible with each PDA hardware standard. Our empirical results indicate significant indirect network effects. By July 2002, the network effect explains roughly 22% of the log-odds ratio of the sales of all Palm O/S compatible PDA-s to Microsoft O/S compatible PDA-s, where the remaining 78% reflects price and model features. We also use our model estimates to study the growth of the installed bases of Palm and Microsoft PDA hardware, with and without the availability of compatible third party software. We find that lack of third party software negatively impacts the evolution of the installed hardware bases of both formats. These results suggest PDA hardware firms would benefit from investing resources in increasing the provision of software for their products. We then compare the benefits of investments in software with investments in the quality of hardware technology. This exercise helps disentangle the potential for incremental hardware sales due to hardware quality improvement from that of positive feedback due to market software provision.</p> |
| <b>Date Added</b>      | 1/28/2021, 7:04:11 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Modified</b>        | 1/28/2021, 8:41:16 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### 5. Estimating network effects in mobile telephony in Germany

|                        |                                                                                                                                           |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                    |
| <b>Author</b>          | Toker Doganoglu                                                                                                                           |
| <b>Author</b>          | Lukasz Grzybowski                                                                                                                         |
| <b>Volume</b>          | 19                                                                                                                                        |
| <b>Issue</b>           | 1                                                                                                                                         |
| <b>Pages</b>           | 65–79                                                                                                                                     |
| <b>Publication</b>     | Information Economics and Policy                                                                                                          |
| <b>Date</b>            | 2007                                                                                                                                      |
| <b>Extra</b>           | Publisher: Elsevier                                                                                                                       |
| <b>Library Catalog</b> | Google Scholar                                                                                                                            |
| <b>Abstract</b>        | <p>In this paper we analyze the demand for mobile telecommunication services in Germany in the period from January 1998 to June 2003.</p> |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | During this time, the subscriber base grew exponentially by about 700% while prices declined only moderately by about 41%. We believe that prices alone cannot account for such rapid diffusion and network effects have influenced the evolution of the industry. We put this view to the test by using publicly available data on subscriptions, price indices and churn rates. Using churn rates gave us approximate sales levels which enabled us to use standard methods to investigate the effect of network size on demands. Our estimates of a system of demand functions show that network effects played a significant role in the diffusion of mobile services in Germany. |
| <b>Date Added</b> | 1/28/2021, 7:06:23 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Modified</b>   | 2/17/2021, 8:10:49 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 6. Evidence on learning and network externalities in the diffusion of home computers

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>          | Austan Goolsbee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Author</b>          | Peter J. Klenow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Volume</b>          | 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Issue</b>           | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Pages</b>           | 317–343                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Publication</b>     | The Journal of Law and Economics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Date</b>            | 2002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Extra</b>           | Publisher: The University of Chicago Press                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Abstract</b>        | In this paper we examine the importance of local spillovers such as network externalities and learning from others in the diffusion of home computers using data on 110,000 U.S. households in 1997. Controlling for many individual characteristics, we find that people are more likely to buy their first home computer in areas where a high fraction of households already own computers or when a large share of their friends and family own computers. Further results suggest that these patterns are unlikely to be explained by city-specific unobserved traits. Looked at in more detail, the spillovers appear to come from experienced and intensive computer users. They are not as associated with the use of any particular type of software but do seem to be highly tied to the use of e-mail and the Internet, consistent with computers being part of a local information and communications network. |
| <b>Date Added</b>      | 1/28/2021, 6:04:04 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Modified</b>        | 2/17/2021, 8:20:36 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 7. Hedonic price indexes for spreadsheets and an empirical test for network externalities

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Author</b>          | Neil Gandal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Pages</b>           | 160–170                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Publication</b>     | the RAND Journal of Economics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Date</b>            | 1994                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Extra</b>           | Publisher: JSTOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Abstract</b>        | In this article, I first estimate hedonic price equations for computer spreadsheet programs, and then use the analysis to empirically test whether network externalities exist in this industry. The study shows that consumers are willing to pay a significant premium for spreadsheets that are compatible with the Lotus platform and for spreadsheets that offer links to external databases, and a smaller premium for spreadsheets that offer local area network compatibility. These results support the hypothesis that the computer spreadsheet market exhibits network externalities. Finally, the quality-adjusted (real) price of computer spreadsheets declined by approximately 15% per year from 1986 to 1991. |
| <b>Date Added</b>      | 1/28/2021, 5:55:35 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Modified</b>        | 1/28/2021, 8:28:09 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## 8. Indirect network effects and the product cycle: video games in the US, 1994–2002

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Author</b>          | Matthew T. Clements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Author</b>          | Hiroshi Ohashi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Volume</b>          | 53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Issue</b>           | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Pages</b>           | 515–542                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Publication</b>     | The Journal of Industrial Economics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Date</b>            | 2005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Extra</b>           | Publisher: Wiley Online Library                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Abstract</b>        | We examine the importance of indirect network effects in the U.S. video game market between 1994 and 2002. The diffusion of game systems is analyzed by the interaction between console adoption decisions and software supply decisions. Estimation results suggest that introductory pricing is an effective practice at the beginning of the product cycle, and expanding software variety becomes more effective later. We also find a degree of inertia in the software market that does not exist in the hardware market. This observation implies that software providers continue to exploit the installed base of hardware users after hardware demand has slowed. |

|                    |                                                |
|--------------------|------------------------------------------------|
| <b>Short Title</b> | Indirect network effects and the product cycle |
| <b>Date Added</b>  | 1/28/2021, 7:05:40 PM                          |
| <b>Modified</b>    | 1/28/2021, 8:51:16 PM                          |

### 9. Indirect network effects in new product growth

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Author</b>          | Stefan Stremersch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Author</b>          | Gerard J. Tellis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>          | Philip Hans Franses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>          | Jeroen LG Binken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Volume</b>          | 71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Issue</b>           | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Pages</b>           | 52–74                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Publication</b>     | Journal of Marketing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Date</b>            | 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Extra</b>           | Publisher: SAGE Publications Sage CA: Los Angeles, CA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Abstract</b>        | <p>Indirect network effects are of prime interest to marketers because they affect the growth and takeoff of software availability for, and hardware sales of, a new product. While prior work on indirect network effects in the economics and marketing literature is valuable, these literatures show two main shortcomings. First, empirical analysis of indirect network effects is rare. Second, in contrast to the importance the prior literature credits to the chicken-and-egg paradox in these markets, the temporal pattern – which leads which? – of indirect network effects remains unstudied. Based on empirical evidence of nine markets, this study shows, among others, that: (1) indirect network effects, as commonly operationalized by prior literature, are weaker than expected from prior literature; (2) in most markets we examined, hardware sales leads software availability, while the reverse almost never happens, contradicting existing beliefs. These findings are supported by multiple methods, such as takeoff and time series analyses, and fit with the histories of the markets we studied. The findings have important implications for academia, public policy and management practice. To academia, it identifies a need for new, and more relevant, conceptualizations of indirect network effects. To public policy, it questions the need for intervention in network markets. To management practice, it downplays the importance of the availability of a large library of software for hardware technology to be successful.</p> |
| <b>Date Added</b>      | 1/28/2021, 7:09:59 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Modified</b>        | 1/28/2021, 8:39:10 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



#### 10. Network externalities and technology adoption: Lessons from electronic payments

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|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Report</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>          | Gautam Gowrisankaran                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b>          | Joanna Stavins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date</b>            | 2002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Institution</b>     | National Bureau of Economic Research                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Abstract</b>        | We seek to analyze the extent and sources of network externalities for the automated clearinghouse (ACH) electronic payments system using a quarterly panel data set on individual bank adoption and usage of ACH. We provide three methods to identify network externalities using this panel data. The first method identifies network externalities from the clustering of ACH adoption. The second method identifies them by examining whether banks in areas with higher market concentration or larger competitors are more likely to adopt ACH. The third method identifies them by examining whether the ACH adoption by small branches of large banks affects the adoption by local competitors. Using fixed effects and panel data these methods separately identify network externalities from technological advancement, peer-group effects, economies of scale and market power. We find evidence that the network externalities are moderately large. |
| <b>Short Title</b>     | Network externalities and technology adoption                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Date Added</b>      | 1/28/2021, 6:09:27 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Modified</b>        | 2/17/2021, 8:12:38 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

#### 11. Network effects and competition: An empirical analysis of the home video game industry

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|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>          | Venkatesh Shankar                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Author</b>          | Barry L. Bayus                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Volume</b>          | 24                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Issue</b>           | 4                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Pages</b>           | 375–384                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Publication</b>     | Strategic Management Journal                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Date</b>            | 2003                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Extra</b>           | Publisher: Wiley Online Library                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Abstract</b>        | Building on the resource-based view of the firm, we advance the idea that a firm's customer network can be a strategic asset. We suggest that network effects are a function of network size (i.e., installed customer base) and network strength (i.e., the marginal impact of a unit increase in network size on demand). We empirically study these network effects in the 16-bit home video game industry in which the |



|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | dominant competitors were Nintendo and Sega. In the spirit of the new empirical IO framework, we estimate a structural econometric model assuming the data are equilibrium outcomes of the best fitting noncooperative game in price and advertising. After controlling for other effects, we find strong evidence that network effects are asymmetric between the competitors in the home video game industry. Specifically, we find that the firm with a smaller customer network (Nintendo) has higher network strength than the firm with the larger customer base (Sega). Thus, our results provide a possible explanation for this situation in which the firm with a smaller customer network (Nintendo) was able to overtake the sales of a firm with a larger network size (Sega). Copyright © 2002 John Wiley & Sons, Ltd. |
| <b>Short Title</b> | Network effects and competition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date Added</b>  | 1/28/2021, 6:07:26 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Modified</b>    | 1/28/2021, 8:39:51 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 12. Network effects and the adoption of new technology: evidence from the US telecommunications industry

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Author</b>          | Sumit K. Majumdar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Author</b>          | Sriram Venkataraman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Volume</b>          | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Issue</b>           | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Pages</b>           | 1045–1062                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Publication</b>     | Strategic Management Journal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date</b>            | 1998                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Extra</b>           | Publisher: Wiley Online Library                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Abstract</b>        | This paper examines variations in the adoption of new technology by firms operating in a network-based industry: telecommunications. These variations are explained as a function of three network effects: the first is the conversion effect, driven by operations-related increasing returns to scale; the second is the consumption effect, driven by demand-side increasing returns to scale; the third is an imitative effect. We expect the conversion effect to be felt more strongly during earlier phases of a technology's evolution, while a strong consumption effect is felt throughout. The imitative effect is also expected to be felt throughout. These hypotheses are examined with respect to electronic switching adoption in the local operating sector of the U.S. telecommunications industry. An analysis of the variations in adoption levels of the 40 largest firms over a period lasting from 1973 to 1987 supports our expectations, except for the imitative effect. |
| <b>Short Title</b>     | Network effects and the adoption of new technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Date Added</b>      | 1/28/2021, 5:59:47 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Modified</b>        | 1/28/2021, 8:46:26 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### 13. Network effects and the choice of mobile phone operator

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|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Book Section</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b>          | Daniel Birke                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>          | GM Peter Swann                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Publisher</b>       | Springer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Pages</b>           | 109–128                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Date</b>            | 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Abstract</b>        | This paper explores the role of network effects in the consumer's choice of mobile phone operators in the UK. It contributes to the existing literature by taking a new approach to testing for direct network effects and by using individual- level data, which allows to analyse the impact that the immediate social network has on consumer choice in network markets. For our empirical analysis we use two sources of data: market-level data from the British telecommunications regulator OFCOM and micro-level data on consumers' usage of mobile telephones from the survey, Home OnLine. We estimate two classes of models which illustrate the role of network effects. The first is an aggregate model of the comparative volume of on-net and off-net calls. This finds that the proportion of off-net calls falls as mobile operators charge a premium for off-net calls, but even in the absence of any price differential between on-net and off-net, there is still a form of pure network effect, where a disproportionate number of calls are on-net. The second is a model of the individual consumer's choice of operator. This finds that individual choice shows considerable inertia, as expected, but is heavily influenced by the choices of others in the same household. There is some evidence that individual choice of operator is influenced by the total number of subscribers for each operator, but a much stronger effect is the operator choice of other household members. |
| <b>Book Title</b>      | Innovation, Industrial Dynamics and Structural Transformation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date Added</b>      | 1/28/2021, 7:12:26 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>        | 2/17/2021, 8:14:21 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### 14. Quantitative analysis of network externalities in competing technologies: The VCR case

|                    |                                    |
|--------------------|------------------------------------|
| <b>Type</b>        | <b>Journal Article</b>             |
| <b>Author</b>      | Sangin Park                        |
| <b>Volume</b>      | 86                                 |
| <b>Issue</b>       | 4                                  |
| <b>Pages</b>       | 937–945                            |
| <b>Publication</b> | Review of Economics and Statistics |
| <b>Date</b>        | 2004                               |
| <b>Extra</b>       | Publisher: MIT Press               |

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| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Abstract</b>        | In this paper, we extend a standard nested logit model, developing an empirically applicable dynamic structural model of consumers' choices and producers' pricing in an oligopolistic market for newly introduced durable products with network externalities. The model is then applied to quantitatively analyze the extent to which network externalities contributed to the de facto standardization of the VHS format in the U.S. home VCR market during the years 1981-1988. The estimation results established in the paper show: (i) the network advantage of VHS explains at least 70.3 percent to 86.8 percent of (the logarithm of) relative sales of VHS to Betamax in each year; (ii) an increase in the network advantage of VHS was an engine of tipping toward the VHS format; and (iii) the network advantage of VHS was mainly due to its expected growth advantage in the early 1980's, but as the household penetration rate of VCR jumped in mid 1980's, the installed base advantage became more important. Our quantitative analyses also indicate that this tipping process was intact by a big average price/quality advantage of Betamax in 1987, implying the significance of an applications barrier to entry. |
| <b>Short Title</b>     | Quantitative analysis of network externalities in competing technologies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Date Added</b>      | 1/28/2021, 9:32:17 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Modified</b>        | 2/17/2021, 8:12:16 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

#### 15. Software exclusivity and the scope of indirect network effects in the US home video game market

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|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Author</b>          | Kenneth S. Corts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Author</b>          | Mara Lederman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Volume</b>          | 27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Issue</b>           | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Pages</b>           | 121–136                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Publication</b>     | international Journal of industrial Organization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date</b>            | 2009                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Extra</b>           | Publisher: Elsevier                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Abstract</b>        | This paper investigates the scope of indirect network effects in the home video game industry. We argue that the increasing prevalence of non-exclusive software gives rise to indirect network effects that exist between users of competing and incompatible hardware platforms. This is because software non-exclusivity, like hardware compatibility, allows a software firm to sell to a market broader than a single platform's installed base, leading to a dependence of any particular platform's software on all firms' installed bases. We look for evidence of these market-wide network effects by estimating a model of hardware demand and software supply. Our software |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | supply equation allows the supply of games for a particular platform to depend not only on the installed base of that platform, but also on the installed base of competing platforms. Our results indicate the presence of both a platform-specific network effect and – in recent years – a cross- platform (or generation-wide) network effect. Our finding that the scope of indirect network effects in this industry has widened suggests one reason that this market, which is often cited as a canonical example of one with strong indirect network effects, is no longer dominated by a single platform. |
| <b>Date Added</b> | 1/28/2021, 7:08:10 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>   | 1/28/2021, 8:50:59 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

**16. The advantage of network size in acquiring new subscribers: a conditional logit analysis of the Korean mobile telephony market**

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|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Author</b>          | Hee-Su Kim                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Author</b>          | Namhoon Kwon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Volume</b>          | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Issue</b>           | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Pages</b>           | 17–33                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Publication</b>     | Information economics and policy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Date</b>            | 2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Extra</b>           | Publisher: Elsevier                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Abstract</b>        | Although telecommunications networks are usually believed to exhibit so-called network effects, this might not be the case at the level of individual carriers since most telecom networks of today are interconnected. Based on a consumer survey for the Korean mobile telephony market, we test whether network size matters when new subscribers choose their service providers. A conditional logit analysis reveals that consumers prefer carriers with a larger number of subscribers other things being equal. Further investigation shows that the intra-network call discounts and the quality signaling effect are likely to be the sources of the size effect. |
| <b>Short Title</b>     | The advantage of network size in acquiring new subscribers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Date Added</b>      | 1/28/2021, 6:06:29 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Modified</b>        | 1/28/2021, 8:49:13 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**17. The dynamics of technological adoption in hardware/software systems: the case of compact disc players**

|                    |                               |
|--------------------|-------------------------------|
| <b>Type</b>        | <b>Journal Article</b>        |
| <b>Author</b>      | Neil Gandal                   |
| <b>Author</b>      | Michael Kende                 |
| <b>Author</b>      | Rafael Rob                    |
| <b>Pages</b>       | 43–61                         |
| <b>Publication</b> | The Rand Journal of Economics |

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| <b>Date</b>            | 2000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Extra</b>           | Publisher: JSTOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Abstract</b>        | In this paper we examine the diffusion of a hardware/software system. For such systems there is interdependence between the hardware adoption decisions of consumers and the supply decisions of software manufacturers. Hence, there can be bottlenecks to the diffusion of the system, which stem not from high prices but from the fact that the complementary product is not available. We consider the CD industry and estimate the (direct) elasticity of adoption with respect to CD prices and (the cross) elasticity with respect to the variety of CD titles. Our results show that the cross elasticity is indeed significant so that the presence of complementarities poses a serious bottleneck problem for the diffusion of the base product. We illustrate two applications of our methodology: (i) the business-policy question of how to subsidize a new base product which is contingent on a sufficiently large supply of complementary products; and (ii) the public-policy question of what are the benefits of imposing backward compatibility on a new technology (e.g. high definition televisions). |
| <b>Short Title</b>     | The dynamics of technological adoption in hardware/software systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Date Added</b>      | 1/28/2021, 6:02:28 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Modified</b>        | 1/28/2021, 8:49:47 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

#### 18. The DVD vs. DIVX standard war: Empirical evidence of vaporware

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Author</b>          | David Dranove                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Author</b>          | Neil Gandal                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Publication</b>     | UC Berkeley, Center for Competition Policy Working Paper No. CPC00-16                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Date</b>            | 2000                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Abstract</b>        | In this paper, we empirically measure the effect of the DIVX preannouncement in the DVD market. We do this by measuring the effect of potential (incompatible) competition on a network undergoing growth. We find that there are network effects in the DVD market and that the preannouncement of DIVX slowed down the adoption of DVD technology. This suggests that strategic preannouncements can indeed affect the outcome of a standards competition. |
| <b>Short Title</b>     | The DVD vs. DIVX standard war                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Date Added</b>      | 1/28/2021, 6:05:28 PM                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Modified</b>        | 2/17/2021, 8:19:27 PM                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## 19. Vertical integration and exclusivity in platform and two-sided markets

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>            | <b>Journal Article</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Author</b>          | Robin S. Lee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Volume</b>          | 103                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Issue</b>           | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Pages</b>           | 2960–3000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Publication</b>     | American Economic Review                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Date</b>            | 2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Library Catalog</b> | Google Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Abstract</b>        | <p>This paper measures the impact of vertically integrated and exclusive software on industry structure and welfare in the sixth-generation of the US video game industry (2000–2005). I specify and estimate a dynamic model of both consumer demand for hardware and software products, and software demand for hardware platforms. I use estimates to simulate market outcomes had platforms been unable to own or contract exclusively with software. Driven by increased software compatibility, hardware and software sales would have increased by 7 percent and 58 percent and consumer welfare by \$1.5 billion. Gains would be realized only by the incumbent, suggesting exclusivity favored the entrant platforms.</p> |
| <b>Date Added</b>      | 1/28/2021, 9:35:29 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Modified</b>        | 2/17/2021, 8:11:52 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## **J. Appendix-J: Supporting, Analysis and Modeling Software Tools Overview**

The following paragraphs provide a brief overview about all software tools that were used along the research journey for the DBA thesis according to the logical order of usage during the journey as well as the order of appearance in the thesis itself.

**VOSviewer:** The VOSviewer tool (Van Eck & Waltman, 2019) is a software tool that is specialized in bibliometrics analysis. It provide a great deal of functionality that enable the researcher to construct and visualize many types of bibliometrics networks, which may help analyzing the impact of publications, researchers, and journals. Furthermore, these networks may be based on different bibliometrics analysis concepts such as “Citation, Co-citation, Co-authorship, and Bibliographic Coupling”. For semantic meanings, it supports “keywords Co-occurrence” networks and “Text Mining” for titles and abstract texts.

**Zotero:** The Zotero tool (Zotero, 2021) is one of the most common references management tools that provides an essential assistance functionality for researchers. It is a free, open-source, and easy-to-use software tool, which helps researchers to systematically collect, organize, cite and share publications. Furthermore, it can export the organized references into many common and well-known file formats, which support further analysis.

**MAXQDA:** The MAXQDA tool (MAXQDA, 2020) is a software tool that is specialized in qualitative and mixed methods research. It provides many data analysis techniques. Generally, it enables the deal with many types of data such as texts, images, audio, video, websites, tweets, surveys, and many others. Furthermore, it has many functionalities that can support the different stages in doing classical grounded theory research.

**KUMU:** The KUMU modeling tool (Kumu.io, 2020) was selected to make the model and the archetypes in this report because of its simple user interface and ease of use, which both results in a fast learning curve. The tool was found after some online searching activities to find a suitable tool after discovering that using the Microsoft Word for drawing the causal loops is just a nightmare. The tool was one of two tools suggested on the “The System Thinker” website (<https://thesystemsthinker.com/tools/>) along with the “Insight Maker” tool. Quick test-drives for both tools were sufficient to reach a conclusion that using the KUMU modeling tool is much better as well as easier.

## K. Appendix-K: Model Elements List

The following table shows the list of all elements that exist within the causal loops of the digital platform, strategy dynamic model:

| No. | Element                            | Type     | Related Archetypes                                                                                |
|-----|------------------------------------|----------|---------------------------------------------------------------------------------------------------|
| 1   | Capacity                           | Variable | Growth and Underinvestment                                                                        |
| 2   | Competitors' Launching Strategies  | Variable | Tragedy of the Commons                                                                            |
| 3   | Competitors' Subscribed Users      | Variable | Tragedy of the Commons                                                                            |
| 4   | Current Performance                | Variable | Growth and Underinvestment                                                                        |
| 5   | DP Strategy Adoption Challenges    | Variable | Fixes that Fail                                                                                   |
| 6   | DP Strategy Launching Strategies   | Variable | Tragedy of the Commons<br>Eroding Goals<br>Growth and Underinvestment                             |
| 7   | DP Strategy Subscribed Users (Net) | Variable |                                                                                                   |
| 8   | Effectiveness                      | Variable | Attractiveness Principle                                                                          |
| 9   | Efficiency                         | Variable | Attractiveness Principle                                                                          |
| 10  | Fixes                              | Variable | Fixes that Fail                                                                                   |
| 11  | Gain Per a Launching Strategy      | Variable | Tragedy of the Commons                                                                            |
| 12  | Invest in Capacity                 | Variable | Growth and Underinvestment                                                                        |
| 13  | Invest in Capacity                 | Variable | Growth and Underinvestment                                                                        |
| 14  | IT Capabilities                    | Source   | Attractiveness Principle                                                                          |
| 15  | Knowledge Generation               | Source   | Attractiveness Principle                                                                          |
| 16  | Market Pie Size                    | Source   | Tragedy of the Commons                                                                            |
| 17  | New Subscribed Users               | Variable | Tragedy of the Commons<br>Attractiveness Principle<br>Eroding Goals<br>Growth and Underinvestment |
| 18  | Perceived Need to Invest           | Variable | Growth and Underinvestment                                                                        |
| 19  | Performance Standard               | Source   | Growth and Underinvestment                                                                        |
| 20  | Pressures to Adjust Goal           | Variable | Eroding Goals<br>Fixes that Fail                                                                  |
| 21  | Problem Solving Capability         | Variable | Attractiveness Principle                                                                          |
| 22  | Subscribed Users Gap               | Variable | Eroding Goals                                                                                     |
| 23  | Total Launching Strategies         | Variable | Tragedy of the Commons                                                                            |
| 24  | Unsubscribed Users                 | Variable | Fixes that Fail                                                                                   |
| 25  | Users Subscription Goal            | Variable | Eroding Goals                                                                                     |



## L. Appendix-L: Model Causal Loops List

The following table shows the list of all causal loops that exist within the causal loops of the digital platform, strategy dynamic model:

| No. | Loop | Type        | Related Archetypes                                  |
|-----|------|-------------|-----------------------------------------------------|
| 1   | B1   | Balancing   | Tragedy of the Commons                              |
| 2   | B2   | Balancing   | Tragedy of the Commons                              |
| 3   | B3   | Balancing   | Attractiveness Principle                            |
| 4   | B4   | Balancing   | Attractiveness Principle                            |
| 5   | B5   | Balancing   | Eroding Goals                                       |
| 6   | B6   | Balancing   | Eroding Goals                                       |
| 7   | B7   | Balancing   | Fixes that Fails                                    |
| 8   | B8   | Balancing   | Growth and Underinvesting                           |
| 9   | B9   | Balancing   | Growth and Underinvesting                           |
| 10  | R1   | Reinforcing | Tragedy of the Commons<br>Growth and Underinvesting |
| 11  | R2   | Reinforcing | Tragedy of the Commons                              |
| 12  | R3   | Reinforcing | Fixes that Fails                                    |

## M. Appendix-M: Model Connections List

The following table shows the list of all connections that exist within the causal loops of the digital platform, strategy dynamic model:

| No. | From                              | To                                | Type | Related Archetypes                          |
|-----|-----------------------------------|-----------------------------------|------|---------------------------------------------|
| 1   | Capacity                          | Current Performance               | +    | Growth and Underinvestment                  |
| 2   | Competitors' Launching Strategies | Total Launching Strategies        | +    | Tragedy of the Commons                      |
| 3   | Competitors' Launching Strategies | Competitors' Subscribed Users     | +    | Tragedy of the Commons                      |
| 4   | Competitors' Subscribed Users     | Competitors' Launching Strategies | +    | Tragedy of the Commons                      |
| 5   | Current Performance               | Perceived Need to Invest          | +    | Growth and Underinvestment                  |
| 6   | Current Performance               | New Subscribed Users              | +    | Growth and Underinvestment                  |
| 7   | DP Strategy Adoption Challenges   | Fixes                             | +    | Fixes that Fail                             |
| 8   | DP Strategy Launching Strategies  | Total Launching Strategies        | +    | Tragedy of the Commons                      |
| 9   | DP Strategy Launching Strategies  | New Subscribed Users              | +    | Eroding Goals<br>Growth and Underinvestment |
| 10  | Effectiveness                     | Problem Solving Capability        | +    | Attractiveness Principle                    |
| 11  | Efficiency                        | Problem Solving Capability        | +    | Attractiveness Principle                    |
| 12  | Fixes                             | DP Strategy Adoption Challenges   | -    | Fixes that Fail                             |
| 13  | Fixes                             | Unsubscribed Users                | +    | Fixes that Fail                             |
| 14  | Gain Per a Launching Strategy     | New Subscribed Users              | +    | Tragedy of the Commons                      |
| 15  | Gain Per a Launching Strategy     | Competitors' Subscribed Users     | +    | Tragedy of the Commons                      |
| 16  | Invest in Capacity                | Capacity                          | +    | Growth and Underinvestment                  |
| 17  | IT Capabilities                   | Efficiency                        | +    | Attractiveness Principle                    |

|    |                            |                                    |   |                                                      |
|----|----------------------------|------------------------------------|---|------------------------------------------------------|
| 18 | Knowledge Generation       | Effectiveness                      | + | Attractiveness Principle                             |
| 19 | Knowledge Generation       | Effectiveness                      | + | Attractiveness Principle                             |
| 20 | Market Pie Size            | Gain Per a Launching Strategy      | + | Tragedy of the Commons                               |
| 21 | New Subscribed Users       | Subscribed Users Gap               | - | Eroding Goals                                        |
| 22 | New Subscribed Users       | Efficiency                         | - | Attractiveness Principle                             |
| 23 | New Subscribed Users       | Current Performance                | - | Growth and Underinvestment                           |
| 24 | New Subscribed Users       | Effectiveness                      | + | Attractiveness Principle                             |
| 25 | New Subscribed Users       | DP Strategy Launching Strategies   | + | Tragedy of the Commons<br>Growth and Underinvestment |
| 26 | New Subscribed Users       | DP Strategy Subscribed Users (Net) | + |                                                      |
| 27 | Perceived Need to Invest   | Invest in Capacity                 | + | Growth and Underinvestment                           |
| 28 | Performance Standard       | Perceived Need to Invest           | + | Growth and Underinvestment                           |
| 29 | Pressures to Adjust Goal   | Users Subscription Goal            | - | Eroding Goals                                        |
| 30 | Problem Solving Capability | New Subscribed Users               | + | Attractiveness Principle                             |
| 31 | Subscribed Users Gap       | Pressures to Adjust Goal           | + | Eroding Goals                                        |
| 32 | Subscribed Users Gap       | DP Strategy Launching Strategies   | + | Eroding Goals                                        |
| 33 | Total Launching Strategies | Gain Per a Launching Strategy      | - | Tragedy of the Commons                               |
| 34 | Unsubscribed Users         | DP Strategy Subscribed Users (Net) | - | Fixes that Fail                                      |
| 35 | Unsubscribed Users         | DP Strategy Adoption Challenges    | + | Fixes that Fail                                      |
| 36 | Users Subscription Goal    | Subscribed Users Gap               | + | Eroding Goals                                        |

## N. Appendix-N: UBER Technologies Inc. Case Study Collected Data

The following table shows the list of all collected news about the “UBER Technologies Inc.” company in USA as a case study, which were published in ProQuest with the English Language:

| No. | Date         | Headline                                                                                                                                                                                      | News Category  |
|-----|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 1   | Jan 28, 2021 | DoorDash leads surge in delivery orders from US convenience stores                                                                                                                            | Trade Journals |
| 2   | Oct 31, 2020 | Uber at the crossroads: The company faces an existential challenge in this week's California vote on the gig economy. Can CEO Dara Khosrowshahi steer it through? By Dave Lee [Usa Region]    | Newspapers     |
| 3   | Oct 31, 2020 | Uber at the crossroads: The company faces an existential challenge in this week's California vote on the gig economy. Can CEO Dara Khosrowshahi steer it through? By Dave Lee [Asia Region]   | Newspapers     |
| 4   | Oct 31, 2020 | Uber at the crossroads: The company faces an existential challenge in this week's California vote on the gig economy. Can CEO Dara Khosrowshahi steer it through? By Dave Lee [Europe Region] | Newspapers     |
| 5   | Oct 28, 2020 | Grubhub sued for adding restaurants to its delivery platform without permission                                                                                                               | Trade Journals |
| 6   | Oct 28, 2020 | Grubhub sued for adding restaurants to its delivery platform without permission                                                                                                               | Trade Journals |
| 7   | Oct 15, 2020 | Restaurant chain leaders say inflated pricing and direct delivery are winning third-party delivery strategies                                                                                 | Trade Journals |
| 8   | Oct 15, 2020 | Restaurant chain leaders say inflated pricing and direct delivery are winning third-party delivery strategies                                                                                 | Trade Journals |
| 9   | Sep 9, 2020  | Uber aims to opt for 100 percent electric vehicles by 2040                                                                                                                                    | Trade Journals |
| 10  | Aug 14, 2020 | Lyft/Uber: drop-off point: Twitter: @FTLex [Usa Region]                                                                                                                                       | Newspapers     |
| 11  | Aug 14, 2020 | Lyft/Uber: drop-off point: Twitter: @FTLex [Middleeast Region]                                                                                                                                | Newspapers     |
| 12  | Aug 14, 2020 | Lyft/Uber: drop-off point: Twitter: @FTLex                                                                                                                                                    | Newspapers     |
| 13  | Aug 14, 2020 | Lyft/Uber: drop-off point: Twitter: @FTLex [Europe Region]                                                                                                                                    | Newspapers     |
| 14  | Aug 14, 2020 | Lyft/Uber: drop-off point: Twitter: @FTLex [Asia Region]                                                                                                                                      | Newspapers     |
| 15  | May 23, 2020 | Uber riles staff and rallies [...]: Technology. Consolidation Disgruntled workers claim                                                                                                       | Newspapers     |

|    |              |                                                                                                                                                                        |                |
|----|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|    |              | crisis provided opportunity to retrench and cut 7,000 jobs [Usa Region]                                                                                                |                |
| 16 | May 23, 2020 | Uber riles staff and rallies investors: Technology. Consolidation Disgruntled workers claim crisis provided opportunity to retrench and cut 7,000 jobs [Europe Region] | Newspapers     |
| 17 | May 23, 2020 | Uber riles staff and rallies [...]: Technology. Consolidation Disgruntled workers claim crisis provided opportunity to retrench and cut 7,000 jobs [Asia Region]       | Newspapers     |
| 18 | Feb 11, 2020 | Food delivery business out of the way, Uber turns focus to car rentals, shuttles                                                                                       | Newspapers     |
| 19 | Feb 4, 2020  | Uber seeks ways to share the costs of its bet on driverless cars: INSIDE BUSINESS FINANCE [Usa Region]                                                                 | Newspapers     |
| 20 | Feb 4, 2020  | Uber seeks ways to share the costs of its bet on driverless cars: INSIDE BUSINESS FINANCE [Europe Region]                                                              | Newspapers     |
| 21 | Feb 4, 2020  | Uber seeks ways to share the costs of its bet on driverless cars: INSIDE BUSINESS FINANCE                                                                              | Newspapers     |
| 22 | Feb 4, 2020  | Uber seeks ways to share the costs of its bet on driverless cars: INSIDE BUSINESS FINANCE [Asia Region]                                                                | Newspapers     |
| 23 | Jan 31, 2020 | Uber and DoorDash eyed merger: ? SoftBank pushed for deal ? Food delivery rivalry sharpens ? Future talks still possible [Usa Region]                                  | Newspapers     |
| 24 | Jan 31, 2020 | Uber and DoorDash eyed merger: ? SoftBank pushed for deal ? Food delivery rivalry sharpens ? Future talks still possible [Asia Region]                                 | Newspapers     |
| 25 | Jan 31, 2020 | Uber and DoorDash eyed merger: ? SoftBank pushed for deal ? Food delivery rivalry sharpens ? Future talks still possible                                               | Newspapers     |
| 26 | Jan 31, 2020 | Uber and DoorDash eyed merger: ? SoftBank pushed for deal ? Food delivery rivalry sharpens ? Future talks still possible [Europe Region]                               | Newspapers     |
| 27 | Jan 30, 2020 | Uber and DoorDash held merger talks after SoftBank push                                                                                                                | Trade Journals |
| 28 | Jan 8, 2020  | Uber/Hyundai: not fare: Twitter: @FTLex                                                                                                                                | Newspapers     |
| 29 | Jan 8, 2020  | Uber/Hyundai: not fare: Twitter: @FTLex [Usa Region]                                                                                                                   | Newspapers     |
| 30 | Jan 8, 2020  | Uber/Hyundai: not fare: Twitter: @FTLex [Middleeast Region]                                                                                                            | Newspapers     |
| 31 | Jan 8, 2020  | Uber/Hyundai: not fare: Twitter: @FTLex [Asia Region]                                                                                                                  | Newspapers     |

|    |              |                                                                                                                                                                                   |                |
|----|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 32 | Jan 8, 2020  | Uber/Hyundai: not fare: Twitter: @FTLex [Europe Region]                                                                                                                           | Newspapers     |
| 33 | Nov 22, 2019 | Uber hopes for a bounce in two-wheelers                                                                                                                                           | Newspapers     |
| 34 | Oct 25, 2019 | Uber aims high with super-app ambition: Technology. Diversification Strategy is to emulate Gojek and WeChat with access to many services from one point [Asia Region]             | Newspapers     |
| 35 | Oct 25, 2019 | Uber aims high with super-app ambition: Technology. Diversification Strategy is to emulate Gojek and WeChat with access to many services from one point [Usa Region]              | Newspapers     |
| 36 | Oct 25, 2019 | Uber aims high with super-app ambition: Technology. Diversification Strategy is to emulate Gojek and WeChat with access to many services from one point                           | Newspapers     |
| 37 | Oct 25, 2019 | Uber aims high with super-app ambition: Technology. Diversification Strategy is to emulate Gojek and WeChat with access to many services from one point [Europe Region]           | Newspapers     |
| 38 | Oct 11, 2019 | Uber moves into online groceries with Cornershop deal                                                                                                                             | Trade Journals |
| 39 | Aug 9, 2019  | Uber moves into grocery deliveries as it posts \$5bn loss                                                                                                                         | Trade Journals |
| 40 | Jun 12, 2019 | Flying taxis will bring traffic jams to the sky                                                                                                                                   | Trade Journals |
| 41 | Jun 11, 2019 | Uber faces fresh competition from Bolt and Ola in London                                                                                                                          | Trade Journals |
| 42 | Jun 5, 2019  | IRS and other authorities probe Uber tax returns: Technology [Usa Region]                                                                                                         | Newspapers     |
| 43 | Jun 5, 2019  | IRS and other authorities probe Uber tax returns: Technology                                                                                                                      | Newspapers     |
| 44 | Jun 5, 2019  | IRS and other authorities probe Uber tax returns: Technology [Europe Region]                                                                                                      | Newspapers     |
| 45 | Jun 5, 2019  | IRS and other authorities probe Uber tax returns: Technology [Asia Region]                                                                                                        | Newspapers     |
| 46 | May 9, 2019  | Uber back-seat driver sits tight ahead of IPO: His eye on the NYSE prize, an uncharacteristically quiet Kalanick suffers boss Khosrowshahi to steer ride-hailer Are we there yet? | Newspapers     |
| 47 | May 9, 2019  | Uber prices IPO near low end of range at \$45                                                                                                                                     | Trade Journals |
| 48 | May 1, 2019  | Uber roadshow diverts investor focus from stalling growth                                                                                                                         | Trade Journals |
| 49 | Apr 12, 2019 | Uber aims to maintain heavy spending to keep rivals at bay                                                                                                                        | Trade Journals |
| 50 | Apr 4, 2019  | Uber emerges as backer of NY traffic levy: Technology US car-booking app group had                                                                                                | Newspapers     |

|    |              |                                                                                                                                                                                     |                |
|----|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|    |              | been seen as adding to city traffic and pollution                                                                                                                                   |                |
| 51 | Apr 3, 2019  | Uber spent \$2m to help push New York congestion charge                                                                                                                             | Trade Journals |
| 52 | Mar 27, 2019 | Careem deal takes Uber in new direction: Technology. Ride-hailing apps Purchase of Mideast group for \$3.1bn reverses a strategy of buying smaller stakes in rivals [Usa Region]    | Newspapers     |
| 53 | Mar 27, 2019 | Careem deal takes Uber in new direction: Technology. Ride-hailing apps Purchase of Mideast group for \$3.1bn reverses a strategy of buying smaller stakes in rivals                 | Newspapers     |
| 54 | Mar 27, 2019 | Careem deal takes Uber in new direction: Technology. Ride-hailing apps Purchase of Mideast group for \$3.1bn reverses a strategy of buying smaller stakes in rivals [Asia Region]   | Newspapers     |
| 55 | Mar 27, 2019 | Careem deal takes Uber in new direction: Technology. Ride-hailing apps Purchase of Mideast group for \$3.1bn reverses a strategy of buying smaller stakes in rivals [Europe Region] | Newspapers     |
| 56 | Mar 26, 2019 | Uber pays \$3bn for Middle East rival Careem                                                                                                                                        | Trade Journals |
| 57 | Feb 23, 2019 | Uber Eats India likely to end up on Swiggy's plate [Startups_NewsBuzz]                                                                                                              | Newspapers     |
| 58 | Dec 11, 2018 | Canada focus: how Uber v Quebec tax tussle was resolved                                                                                                                             | Trade Journals |
| 59 | Oct 26, 2018 | Uber aims to be the Amazon of transport: Technology. Growth push Khosrowshahi targets 1bn active passengers, drivers and food delivery customers [Usa Region]                       | Newspapers     |
| 60 | Oct 26, 2018 | Uber aims to be the Amazon of transport: Technology. Growth push Khosrowshahi targets 1bn active passengers, drivers and food delivery customers [Europe Region]                    | Newspapers     |
| 61 | Oct 26, 2018 | Uber aims to be the Amazon of transport: Technology. Growth push Khosrowshahi targets 1bn active passengers, drivers and food delivery customers [Asia Region]                      | Newspapers     |
| 62 | Oct 26, 2018 | Uber aims to be the Amazon of transport: Technology. Growth push Khosrowshahi targets 1bn active passengers, drivers and food delivery customers                                    | Newspapers     |
| 63 | Oct 25, 2018 | Uber aims to be 'Amazon of transportation'                                                                                                                                          | Trade Journals |
| 64 | Oct 6, 2018  | Uber Eats learns to make its own way: Technology. Takeaways Food delivery unit is                                                                                                   | Newspapers     |

|    |              |                                                                                                                                                                                               |                |
|----|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|    |              | winning customers that have never used the ride-hailing service                                                                                                                               |                |
| 65 | Sep 21, 2018 | Uber in early talks to acquire food delivery rival Deliveroo                                                                                                                                  | Trade Journals |
| 66 | Sep 21, 2018 | Uber looks to Deliveroo to expand food delivery in Europe                                                                                                                                     | Trade Journals |
| 67 | Jul 6, 2018  | Singapore challenges Uber-Grab merger: Technology. Competition SoftBank strategy in question after higher prices for inferior service raise antitrust concern [Usa Region]                    | Newspapers     |
| 68 | Jul 6, 2018  | Singapore challenges Uber-Grab merger: Technology. Competition SoftBank strategy in question after higher prices for inferior service raise antitrust concern                                 | Newspapers     |
| 69 | Jul 6, 2018  | Singapore challenges Uber-Grab merger: Technology. Competition SoftBank strategy in question after higher prices for inferior service raise antitrust concern [Europe Region]                 | Newspapers     |
| 70 | Jul 6, 2018  | Singapore challenges Uber-Grab merger: Technology. Competition SoftBank strategy in question after higher prices for inferior service raise antitrust concern [Asia Region]                   | Newspapers     |
| 71 | Jun 11, 2018 | Uber brand officer leaves one of toughest jobs in tech                                                                                                                                        | Trade Journals |
| 72 | Apr 11, 2018 | Uber to expand transport options with new deals                                                                                                                                               | Trade Journals |
| 73 | Mar 10, 2018 | Didi takes on Uber in global ride-hailing race: China group valued at \$56bn plans to keep margins thin as it spreads worldwide via deals and partnerships, or on its own [Europe Region]     | Newspapers     |
| 74 | Mar 10, 2018 | Didi takes on Uber in global ride-hailing race: China group valued at \$56bn plans to keep margins thin as it spreads worldwide via deals and partnerships, or on its own [Middleeast Region] | Newspapers     |
| 75 | Mar 10, 2018 | Didi takes on Uber in global ride-hailing race: China group valued at \$56bn plans to keep margins thin as it spreads worldwide via deals and partnerships, or on its own [Asia Region]       | Newspapers     |
| 76 | Mar 10, 2018 | Didi takes on Uber in global ride-hailing race: China group valued at \$56bn plans to keep margins thin as it spreads worldwide via deals and partnerships, or on its own [Usa Region]        | Newspapers     |
| 77 | Mar 10, 2018 | Didi takes on Uber in global ride-hailing race: China group valued at \$56bn plans to keep margins thin as it spreads worldwide via deals and partnerships, or on its own                     | Newspapers     |



|    |              |                                                                                                                                                                 |                |
|----|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 78 | Mar 4, 2018  | Uber turns over a new leaf in Asia                                                                                                                              | Trade Journals |
| 79 | Feb 23, 2018 | India to determine Uber's growth: CEO Dara Khosrowshahi                                                                                                         | Newspapers     |
| 80 | Feb 7, 2018  | Uber boosts greenfield FDI despite tough year                                                                                                                   | Trade Journals |
| 81 | Jan 18, 2018 | SoftBank tells Uber to focus on US and Europe as deal closes                                                                                                    | Trade Journals |
| 82 | Oct 4, 2017  | How Uber and Lyft are reinventing the bus                                                                                                                       | Trade Journals |
| 83 | Sep 25, 2017 | Lyft looks toward London as Uber reels from ban                                                                                                                 | Trade Journals |
| 84 | Sep 25, 2017 | Uber pays steep fare for its founder's strategy                                                                                                                 | Newspapers     |
| 85 | Sep 24, 2017 | Uber pays steep fare for its founder's strategy                                                                                                                 | Trade Journals |
| 86 | Aug 30, 2017 | Uber India staff has a wishlist for new boss Khosrowshahi [Startups]                                                                                            | Newspapers     |
| 87 | Jun 23, 2017 | Can Uber ever make money?                                                                                                                                       | Trade Journals |
| 88 | Jun 12, 2017 | Aldi, Uber, Microsoft: Everything that matters this morning                                                                                                     | Magazines      |
| 89 | Jun 2, 2017  | It could soon take just a ring or a text to hail your Uber ride [Technology]                                                                                    | Newspapers     |
| 90 | May 2017     | Books: A driving force                                                                                                                                          | Trade Journals |
| 91 | Mar 27, 2017 | India's Uber drivers feel taken for a ride: Many are left struggling to meet car-loan repayments as subsidies are cut and earnings promises fail to materialise | Newspapers     |
| 92 | Mar 25, 2017 | India's Uber drivers feel taken for a ride on earnings promises                                                                                                 | Trade Journals |
| 93 | Mar 25, 2017 | India's Uber drivers feel taken for a ride on earnings promises                                                                                                 | Trade Journals |
| 94 | Nov 24, 2016 | Ola hopes to outpace Uber with new Play & break even in 2-3 Yrs [Startups]                                                                                      | Newspapers     |
| 95 | Apr 11, 2016 | GLOBAL BUSINESS EXPANSION REVEALS A WORLD OF DIFFERENCE IN AUTO COVERAGE: UBER NAVIGATES PATH BETWEEN PRIVATE PLACEMENT AND GOVERNMENT-RUN INSURERS             | Trade Journals |
| 96 | Apr 11, 2016 | RISK MANAGER OF THE YEAR 2016: A QUICK STUDY PUT UBER IN THE DRIVER'S SEAT                                                                                      | Trade Journals |
| 97 | Apr 11, 2016 | WHERE A DRIVER'S PERSONAL COVERAGE LEAVES OFF AND UBER'S PICKS UP                                                                                               | Trade Journals |
| 98 | Apr 07, 2016 | Uber vs Ola: Who will end up dominating the streets? [Startups]                                                                                                 | Newspapers     |
| 99 | Jan 30, 2016 | More than mobility; Car-hailing apps in China                                                                                                                   | Magazines      |

|            |              |                                                                                                                                                                                  |                |
|------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>100</b> | Jun 13, 2015 | Driving hard; Uber                                                                                                                                                               | Magazines      |
| <b>101</b> | Jan 26, 2021 | ETtech Morning Dispatch on 25 Jan. 2021: Top tech news to start your day [Tech Bytes]                                                                                            | Newspapers     |
| <b>102</b> | Nov 30, 2020 | The Business of Superapps: An Interview with Gheed El Makkaoui, Careem UAE General Manager                                                                                       | Reports        |
| <b>103</b> | May 23, 2020 | Uber riles staff and rallies investors with coronavirus shake-up: Technology. Consolidation Disgruntled workers claim crisis provided opportunity to retrench and cut 7,000 jobs | Newspapers     |
| <b>104</b> | Mar 12, 2020 | Nathan's announces NYC delivery deal with Kitopi, as to-go restaurant sales demand grows due to coronavirus                                                                      | Trade Journals |
| <b>105</b> | Feb 3, 2020  | Uber looks to radical financing to fund driverless cars                                                                                                                          | Trade Journals |
| <b>106</b> | Nov 25, 2019 | Uber must ride luck in court — and in the court of public opinion                                                                                                                | Trade Journals |
| <b>107</b> | Nov 12, 2019 | Travis Kalanick readies recipe for India cloud kitchen foray [Startups]                                                                                                          | Newspapers     |
| <b>108</b> | Nov 11, 2019 | Blackstone Makes \$3B Match with Bumble Owner                                                                                                                                    | Trade Journals |
| <b>109</b> | Nov 1, 2019  | 'Uber of trucks' matches cargo with transport to cut costs: Logistics Nairobi start-up aims to tackle notorious inefficiency in the sector, says David Pilling [Usa Region]      | Newspapers     |
| <b>110</b> | Oct 29, 2019 | Restaurant delivery gets easier for most, but not Grubhub                                                                                                                        | Magazines      |
| <b>111</b> | Oct 22, 2019 | Ola Foods has Plans for its Khichdi Experiment [Startups]                                                                                                                        | Newspapers     |
| <b>112</b> | Oct 8, 2019  | Domino's sticking to growth plan despite sales pressures                                                                                                                         | Magazines      |
| <b>113</b> | Oct 8, 2019  | SoftBank's damage from Uber, WeWork could exceed \$5bn                                                                                                                           | Newspapers     |
| <b>114</b> | Sep 17, 2019 | Dubai's Careem rides high after \$3bn Uber buyout                                                                                                                                | Trade Journals |
| <b>115</b> | Aug 21, 2019 | Amazon readies new spread to lure eateries away from Zomato, Swiggy [Startups]                                                                                                   | Newspapers     |
| <b>116</b> | Aug 2, 2019  | Food delivery wars are just starting as rivals spend to win diners: INSIDE BUSINESS TECHNOLOGY [Europe Region]                                                                   | Newspapers     |
| <b>117</b> | Aug 2, 2019  | Food delivery wars are just starting as rivals spend to win diners: INSIDE BUSINESS TECHNOLOGY                                                                                   | Newspapers     |
| <b>118</b> | Aug 2, 2019  | Food delivery wars are just starting as rivals spend to win diners: INSIDE BUSINESS TECHNOLOGY [Usa Region]                                                                      | Newspapers     |

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|-----|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 119 | Aug 2, 2019  | Food delivery wars are just starting as rivals spend to win diners: INSIDE BUSINESS TECHNOLOGY [Asia Region]                                                                                          | Newspapers     |
| 120 | Aug 2019     | What Are They? Independent Contractors Or Employees?                                                                                                                                                  | Magazines      |
| 121 | Aug 2019     | What Are They? Independent Contractors Or Employees?                                                                                                                                                  | Magazines      |
| 122 | Jul 16, 2019 | Domino's Pizza sales feel the heat from food delivery services                                                                                                                                        | Trade Journals |
| 123 | Jun 4, 2019  | Uber taxes under audit by IRS and foreign authorities                                                                                                                                                 | Trade Journals |
| 124 | May 23, 2019 | Food delivery platform Foodpanda plans to open physical outlets for its private label brands [Startups]                                                                                               | Newspapers     |
| 125 | May 10, 2019 | Uber shares close nearly 8% below IPO price                                                                                                                                                           | Trade Journals |
| 126 | May 9, 2019  | Uber back-seat driver sits tight ahead of IPO: His eye on the NYSE prize, an uncharacteristically quiet Kalanick suffers boss Khosrowshahi to steer ride-hailer Are we there yet? [Usa Region]        | Newspapers     |
| 127 | May 9, 2019  | Uber back-seat driver sits tight ahead of IPO: His eye on the NYSE prize, an uncharacteristically quiet Kalanick suffers boss Khosrowshahi to steer ride-hailer Are we there yet? [Europe Region]     | Newspapers     |
| 128 | May 9, 2019  | Uber back-seat driver sits tight ahead of IPO: His eye on the NYSE prize, an uncharacteristically quiet Kalanick suffers boss Khosrowshahi to steer ride-hailer Are we there yet? [Middleeast Region] | Newspapers     |
| 129 | May 9, 2019  | Uber back-seat driver sits tight ahead of IPO: His eye on the NYSE prize, an uncharacteristically quiet Kalanick suffers boss Khosrowshahi to steer ride-hailer Are we there yet? [Asia Region]       | Newspapers     |
| 130 | May 8, 2019  | Uber chief keeps founder in back seat ahead of IPO                                                                                                                                                    | Trade Journals |
| 131 | May 2019     | A new spin on all things retail                                                                                                                                                                       | Trade Journals |
| 132 | Apr 24, 2019 | Domino's same-store sales growth slows in Q1                                                                                                                                                          | Trade Journals |
| 133 | Apr 14, 2019 | There's a lot riding on India, reveals Uber's IPO filing [IPO]                                                                                                                                        | Newspapers     |
| 134 | Apr 12, 2019 | Uber admits its culture is IPO risk                                                                                                                                                                   | Trade Journals |
| 135 | Apr 4, 2019  | Uber emerges as \$2m champion of push for New York congestion charge [Middleeast Region]                                                                                                              | Newspapers     |

|     |              |                                                                                                                                                                                        |                |
|-----|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 136 | Apr 1, 2019  | Investors intensify their fight against dual-class shares: Institutions pushing ahead on several fronts to encourage one share, one vote structure                                     | Trade Journals |
| 137 | Mar 24, 2019 | Uber set to acquire Careem this week in \$3.1bn deal                                                                                                                                   | Newspapers     |
| 138 | Feb 21, 2019 | Uber Eats to cut fees in battle with Deliveroo and Just Eat                                                                                                                            | Trade Journals |
| 139 | Oct 8, 2018  | Musk's SpaceX Successfully Lands Rocket Back at California Base                                                                                                                        | Trade Journals |
| 140 | Oct 6, 2018  | Saudi Arabia to double down on SoftBank bet with extra \$45bn                                                                                                                          | Newspapers     |
| 141 | Sep 27, 2018 | Which banks will win in the IPO drag race between Lyft and Uber?                                                                                                                       | Trade Journals |
| 142 | Aug 26, 2018 | Uber plans shift from cars to bikes for shorter trips                                                                                                                                  | Trade Journals |
| 143 | Aug 23, 2018 | Calstrs Is Said Among Buyers in NYC Terminal Stores Acquisition                                                                                                                        | Trade Journals |
| 144 | Aug 8, 2018  | New York's year-long licence cap to hit Uber and Lyft                                                                                                                                  | Trade Journals |
| 145 | Jun 20, 2018 | Uber appoints Pradeep Parameswaran as new India head                                                                                                                                   | Newspapers     |
| 146 | Jun 19, 2018 | Pradeep Parameswaran named Uber's India head                                                                                                                                           | Newspapers     |
| 147 | Jun 19, 2018 | Uber appoints Pradeep Parameswaran as its new India head                                                                                                                               | Newspapers     |
| 148 | May 24, 2018 | Uber rolls out social benefits in Europe                                                                                                                                               | Trade Journals |
| 149 | Apr 12, 2018 | An Onslaught of New Rivals in Parcel and Express                                                                                                                                       | Reports        |
| 150 | Mar 28, 2018 | Day after selling SE Asia biz to Grab, Uber to intensify battle against Ola [NewsBuzz]                                                                                                 | Newspapers     |
| 151 | Mar 27, 2018 | Uber merges south-east Asia unit with Grab: Decision to quit region in return for stake in rival is part of consolidation process that aids Japanese investor SoftBank [Usa Region]    | Newspapers     |
| 152 | Mar 27, 2018 | Uber merges south-east Asia unit with Grab: Decision to quit region in return for stake in rival is part of consolidation process that aids Japanese investor SoftBank                 | Newspapers     |
| 153 | Mar 27, 2018 | Uber merges south-east Asia unit with Grab: Decision to quit region in return for stake in rival is part of consolidation process that aids Japanese investor SoftBank [Asia Region]   | Newspapers     |
| 154 | Mar 27, 2018 | Uber merges south-east Asia unit with Grab: Decision to quit region in return for stake in rival is part of consolidation process that aids Japanese investor SoftBank [Europe Region] | Newspapers     |

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|-----|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 155 | Mar 26, 2018 | Uber exits south-east Asia with sale to rival Grab                                                                                                                    | Trade Journals |
| 156 | Jan 19, 2018 | SoftBank hails \$9bn Uber investment with call to refocus on US and Europe                                                                                            | Newspapers     |
| 157 | Dec 21, 2017 | EU ruling opens Uber up to new claims: Decision that the app is a transport group makes it easier for authorities to impose rules and restrict services [Usa Region]  | Newspapers     |
| 158 | Aug 23, 2017 | Why Amazon, Disney and Uber are courting this two-year-old startup [Startups]                                                                                         | Newspapers     |
| 159 | Jul/Aug 2017 | UBER - REVERSE GEAR OR PEDAL DOWN?                                                                                                                                    | Magazines      |
| 160 | Jun 24, 2017 | Uber struggles for grip on the road to profit: Ride-sharing group's new chief must stem losses and navigate a market that investors no longer see as winner-takes-all | Newspapers     |
| 161 | Jun 24, 2017 | Gear change; Uber                                                                                                                                                     | Magazines      |
| 162 | Jun 10, 2017 | Lyft's big lift; Ride-hailing wars                                                                                                                                    | Magazines      |
| 163 | May 1, 2017  | Are Indian Internet companies justified in calls for protectionism?                                                                                                   | Newspapers     |
| 164 | Feb 17, 2017 | MealPal takes on Deliveroo and UberEats with subscription lunch service                                                                                               | Magazines      |
| 165 | Sep 24, 2016 | Who's self-driving your car?; Autonomous vehicles                                                                                                                     | Magazines      |
| 166 | Sep 19, 2016 | Ola, Uber pick divergent paths to raise cab supply                                                                                                                    | Newspapers     |
| 167 | May 04, 2016 | Uber, Alipay enter into global partnership; targets growth in China, India [Startups]                                                                                 | Newspapers     |
| 168 | Apr 11, 2016 | Driver star-rating system doubles as risk management tool                                                                                                             | Trade Journals |
| 169 | Apr 11, 2016 | Ability to measure usage in miles not months leads to creation of new models                                                                                          | Trade Journals |
| 170 | Apr 11, 2016 | MOBILE APP OPENS THREE ROUTES OF RISK: ON-DUTY, OFF-DUTY, CYBER                                                                                                       | Trade Journals |
| 171 | Dec 26, 2015 | Uber to set up its 1st engineering centre in India [Startups]                                                                                                         | Newspapers     |
| 172 | Apr 16, 2015 | Uber to appoint India CEO soon, will have multi-seater leadership [Shipping / Transport]                                                                              | Newspapers     |
| 173 | Mar 24, 2015 | Uber signs strategic deal with Times Internet for India expansion [Startups]                                                                                          | Newspapers     |
| 174 | Jan 26, 2021 | ETtech Morning Dispatch on 25 Jan. 2021: Top tech news to start your day [Tech Bytes]                                                                                 | Newspapers     |
| 175 | Oct 15, 2020 | Restaurant chain leaders say inflated pricing and direct delivery are winning third-party delivery strategies                                                         | Trade Journals |
| 176 | Oct 15, 2020 | Restaurant chain leaders say inflated pricing and direct delivery are winning third-party delivery strategies                                                         | Trade Journals |

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|-----|--------------|---------------------------------------------------------------------------------------------------------------|----------------|
| 177 | Feb 28, 2020 | Amazon joins food delivery business in B'luru [Startups]                                                      | Newspapers     |
| 178 | Aug 21, 2019 | Amazon readies new spread to lure eateries away from Zomato, Swiggy [Startups]                                | Newspapers     |
| 179 | Jun 26, 2019 | From Koramangala to NYSE: Kaleyra's march towards a \$192-million share sale                                  | Newspapers     |
| 180 | Mar 26, 2019 | Uber confirms \$3.1bn Careem acquisition in Q1 2020                                                           | Newspapers     |
| 181 | Mar 26, 2019 | Uber pays \$3bn for Middle East rival Careem                                                                  | Trade Journals |
| 182 | Nov 29, 2018 | Deliveroo/Uber: roo awakening: Twitter: @FTLex                                                                | Newspapers     |
| 183 | Nov 29, 2018 | Deliveroo/Uber: roo awakening: Twitter: @FTLex [Usa Region]                                                   | Newspapers     |
| 184 | Nov 29, 2018 | Deliveroo/Uber: roo awakening: Twitter: @FTLex [Asia Region]                                                  | Newspapers     |
| 185 | Nov 29, 2018 | Deliveroo/Uber: roo awakening: Twitter: @FTLex [Europe Region]                                                | Newspapers     |
| 186 | Nov 29, 2018 | Deliveroo/Uber: roo awakening: Twitter: @FTLex [Middleeast Region]                                            | Newspapers     |
| 187 | Nov 28, 2018 | Deliveroo/Uber: roo awakening                                                                                 | Trade Journals |
| 188 | Mar 26, 2018 | Uber/Grab: oh, what a circus                                                                                  | Trade Journals |
| 189 | Mar 26, 2018 | Uber exits south-east Asia, takes interest in rival Grab                                                      | Trade Journals |
| 190 | Mar 4, 2018  | Uber turns over a new leaf in Asia                                                                            | Trade Journals |
| 191 | Jun 30, 2017 | The Uber episode: Is monoculturalism the real problem?                                                        | Newspapers     |
| 192 | Nov 20, 2015 | Ola completes \$500 million fundraise as race with Uber gains traction [Startups]                             | Newspapers     |
| 193 | pubdate      | Title                                                                                                         | ArticleType    |
| 194 | Jan 26, 2021 | ETtech Morning Dispatch on 25 Jan. 2021: Top tech news to start your day [Tech Bytes]                         | Newspapers     |
| 195 | Oct 15, 2020 | Restaurant chain leaders say inflated pricing and direct delivery are winning third-party delivery strategies | Trade Journals |
| 196 | Oct 15, 2020 | Restaurant chain leaders say inflated pricing and direct delivery are winning third-party delivery strategies | Trade Journals |
| 197 | Aug 21, 2019 | Amazon readies new spread to lure eateries away from Zomato, Swiggy [Startups]                                | Newspapers     |
| 198 | Mar 26, 2019 | Uber pays \$3bn for Middle East rival Careem                                                                  | Trade Journals |
| 199 | Mar 4, 2018  | Uber turns over a new leaf in Asia                                                                            | Trade Journals |
| 200 | Oct 6, 2019  | How tech companies are cashing in on sports sponsorship deals [Branding]                                      | Newspapers     |

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|-----|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 201 | Sep 17, 2019 | Dubai's Careem rides high after \$3bn Uber buyout                                                                                                                | Trade Journals |
| 202 | Oct 26, 2018 | Uber aims to be the Amazon of transport: Technology. Growth push Khosrowshahi targets 1bn active passengers, drivers and food delivery customers [Usa Region]    | Newspapers     |
| 203 | Oct 26, 2018 | Uber aims to be the Amazon of transport: Technology. Growth push Khosrowshahi targets 1bn active passengers, drivers and food delivery customers [Europe Region] | Newspapers     |
| 204 | Oct 26, 2018 | Uber aims to be the Amazon of transport: Technology. Growth push Khosrowshahi targets 1bn active passengers, drivers and food delivery customers [Asia Region]   | Newspapers     |
| 205 | Oct 26, 2018 | Uber aims to be the Amazon of transport: Technology. Growth push Khosrowshahi targets 1bn active passengers, drivers and food delivery customers                 | Newspapers     |
| 206 | Oct 25, 2018 | Uber aims to be 'Amazon of transportation'                                                                                                                       | Trade Journals |
| 207 | Jun 4, 2019  | Analysts say Uber a 'buy' as Wall Street kick-starts coverage                                                                                                    | Trade Journals |
| 208 | Jun 3, 2019  | Online food companies: hunger games                                                                                                                              | Newspapers     |
| 209 | Jun 3, 2019  | { } Online food companies: hunger games [Usa Region]                                                                                                             | Newspapers     |
| 210 | Jun 3, 2019  | Online food companies: hunger games [Middleeast Region]                                                                                                          | Newspapers     |
| 211 | Jun 3, 2019  | Online food companies: hunger games [Europe Region]                                                                                                              | Newspapers     |
| 212 | Jun 3, 2019  | Online food companies: hunger games [Asia Region]                                                                                                                | Newspapers     |
| 213 | Jun 2, 2019  | Online meal deliveries: hunger games                                                                                                                             | Trade Journals |
| 214 | Apr 27, 2019 | Uber alumni ride tech's new wave: Disrupter bred generation of founders inspired to tackle challenges ignored by Silicon Valley [Europe Region]                  | Newspapers     |
| 215 | Apr 27, 2019 | Uber alumni ride tech's new wave: Disrupter bred generation of founders inspired to tackle challenges ignored by Silicon Valley [Asia Region]                    | Newspapers     |
| 216 | Apr 27, 2019 | Uber alumni ride tech's new wave: Disrupter bred generation of founders inspired to tackle challenges ignored by Silicon Valley                                  | Newspapers     |
| 217 | Apr 27, 2019 | Uber alumni ride tech's new wave: Disrupter bred generation of founders inspired to tackle challenges ignored by Silicon Valley [Usa Region]                     | Newspapers     |
| 218 | Apr 27, 2019 | Schumpeter: Can Uber ever make money?                                                                                                                            | Magazines      |



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|-----|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 219 | Apr 26, 2019 | How Uber changed Silicon Valley                                                                                                                                                        | Trade Journals |
| 220 | Apr 12, 2019 | Uber aims to maintain heavy spending to keep rivals at bay                                                                                                                             | Trade Journals |
| 221 | Apr 12, 2019 | Uber admits its culture is IPO risk                                                                                                                                                    | Trade Journals |
| 222 | Mar 29, 2019 | How 5G Will Transform the Way We Live and Work                                                                                                                                         | Trade Journals |
| 223 | Dec 4, 2018  | Uber eyes takeover of scooter start-up: Technology US group has discussed multibillion-dollar deals with Bird and Lime [Usa Region]                                                    | Newspapers     |
| 224 | Dec 4, 2018  | Uber eyes takeover of scooter start-up: Technology US group has discussed multibillion-dollar deals with Bird and Lime [Europe Region]                                                 | Newspapers     |
| 225 | Dec 4, 2018  | Uber eyes takeover of scooter start-up: Technology US group has discussed multibillion-dollar deals with Bird and Lime [Asia Region]                                                   | Newspapers     |
| 226 | Dec 4, 2018  | Uber eyes takeover of scooter start-up: Technology US group has discussed multibillion-dollar deals with Bird and Lime                                                                 | Newspapers     |
| 227 | Apr 12, 2018 | An Onslaught of New Rivals in Parcel and Express                                                                                                                                       | Reports        |
| 228 | Mar 27, 2018 | Uber merges south-east Asia unit with Grab: Decision to quit region in return for stake in rival is part of consolidation process that aids Japanese investor SoftBank [Usa Region]    | Newspapers     |
| 229 | Mar 27, 2018 | Uber merges south-east Asia unit with Grab: Decision to quit region in return for stake in rival is part of consolidation process that aids Japanese investor SoftBank                 | Newspapers     |
| 230 | Mar 27, 2018 | Uber merges south-east Asia unit with Grab: Decision to quit region in return for stake in rival is part of consolidation process that aids Japanese investor SoftBank [Asia Region]   | Newspapers     |
| 231 | Mar 27, 2018 | Uber merges south-east Asia unit with Grab: Decision to quit region in return for stake in rival is part of consolidation process that aids Japanese investor SoftBank [Europe Region] | Newspapers     |
| 232 | Mar 26, 2018 | Uber exits south-east Asia with sale to rival Grab                                                                                                                                     | Trade Journals |
| 233 | Jan 5, 2018  | Didi takeover of Brazil's 99 puts pressure on Uber: Technology [Europe Region]                                                                                                         | Newspapers     |
| 234 | Jan 5, 2018  | Didi takeover of Brazil's 99 puts pressure on Uber: Technology [Usa Region]                                                                                                            | Newspapers     |
| 235 | Jan 5, 2018  | Didi takeover of Brazil's 99 puts pressure on Uber: Technology [Asia Region]                                                                                                           | Newspapers     |



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| 236 | Jan 3, 2018  | Didi takeover of Brazil's 99 piles pressure on Uber                         | Trade Journals |
| 237 | Oct 17, 2017 | Uber: food fight: Twitter: @FTLex Email: lex@ft.com                         | Newspapers     |
| 238 | Oct 17, 2017 | Uber: food fight: Twitter: @FTLex Email: lex@ft.com [Middleeast Region]     | Newspapers     |
| 239 | Oct 17, 2017 | Uber: food fight: Twitter: @FTLex Email: lex@ft.com [Usa Region]            | Newspapers     |
| 240 | Oct 17, 2017 | Uber: food fight: Twitter: @FTLex Email: lex@ft.com [Europe Region]         | Newspapers     |
| 241 | Oct 17, 2017 | Uber: food fight: Twitter: @FTLex Email: lex@ft.com [Asia Region]           | Newspapers     |
| 242 | Oct 16, 2017 | Uber food delivery business makes up tenth of ride-hailing group's bookings | Newspapers     |
| 243 | Oct 15, 2017 | UberEats a bright spot on menu with \$3bn potential sales                   | Trade Journals |
| 244 | Aug 2, 2017  | Treat Uber as a marketplace to ensure fairness                              | Newspapers     |
| 245 | Aug 1, 2017  | Treat Uber like a stock exchange to ensure fairness                         | Trade Journals |
| 246 | Jun 18, 2017 | Uber loses ground in US as rival Lyft accelerates                           | Trade Journals |
| 247 | Apr 30, 2016 | Independent contractors; Category error                                     | Magazines      |
| 248 | Nov 22, 2014 | Uber-competitive; The taxi-app market                                       | Magazines      |

The following table shows the list of all collected news about the “UBER Technologies Inc.” company in USA as a case study, which were published in MarketLine with the English Language:

| No | Date        | Headline                                                                                                                                             | News Category                    |
|----|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 1  | 08 May 2021 | <a href="#">Uber and Arrival confirm deal to produce electric vehicles</a>                                                                           | Strategic Actions                |
| 2  | 06 May 2021 | <a href="#">Hefty \$600m fare for Uber's ride out of UK gig economy</a>                                                                              | Operations Update                |
| 3  | 05 May 2021 | <a href="#">Uber Announces Results for First Quarter 2021</a>                                                                                        | Financial Announcements          |
| 4  | 04 May 2021 | <a href="#">Uber and Gopuff partner to bring everyday essentials to Uber Eats</a>                                                                    | Business Expansion               |
| 5  | 29 Apr 2021 | <a href="#">Uber, Walgreens partner to give people easy access to COVID-19 vaccines</a>                                                              | Sales, Marketing & Advertisement |
| 6  | 28 Apr 2021 | <a href="#">Uber tweaks app to further integrate food delivery with rides</a>                                                                        | Operations Update                |
| 7  | 28 Apr 2021 | <a href="#">Uber app launches car rental feature</a>                                                                                                 | Sales, Marketing & Advertisement |
| 8  | 15 Apr 2021 | <a href="#">Uber expands its SaaS offerings to three agencies</a>                                                                                    | Contracts & Tenders              |
| 9  | 14 Apr 2021 | <a href="#">Marriott Bonvoy and Uber team up for first of its kind collaboration enabling members to earn points on both food delivery and rides</a> | Business Expansion               |
| 10 | 12 Apr 2021 | <a href="#">Uber Announces Date of First Quarter 2021 Results Conference Call</a>                                                                    | Financial Result Timings         |
| 11 | 09 Apr 2021 | <a href="#">Uber Eats launches new Dine-In feature that allows diners to order in-person when restaurants reopen next week</a>                       | Sales, Marketing & Advertisement |
| 12 | 09 Apr 2021 | <a href="#">Uber Eats launches in-restaurant food ordering platform</a>                                                                              | Sales, Marketing & Advertisement |
| 13 | 08 Apr 2021 | <a href="#">Work for us on temporarily decent pay, says Uber amid driver shortage</a>                                                                | Operations Update                |
| 14 | 06 Apr 2021 | <a href="#">We simply can't afford this luxury lifestyle for our drivers - Uber</a>                                                                  | Operations Update                |
| 15 | 30 Mar 2021 | <a href="#">Uber OOH announces expansion of digital cartop advertising network to New York City</a>                                                  | Business Expansion               |
| 16 | 29 Mar 2021 | <a href="#">Uber opens new San Francisco Mission Bay headquarters</a>                                                                                | Operations Update                |
| 17 | 29 Mar 2021 | <a href="#">Uber Green: EV-only service goes live in London</a>                                                                                      | Operations Update                |
| 18 | 25 Mar 2021 | <a href="#">Uber Eats and Nimble announce launch of on-demand prescription delivery in Chicago, Illinois</a>                                         | Business Expansion               |

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|----|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 19 | 24 Mar 2021 | <a href="#">Uber expands prescription delivery business with ScriptDrop partnership</a>                                                              | Partnerships                     |
| 20 | 23 Mar 2021 | <a href="#">Uber Tech appoint Alexander Wynaendts to Board</a>                                                                                       | Management Changes               |
| 21 | 11 Mar 2021 | <a href="#">Leading rideshare companies launch industry sharing safety program in the U.S.</a>                                                       | Operations Update                |
| 22 | 11 Mar 2021 | <a href="#">Lyft and Uber announce Industry Sharing Safety Program</a>                                                                               | Operations Update                |
| 23 | 04 Mar 2021 | <a href="#">CIM Group announces sale of Uptown Station building in Oakland</a>                                                                       | Business Expansion               |
| 24 | 19 Feb 2021 | <a href="#">Uber faces UK Supreme Court ruling on worker rights in gig economy test</a>                                                              |                                  |
| 25 | 11 Feb 2021 | <a href="#">Uber will consider accepting bitcoin, says CEO Dara Khosrowshahi</a>                                                                     | Sales, Marketing & Advertisement |
| 26 | 10 Feb 2021 | <a href="#">Uber announces results for fourth quarter and full year 2020</a>                                                                         | Financial Announcements          |
| 27 | 09 Feb 2021 | <a href="#">Walgreens and Uber join forces to address barriers to COVID-19 vaccine equity</a>                                                        | Business Expansion               |
| 28 | 04 Feb 2021 | <a href="#">Uber Eats' campaign to support local restaurants in US</a>                                                                               | Operations Update                |
| 29 | 04 Feb 2021 | <a href="#">The American Express Gold Card brings back the iconic Rose Gold design &amp; launches a new Uber Cash Benefit</a>                        | Partnerships                     |
| 30 | 02 Feb 2021 | <a href="#">Uber to acquire Drizly</a>                                                                                                               | M&A                              |
| 31 | 01 Feb 2021 | <a href="#">bp and Uber announce EV charging and planning program with the City of Houston</a>                                                       | Business Expansion               |
| 32 | 29 Jan 2021 | <a href="#">Uber partners with Utah AG to launch training video to identify human trafficking</a>                                                    | Operations Update                |
| 33 | 28 Jan 2021 | <a href="#">Uber Eats announces prescription delivery in NYC with Nimble</a>                                                                         | Business Expansion               |
| 34 | 25 Jan 2021 | <a href="#">Rexall partners with Uber Eats</a>                                                                                                       | Business Expansion               |
| 35 | 14 Jan 2021 | <a href="#">Uber announces date of fourth quarter and full year 2020 results conference call</a>                                                     | Financial Announcements          |
| 36 | 14 Jan 2021 | <a href="#">Uber launches electric vehicle program in Fairfield County</a>                                                                           | Sales, Marketing & Advertisement |
| 37 | 12 Jan 2021 | <a href="#">Uber expands green rides option to 1,400 cities</a>                                                                                      | Sales, Marketing & Advertisement |
| 38 | 06 Jan 2021 | <a href="#">Bringg partners with Uber to improve customer experiences with same day retail delivery without sacrificing quality or profitability</a> | Partnerships                     |
| 39 | 09 Dec 2020 | <a href="#">Uber Connect brings package delivery option to app to help get holiday gifts and more across town</a>                                    | Sales, Marketing & Advertisement |

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|----|-------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 40 | 08 Dec 2020 | <a href="#">Uber sells self-driving subsidiary to Aurora Technologies</a>                                                 | M&A                              |
| 41 | 26 Nov 2020 | <a href="#">Food ordering app Uber Eats arrives in Rhy</a>                                                                | Sales, Marketing & Advertisement |
| 42 | 23 Nov 2020 | <a href="#">Uber teams up with Rosetta Stone to include language learning in Uber Rewards program</a>                     | Partnerships                     |
| 43 | 23 Nov 2020 | <a href="#">US federal government awards transportation contract to Uber, Lyft</a>                                        | Partnerships                     |
| 44 | 18 Nov 2020 | <a href="#">Uber chooses Marqeta to help set up a central payment system</a>                                              | Partnerships                     |
| 45 | 18 Nov 2020 | <a href="#">Utilities, Tesla, Uber create US lobbying group for electric vehicle industry</a>                             | Partnerships                     |
| 46 | 17 Nov 2020 | <a href="#">Uber taps EBANX for instant payments processing in Brazil</a>                                                 | Business Expansion               |
| 47 | 17 Nov 2020 | <a href="#">ioneer joins major US Industry Organisation advocating for zero emission transportation by 2030</a>           | Operations Update                |
| 48 | 14 Nov 2020 | <a href="#">Uber and EVgo launch partnership to electrify on-demand rides and accelerate zero-emission transportation</a> | Business Expansion               |
| 49 | 06 Nov 2020 | <a href="#">Uber's food delivery business outshines core rides service</a>                                                | Operations Update                |
| 50 | 04 Nov 2020 | <a href="#">Proposition 22 passes, keeping Uber and Lyft drivers as contractors</a>                                       | Regulatory & Policy              |
| 51 | 29 Oct 2020 | <a href="#">Baskin-Robbins and Uber Eats sign online delivery partnership</a>                                             | Partnerships                     |
| 52 | 29 Oct 2020 | <a href="#">Uber launches grocery delivery in NYC</a>                                                                     | Sales, Marketing & Advertisement |
| 53 | 27 Oct 2020 | <a href="#">American Express, Uber unveil new offerings for cardmembers in US</a>                                         | Sales, Marketing & Advertisement |
| 54 | 27 Oct 2020 | <a href="#">Uber Eats teams up with Krispy Kreme to deliver Halloween-themed Monster box of doughnuts</a>                 | Partnerships                     |
| 55 | 16 Oct 2020 | <a href="#">Boise Airport, Uber and Lyft streamline rideshare operations for passengers</a>                               | Business Expansion               |
| 56 | 09 Oct 2020 | <a href="#">Uber Eats orders surge</a>                                                                                    | Operations Update                |
| 57 | 05 Oct 2020 | <a href="#">Uber Freight raises US\$500m in funding to expand reach</a>                                                   | Equity Offering                  |
| 58 | 02 Oct 2020 | <a href="#">Former Uber executive Emil Michael to file for \$250 Million SPAC IPO</a>                                     | Equity Offering                  |
| 59 | 25 Sep 2020 | <a href="#">VW offers Uber Berlin used EVs</a>                                                                            | Business Expansion               |
| 60 | 23 Sep 2020 | <a href="#">Uber teams up with Southeastern Grocers on delivery</a>                                                       | Business Expansion               |

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| 61 | 22 Sep 2020 | <a href="#">Uber to help coordinate carpools with new service</a>                             | Sales, Marketing & Advertisement  |
| 62 | 18 Sep 2020 | <a href="#">Amazon's tech chief to join Uber as new CTO</a>                                   | Management Changes                |
| 63 | 14 Sep 2020 | <a href="#">Uber Eats launches new dine-in / pick-up contactless order feature</a>            | Sales, Marketing & Advertisement  |
| 64 | 14 Sep 2020 | <a href="#">Uber announces proposed \$500 million senior notes offering</a>                   | Equity Offering                   |
| 65 | 21 Aug 2020 | <a href="#">Leading Global CISO Charged Over Alleged Hack Cover Up</a>                        |                                   |
| 66 | 20 Aug 2020 | <a href="#">Uber launches prescription delivery service in Seattle, Dallas</a>                | Sales, Marketing & Advertisement  |
| 67 | 12 Aug 2020 | <a href="#">Judge rules ride hail drivers are employees, not contractors</a>                  | Regulatory & Policy               |
| 68 | 07 Aug 2020 | <a href="#">Uber delivery revenues up 103% but ride-hailing decimated by pandemic</a>         | Financial Announcements           |
| 69 | 07 Aug 2020 | <a href="#">Uber's food-delivery business doubles; COVID-19 eviscerates rides demand</a>      | Operations Update                 |
| 70 | 06 Aug 2020 | <a href="#">ServiceNow and Uber for business partner to enable a safer commute to work</a>    | Partnerships                      |
| 71 | 06 Aug 2020 | <a href="#">Uber buys taxi-software company Autocab to fill U.K. market gaps</a>              | M&A                               |
| 72 | 06 Aug 2020 | <a href="#">Uber announces results for second quarter 2020</a>                                | Financial Announcements           |
| 73 | 03 Aug 2020 | <a href="#">Uber launches first commuter boat service on the Thames</a>                       | Sales, Marketing & Advertisement  |
| 74 | 29 Jul 2020 | <a href="#">Uber, Bajaj Auto tie up to install safety partitions in 1 lakh auto-rickshaws</a> | Sales, Marketing & Advertisement  |
| 75 | 27 Jul 2020 | <a href="#">Carrefour expands Uber Eats service</a>                                           | Partnerships                      |
| 76 | 26 Jul 2020 | <a href="#">Uber Eats launches in Kendal</a>                                                  | Business Expansion                |
| 77 | 16 Jul 2020 | <a href="#">Uber Grocery delivery to launch in Miami</a>                                      | Development, Launch & Termination |
| 78 | 10 Jul 2020 | <a href="#">Uber expands driver-led pricing to all of California</a>                          | Operations Update                 |
| 79 | 09 Jul 2020 | <a href="#">Uber announces partnership with Thames Clippers boat service</a>                  | Partnerships                      |
| 80 | 07 Jul 2020 | <a href="#">Uber to acquire food delivery start-up Postmates in \$2.65bn deal</a>             | M&A                               |
| 81 | 07 Jul 2020 | <a href="#">Uber launches on-demand grocery delivery in Latin America and Canada</a>          | Sales, Marketing & Advertisement  |

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| 82  | 30 Jun 2020 | <a href="#">Uber makes offer to buy delivery service Postmates</a>                                                                                            | M&A                              |
| 83  | 27 Jun 2020 | <a href="#">Uber Eats launches festival menu with amazing street food options</a>                                                                             | Sales, Marketing & Advertisement |
| 84  | 25 Jun 2020 | <a href="#">Uber joins UNESCO's global education coalition</a>                                                                                                | Sales, Marketing & Advertisement |
| 85  | 25 Jun 2020 | <a href="#">Uber expands deeper into Fraser Valley</a>                                                                                                        | Business Expansion               |
| 86  | 25 Jun 2020 | <a href="#">Uber launches new features including priority delivery</a>                                                                                        | Sales, Marketing & Advertisement |
| 87  | 22 Jun 2020 | <a href="#">Budweiser teams up with Uber Eats for the return of football and beer deliveries</a>                                                              | Partnerships                     |
| 88  | 18 Jun 2020 | <a href="#">InComm announces new partnership with American Logistics and Uber Health</a>                                                                      | Business Expansion               |
| 89  | 16 Jun 2020 | <a href="#">Ryder expands integrated partnership with Uber for business by surpassing 100,000 rides</a>                                                       | Business Expansion               |
| 90  | 15 Jun 2020 | <a href="#">Dunkin' announces expansion of relationship with Uber Eats</a>                                                                                    | Business Expansion               |
| 91  | 11 Jun 2020 | <a href="#">Yoshinoya Japanese kitchen ups its digital game, launching company's premier loyalty program, mobile app &amp; delivery platform integrations</a> | Sales, Marketing & Advertisement |
| 92  | 05 Jun 2020 | <a href="#">Uber Eats features black-owned restaurants on US, Canadian delivery platform</a>                                                                  | Sales, Marketing & Advertisement |
| 93  | 02 Jun 2020 | <a href="#">Connect transitioning to Uber app July 1, 2020</a>                                                                                                | Partnerships                     |
| 94  | 01 Jun 2020 | <a href="#">Uber lays off 3,000 more employees because of COVID-19</a>                                                                                        | Redundancies                     |
| 95  | 29 May 2020 | <a href="#">Uber launches rent-by-hour service as demand for ride-hailing services drops</a>                                                                  | Sales, Marketing & Advertisement |
| 96  | 26 May 2020 | <a href="#">MoneyGram International announces partnership with Uber</a>                                                                                       | Business Expansion               |
| 97  | 21 May 2020 | <a href="#">Uber and Lyft sued by california for misclassifying gig workers</a>                                                                               | Legal                            |
| 98  | 19 May 2020 | <a href="#">Uber to cut 3000 more jobs, closes 45 offices</a>                                                                                                 | Operations Update                |
| 99  | 14 May 2020 | <a href="#">Uber lays off 3,500 employees in a three-minute-long Zoom call</a>                                                                                | Redundancies                     |
| 100 | 14 May 2020 | <a href="#">Uber announces new safety measures amid COVID-19 pandemic</a>                                                                                     | Operations Update                |
| 101 | 13 May 2020 | <a href="#">Uber looks to raise \$750 million in notes offering</a>                                                                                           | Equity Offering                  |

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| 102 | 12 May 2020 | <a href="#">Uber launches 'Uber Connect' a new package delivery service to connect with family and friends</a>                                           | Sales, Marketing & Advertisement |
| 103 | 07 May 2020 | <a href="#">Uber announces results for first quarter 2020</a>                                                                                            | Financial Announcements          |
| 104 | 07 May 2020 | <a href="#">Uber Eats shows growth and Uber ride-hailing declines</a>                                                                                    | Operations Update                |
| 105 | 06 May 2020 | <a href="#">Uber to cut 3,700 jobs, CEO Dara Khosrowshahi to waive base salary</a>                                                                       | Redundancies                     |
| 106 | 05 May 2020 | <a href="#">Uber partners with CloudTrucks to help drivers get trucking jobs</a>                                                                         | Business Expansion               |
| 107 | 05 May 2020 | <a href="#">Amid reduced supply and barricading, Ola, Uber hit the road</a>                                                                              | Operations Update                |
| 108 | 04 May 2020 | <a href="#">Dunkin' expands delivery options through new partnership with Uber Eats</a>                                                                  | Business Expansion               |
| 109 | 04 May 2020 | <a href="#">Uber Eats to exit eight smaller markets</a>                                                                                                  | Business Contraction             |
| 110 | 01 May 2020 | <a href="#">Uber hires PR company Sling and Stone to manage public affairs</a>                                                                           | Operations Update                |
| 111 | 30 Apr 2020 | <a href="#">Uber lays off 5,400 employees; Lyft announces to terminate 982 employees amid COVID-19 pandemic</a>                                          | Redundancies                     |
| 112 | 30 Apr 2020 | <a href="#">Uber CTO steps down as company reportedly weighs job cuts</a>                                                                                | Management Changes               |
| 113 | 29 Apr 2020 | <a href="#">Expa taps former Uber and Virgin Galactic executive David Clark to open new London office</a>                                                | Business Expansion               |
| 114 | 29 Apr 2020 | <a href="#">Uber's top engineer is leaving the ride-hailing giant as the coronavirus throws its core taxi business into turmoil</a>                      | Management Changes               |
| 115 | 28 Apr 2020 | <a href="#">Uber's CTO steps down as company reportedly mulls 20 percent layoffs</a>                                                                     | Redundancies                     |
| 116 | 23 Apr 2020 | <a href="#">BluJay Solutions and Uber Freight announce partnership</a>                                                                                   | Business Expansion               |
| 117 | 21 Apr 2020 | <a href="#">Uber expands delivery options for retail, personal items</a>                                                                                 | Sales, Marketing & Advertisement |
| 118 | 21 Apr 2020 | <a href="#">Uber adds 2 new services to the mix</a>                                                                                                      | Sales, Marketing & Advertisement |
| 119 | 20 Apr 2020 | <a href="#">Uber launches two new delivery services to counter COVID-19 drop in demand</a>                                                               | Sales, Marketing & Advertisement |
| 120 | 16 Apr 2020 | <a href="#">Uber expands to phone-based food ordering to serve older Americans</a>                                                                       | Partnerships                     |
| 121 | 16 Apr 2020 | <a href="#">Uber Announces Date of First Quarter 2020 Results Conference Call, Withdrawal of Guidance, and Preliminary First Quarter Financial Items</a> | Financial Announcements          |



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| 122 | 16 Apr 2020 | <a href="#">Tim Hortons U.S. joins hands with Uber Eats for delivery option</a>                                     | Business Expansion                |
| 123 | 06 Apr 2020 | <a href="#">Uber launches effort to help drivers find other work during coronavirus crisis</a>                      | Sales, Marketing & Advertisement  |
| 124 | 01 Apr 2020 | <a href="#">Uber Eats beefs up its grocery delivery offer as COVID-19 lockdowns continue</a>                        | Operations Update                 |
| 125 | 31 Mar 2020 | <a href="#">Uber co-founder Garrett Camp steps down from board director role</a>                                    | Management Changes                |
| 126 | 24 Mar 2020 | <a href="#">Uber appoints former Mattel CEO Robert Eckert to board</a>                                              | Management Changes                |
| 127 | 19 Mar 2020 | <a href="#">Chipotle and Uber Eats sign online delivery partnership</a>                                             | Business Expansion                |
| 128 | 19 Mar 2020 | <a href="#">Self-driving technology companies suspend testing on virus fears</a>                                    | Operations Update                 |
| 129 | 19 Mar 2020 | <a href="#">Uber is doing 70 percent fewer trips in cities hit hard by coronavirus</a>                              | Operations Update                 |
| 130 | 18 Mar 2020 | <a href="#">Uber Eats waives delivery fees for independent restaurants across US and Canada</a>                     | Sales, Marketing & Advertisement  |
| 131 | 18 Mar 2020 | <a href="#">Chipotle further enhances delivery options</a>                                                          | Partnerships                      |
| 132 | 17 Mar 2020 | <a href="#">Uber Eats waives delivery fees for independent restaurants during COVID-19 pandemic</a>                 | Operations Update                 |
| 133 | 17 Mar 2020 | <a href="#">Uber, Lime pause some ridesharing services</a>                                                          | Operations Update                 |
| 134 | 16 Mar 2020 | <a href="#">Uber Eats announces Efeorts to support U.S. &amp; Canada restaurant industry amid COVID-19 concerns</a> | Operations Update                 |
| 135 | 16 Mar 2020 | <a href="#">Uber offers 14 days of financial assistance to drivers with coronavirus</a>                             | Operations Update                 |
| 136 | 11 Mar 2020 | <a href="#">Uber resumes self-driving vehicle testing in San Francisco, US</a>                                      | Development, Launch & Termination |
| 137 | 11 Mar 2020 | <a href="#">Coronavirus forces companies like Uber and Lyft to reckon with workers' rights</a>                      | Operations Update                 |
| 138 | 10 Mar 2020 | <a href="#">Uber expands autonomous vehicle pilot</a>                                                               | Sales, Marketing & Advertisement  |
| 139 | 05 Mar 2020 | <a href="#">Uber looks to new finance models to support autonomous cars</a>                                         | Operations Update                 |
| 140 | 28 Feb 2020 | <a href="#">Uber drivers, pizza delivery workers get lift from EU's Vestager</a>                                    | Operations Update                 |
| 141 | 27 Feb 2020 | <a href="#">Uber app adds translation with support for over 100 languages and easier pickup method</a>              | Development, Launch & Termination |
| 142 | 26 Feb 2020 | <a href="#">Uber Freight partners with Samsara for ELDs and trailer tracking</a>                                    | Business Expansion                |



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| 143 | 26 Feb 2020 | <a href="#">Uber Eats VP steps down amid fierce delivery competition</a>                                                      | Management Changes                |
| 144 | 25 Feb 2020 | <a href="#">Uber taps Adomni for vehicle display ads</a>                                                                      | Business Expansion                |
| 145 | 21 Feb 2020 | <a href="#">Uber returns to service in Colombia</a>                                                                           | Sales, Marketing & Advertisement  |
| 146 | 21 Feb 2020 | <a href="#">Uber launches new feature to discreetly report safety issues</a>                                                  | Sales, Marketing & Advertisement  |
| 147 | 20 Feb 2020 | <a href="#">Blablacar, Mobilize, RATP Et Uber join forces for sustainable mobility by launching the "Mobilité360" project</a> | Business Expansion                |
| 148 | 19 Feb 2020 | <a href="#">Uber partners with EBANX in Brazil to enable balance top ups within Uber Cash</a>                                 | Partnerships                      |
| 149 | 19 Feb 2020 | <a href="#">Experienced technology executive Mandy Ginsberg, CEO of Match Group, joins Uber's board</a>                       | Management Changes                |
| 150 | 14 Feb 2020 | <a href="#">Uber goes low-tech with phone bookings</a>                                                                        | Sales, Marketing & Advertisement  |
| 151 | 06 Feb 2020 | <a href="#">Uber announces results for fourth quarter and full year 2019</a>                                                  | Financial Announcements           |
| 152 | 05 Feb 2020 | <a href="#">Uber gets California DMV license to test self-driving cars on public roads</a>                                    |                                   |
| 153 | 04 Feb 2020 | <a href="#">Uber for Business names new director of product</a>                                                               | Management Changes                |
| 154 | 27 Jan 2020 | <a href="#">Uber's autonomous driving effort enters Washington, D.C.</a>                                                      | Business Expansion                |
| 155 | 21 Jan 2020 | <a href="#">Zomato signs agreement to acquire Uber Eats in India</a>                                                          | M&A                               |
| 156 | 14 Jan 2020 | <a href="#">Hyundai Motor takes human-centered mobility vision to new heights at CES 2020</a>                                 | Sales, Marketing & Advertisement  |
| 157 | 13 Jan 2020 | <a href="#">Uber rolls out new safety feature</a>                                                                             | Sales, Marketing & Advertisement  |
| 158 | 09 Jan 2020 | <a href="#">Uber Announces Date of Fourth Quarter and Full Year 2019 Results Conference Call</a>                              | Financial Announcements           |
| 159 | 09 Jan 2020 | <a href="#">Uber launches real-time face ID check for increased safety</a>                                                    | Development, Launch & Termination |
| 160 | 09 Jan 2020 | <a href="#">Attorney General's Office teams up with Uber to stop human trafficking</a>                                        | Business Expansion                |
| 161 | 07 Jan 2020 | <a href="#">Uber and Hyundai announce air taxi partnership</a>                                                                | Partnerships                      |

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| 162 | 07 Jan 2020 | <a href="#">CES - Hyundai unveils flying taxi concept</a>                                                         | Sales, Marketing & Advertisement  |
| 163 | 07 Jan 2020 | <a href="#">Uber Technologies, Hyundai Motor team up to develop electric air taxi</a>                             | Business Expansion                |
| 164 | 07 Jan 2020 | <a href="#">Uber Transit expands bus ticket sales to Las Vegas: CES Update</a>                                    | Sales, Marketing & Advertisement  |
| 165 | 06 Jan 2020 | <a href="#">Uber teams with Las Vegas bus agency to offer seamless ride service</a>                               | Partnerships                      |
| 166 | 26 Dec 2019 | <a href="#">Uber co-founder Kalanick to leave board, sells entire stake</a>                                       | M&A                               |
| 167 | 26 Dec 2019 | <a href="#">Travis Kalanick to leave Uber before January 2020</a>                                                 | Management Changes                |
| 168 | 25 Dec 2019 | <a href="#">Former Uber CEO Travis Kalanick to resign from company's board</a>                                    | Management Changes                |
| 169 | 23 Dec 2019 | <a href="#">Uber creates a learning algorithm which generates training data for other AI models</a>               | Operations Update                 |
| 170 | 20 Dec 2019 | <a href="#">Uber, Lyft will cease Curbside Airport pickups in Phoenix over higher fees</a>                        | Operations Update                 |
| 171 | 20 Dec 2019 | <a href="#">Uber and Joby partner to launch urban air-taxi service in 2023</a>                                    | Business Expansion                |
| 172 | 17 Dec 2019 | <a href="#">Uber announces OpenChain conformance</a>                                                              | Operations Update                 |
| 173 | 15 Dec 2019 | <a href="#">Uber unveils new safety feature</a>                                                                   | Sales, Marketing & Advertisement  |
| 174 | 14 Dec 2019 | <a href="#">Uber's president resigns, adding to the company's turmoil</a>                                         | Management Changes                |
| 175 | 06 Dec 2019 | <a href="#">Uber sexual assault report shows ridesharing "can be a dangerous way to travel"</a>                   | Economy & Industry                |
| 176 | 22 Nov 2019 | <a href="#">Uber's introduction of dashboard cameras raises privacy worries</a>                                   | Operations Update                 |
| 177 | 06 Nov 2019 | <a href="#">Uber Air takes one software step toward sky</a>                                                       | Operations Update                 |
| 178 | 05 Nov 2019 | <a href="#">Uber announces financial results for the third quarter of 2019, losses stand at \$1.2 B</a>           | Financial Announcements           |
| 179 | 04 Nov 2019 | <a href="#">Uber reports results for Q3 2019</a>                                                                  | Financial Announcements           |
| 180 | 29 Oct 2019 | <a href="#">Uber creates new division for payment services</a>                                                    | Business Expansion                |
| 181 | 29 Oct 2019 | <a href="#">Uber unveils new food delivery drone</a>                                                              | Development, Launch & Termination |
| 182 | 28 Oct 2019 | <a href="#">Uber Health and Cerner announce plan to help consumers gain easier access to medical appointments</a> | Operations Update                 |

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| 183 | 16 Oct 2019 | <a href="#">Burger King and Uber Eats partner for food delivery</a>                                                        | Business Expansion                |
| 184 | 14 Oct 2019 | <a href="#">Uber to buy majority stake in grocery delivery start-up Cornershop</a>                                         | M&A                               |
| 185 | 14 Oct 2019 | <a href="#">Uber lays off roughly 350 more employees in cost-cutting push</a>                                              | Redundancies                      |
| 186 | 09 Oct 2019 | <a href="#">Uber names Lucinda Barlow as senior director of marketing, APAC</a>                                            | Management Changes                |
| 187 | 03 Oct 2019 | <a href="#">Uber launches Uber works to connect workers to Gig jobs</a>                                                    | Sales, Marketing & Advertisement  |
| 188 | 11 Sep 2019 | <a href="#">Uber lays off another 435 employees</a>                                                                        | Redundancies                      |
| 189 | 09 Sep 2019 | <a href="#">Uber opens Uber Freight HQ in Chicago, plans to hire thousands in region</a>                                   | Business Expansion                |
| 190 | 20 Aug 2019 | <a href="#">Uber to open new major hub in Dallas that will create 3000 jobs</a>                                            | Operations Update                 |
| 191 | 10 Aug 2019 | <a href="#">Uber considers grocery deliveries</a>                                                                          | Sales, Marketing & Advertisement  |
| 192 | 09 Aug 2019 | <a href="#">Uber posts record quarterly loss</a>                                                                           | Financial Announcements           |
| 193 | 08 Aug 2019 | <a href="#">Uber announces Q2 2019 financial results</a>                                                                   | Financial Announcements           |
| 194 | 30 Jul 2019 | <a href="#">Uber in talks with European supermarkets for grocery delivery service</a>                                      | Partnerships                      |
| 195 | 29 Jul 2019 | <a href="#">Uber announces layoffs of 400 marketing employees</a>                                                          | Redundancies                      |
| 196 | 29 Jul 2019 | <a href="#">Uber cuts third of marketing staff; Lyft chief operating officer exits</a>                                     | Redundancies                      |
| 197 | 19 Jul 2019 | <a href="#">Uber Eats agrees to amend contracts with restaurants after ACCC probe</a>                                      | Operations Update                 |
| 198 | 18 Jul 2019 | <a href="#">Uber launches Plato, an AI platform for developers</a>                                                         | Sales, Marketing & Advertisement  |
| 199 | 16 Jul 2019 | <a href="#">Uber Air plans to build Skyports for flying taxis by 2023</a>                                                  | New Projects                      |
| 200 | 03 Jul 2019 | <a href="#">Uber Eats added a 'Dine-in' option in select cities</a>                                                        | Sales, Marketing & Advertisement  |
| 201 | 23 Jun 2019 | <a href="#">Denver International Airport changes the way Uber and Lyft pick up passengers</a>                              | Operations Update                 |
| 202 | 12 Jun 2019 | <a href="#">Rebounding from crash, Volvo and Uber show production autonomous car</a>                                       | Development, Launch & Termination |
| 203 | 11 Jun 2019 | <a href="#">AT&amp;T and Uber exploring applications for 5G in air taxis and drones</a>                                    | Business Expansion                |
| 204 | 11 Jun 2019 | <a href="#">Safran and Uber unveil a full-scale cabin mockup based on a vision of on-demand urban air mobility vehicle</a> | Development, Launch & Termination |

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|-----|-------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 205 | 10 Jun 2019 | <a href="#">Uber is making a fintech push with a New York hiring spree</a>                                           | Business Expansion               |
| 206 | 08 Jun 2019 | <a href="#">Uber COO, marketing chief step down in leadership overhaul</a>                                           | Management Changes               |
| 207 | 06 Jun 2019 | <a href="#">Uber to offer helicopter rides on demand in NYC</a>                                                      | Sales, Marketing & Advertisement |
| 208 | 30 May 2019 | <a href="#">Uber reports first quarter 2019 results</a>                                                              | Financial Announcements          |
| 209 | 26 May 2019 | <a href="#">Uber's first CEO resigns from board</a>                                                                  | Management Changes               |
| 210 | 23 May 2019 | <a href="#">PF Chang's offers food delivery services through Uber Eats</a>                                           | Business Expansion               |
| 211 | 21 May 2019 | <a href="#">Charles M. Schulz - Sonoma County Airport expands ground transportation options with Uber access</a>     | Sales, Marketing & Advertisement |
| 212 | 10 May 2019 | <a href="#">Uber valued at \$82bn ahead of IPO</a>                                                                   | Operations Update                |
| 213 | 07 May 2019 | <a href="#">As IPO looms Uber clings to hard-knuckled tactics in pursuit of growth</a>                               | Private Equity                   |
| 214 | 02 May 2019 | <a href="#">RTD, Uber and Masabi launch first-ever Uber Transit ticketing for riders in Denver</a>                   | Sales, Marketing & Advertisement |
| 215 | 30 Apr 2019 | <a href="#">Uber and Lyft stop hiring new drivers in New York City</a>                                               | Operations Update                |
| 216 | 29 Apr 2019 | <a href="#">PayPal to invest \$500m in ride-hailing app Uber</a>                                                     | Business Expansion               |
| 217 | 23 Apr 2019 | <a href="#">Uber's unit Advanced Technologies Group gets \$1bn investment</a>                                        | Business Expansion               |
| 218 | 23 Apr 2019 | <a href="#">Aventri introduces Uber Vouchers to deliver new transportation options</a>                               | Partnerships                     |
| 219 | 19 Apr 2019 | <a href="#">Uber wins RM4.14bil investment from Toyota, SoftBank fund</a>                                            | Business Expansion               |
| 220 | 15 Apr 2019 | <a href="#">Never Mind Uber's IPO - What About Ludwig?</a>                                                           | Sales, Marketing & Advertisement |
| 221 | 15 Apr 2019 | <a href="#">The National Cyber Security Alliance welcomes three prominent industry leaders to board of directors</a> | Management Changes               |
| 222 | 10 Apr 2019 | <a href="#">Lyft shares hit new low as Uber IPO chatter revs up</a>                                                  | Equity Offering                  |
| 223 | 09 Apr 2019 | <a href="#">Ubiquitous Uber autonomous will take "a long time"</a>                                                   | Economy & Industry               |
| 224 | 01 Apr 2019 | <a href="#">Mayor Elorza and Uber announce expansion of JUMP Dockless Electric Bike Share in Providence</a>          | Business Expansion               |
| 225 | 28 Mar 2019 | <a href="#">Uber's Ride Pass program expands to 16 more cities, including Phoenix</a>                                | Sales, Marketing & Advertisement |

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| 226 | 21 Mar 2019 | <a href="#">Uber is hiring a drone pilot for its food delivery service</a>                                                                            | Hirings                          |
| 227 | 19 Mar 2019 | <a href="#">Emirates expands partnership with Uber to offer discounted and free rides in Dubai</a>                                                    | Partnerships                     |
| 228 | 16 Mar 2019 | <a href="#">Uber is launching its IPO next month</a>                                                                                                  | Equity Offering                  |
| 229 | 14 Mar 2019 | <a href="#">Uber close to sale of \$1 billion self-driving stake</a>                                                                                  | M&A                              |
| 230 | 13 Mar 2019 | <a href="#">Uber agrees to pay drivers \$20 million to settle class-action lawsuit</a>                                                                | Legal                            |
| 231 | 04 Mar 2019 | <a href="#">Allstate expands protection for Uber driver-partners, riders to 11 more states</a>                                                        | Sales, Marketing & Advertisement |
| 232 | 04 Mar 2019 | <a href="#">Allstate to begin offering insurance to Utah drivers and riders</a>                                                                       | Sales, Marketing & Advertisement |
| 233 | 26 Feb 2019 | <a href="#">ALYI - Alternet Systems, Inc. targets growing electric vehicle rideshare trend that includes Lyft and Uber</a>                            | Contracts & Tenders              |
| 234 | 22 Feb 2019 | <a href="#">Apple and Uber are trailing in autonomous car development</a>                                                                             | Operations Update                |
| 235 | 19 Feb 2019 | <a href="#">Uber claims the law stops it from providing benefits to contractors</a>                                                                   | Operations Update                |
| 236 | 13 Feb 2019 | <a href="#">Uber founder-backed Voyager launches no-fee crypto trading app</a>                                                                        | Sales, Marketing & Advertisement |
| 237 | 08 Feb 2019 | <a href="#">LMP Automotive Holdings extends rideshare vehicle inventory to Uber and Lyft drivers through shared mobility application, DriveItAway</a> | Operations Update                |
| 238 | 06 Feb 2019 | <a href="#">OpenChain Project adds Microsoft as platinum member</a>                                                                                   | Business Expansion               |
| 239 | 04 Feb 2019 | <a href="#">Uber taps Moovit for transit data, to offer new in-app public transport feature</a>                                                       | Partnerships                     |
| 240 | 01 Feb 2019 | <a href="#">Uber has expanded its US app to offer public transportation for the first time</a>                                                        | Sales, Marketing & Advertisement |
| 241 | 31 Jan 2019 | <a href="#">OnAirParking.com launches new product</a>                                                                                                 | Sales, Marketing & Advertisement |
| 242 | 31 Jan 2019 | <a href="#">Introducing the Uber Fitness Guide</a>                                                                                                    | Sales, Marketing & Advertisement |
| 243 | 31 Jan 2019 | <a href="#">Uber has expanded its app to offer public transportation for the first time</a>                                                           | Business Expansion               |
| 244 | 30 Jan 2019 | <a href="#">AgriTech start-up Indigo to launch 'Uber for US crops'</a>                                                                                | Sales, Marketing & Advertisement |

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| 245 | 29 Jan 2019 | <a href="#">Uber rolls out new program in Pittsburgh</a>                                   | Sales, Marketing & Advertisement  |
| 246 | 29 Jan 2019 | <a href="#">Bitcoin and other cryptocurrencies can now be credited to Uber app</a>         |                                   |
| 247 | 23 Jan 2019 | <a href="#">Starbucks expands US delivery service with Uber Eats</a>                       | Partnerships                      |
| 248 | 23 Jan 2019 | <a href="#">Uber rolls out new rewards program for users</a>                               | Sales, Marketing & Advertisement  |
| 249 | 21 Jan 2019 | <a href="#">Uber planning to launch flying taxi service by 2023</a>                        | Development, Launch & Termination |
| 250 | 20 Jan 2019 | <a href="#">Uber is hiring engineers to develop self-driving bikes and e-scooters</a>      | Hirings                           |
| 251 | 15 Jan 2019 | <a href="#">Uber deploys 1000 for-rent electric scooters, bikes in Mesa and Scottsdale</a> | Operations Update                 |
| 252 | 10 Jan 2019 | <a href="#">Bell unveils the Air Taxi you may be able to hail through Uber next year</a>   | Sales, Marketing & Advertisement  |
| 253 | 08 Jan 2019 | <a href="#">Uber expands JUMP bike-share service to more Seattle neighborhoods</a>         | Sales, Marketing & Advertisement  |
| 254 | 02 Jan 2019 | <a href="#">Uber unveils plan to FLY you to your destination by 2023</a>                   | Sales, Marketing & Advertisement  |
| 255 | 01 Jan 2019 | <a href="#">Founder of UBER to launch his own crypto exchange</a>                          | Strategic Actions                 |
| 256 | 24 Dec 2018 | <a href="#">Uber unveils phone service to users</a>                                        | Sales, Marketing & Advertisement  |
| 257 | 20 Dec 2018 | <a href="#">CNIL fines Uber 400K euros over data breach</a>                                |                                   |
| 258 | 20 Dec 2018 | <a href="#">Uber resuming self-driving car testing in Pennsylvania</a>                     | Development, Launch & Termination |
| 259 | 20 Dec 2018 | <a href="#">Uber to launch JUMP scooters in San Diego</a>                                  | Sales, Marketing & Advertisement  |
| 260 | 19 Dec 2018 | <a href="#">Uber latest company to launch e-scooter program in Atlanta</a>                 | Development, Launch & Termination |
| 261 | 19 Dec 2018 | <a href="#">COMET teams up with Uber, Lyft in 2019</a>                                     | Business Expansion                |
| 262 | 14 Dec 2018 | <a href="#">Uber teams up with Crime Stoppers in Las Vegas to report crime</a>             | Operations Update                 |
| 263 | 12 Dec 2018 | <a href="#">Uber app to launch in Bathurst on Thursday</a>                                 | Development, Launch & Termination |

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|-----|-------------|-------------------------------------------------------------------------------------------------------|-----------------------------------|
| 264 | 12 Dec 2018 | <a href="#">Crisp to offer delivery through Uber Eats</a>                                             | Sales, Marketing & Advertisement  |
| 265 | 11 Dec 2018 | <a href="#">Uber to expand services throughout Kentucky on Dec. 12</a>                                | Sales, Marketing & Advertisement  |
| 266 | 11 Dec 2018 | <a href="#">Uber plans to integrate London bus, Tube timetables into its app</a>                      | Sales, Marketing & Advertisement  |
| 267 | 06 Dec 2018 | <a href="#">Uber plans smaller, more cautious self-driving car launch</a>                             | Development, Launch & Termination |
| 268 | 06 Dec 2018 | <a href="#">UBER plans to begin driving 'A HANDFUL' of self Driving cars on a mile loop</a>           | Sales, Marketing & Advertisement  |
| 269 | 27 Nov 2018 | <a href="#">Uber removed second backup driver from self-driving test cars ahead of fatal crash</a>    | Operations Update                 |
| 270 | 27 Nov 2018 | <a href="#">Uber fined €1M for 2016 data breach by Dutch and British privacy watchdogs</a>            |                                   |
| 271 | 26 Nov 2018 | <a href="#">Lime joins Uber in launching electric bikes in Denver</a>                                 | Development, Launch & Termination |
| 272 | 19 Nov 2018 | <a href="#">Uber expands Its e-bike Service, jump, to 2 more West Coast cities</a>                    | Sales, Marketing & Advertisement  |
| 273 | 15 Nov 2018 | <a href="#">Uber posts \$1 billion loss in quarter as growth in bookings slows</a>                    | Financial Announcements           |
| 274 | 15 Nov 2018 | <a href="#">Uber demonstrates its dedication to open source with Linux Foundation Gold membership</a> | Operations Update                 |
| 275 | 14 Nov 2018 | <a href="#">Uber launches rider loyalty Rewards like credits &amp; upgrades 9 cities</a>              | Sales, Marketing & Advertisement  |
| 276 | 05 Nov 2018 | <a href="#">Uber wants to resume self-driving car tests on public roads</a>                           | Development, Launch & Termination |
| 277 | 05 Nov 2018 | <a href="#">Uber earns 2018 AFP Pinnacle Award Grand Prize for excellence in treasury and finance</a> | Awards & Recognition              |
| 278 | 05 Nov 2018 | <a href="#">Uber reaches agreement with Albany International Airport</a>                              | Business Expansion                |
| 279 | 05 Nov 2018 | <a href="#">DC government teams up with Uber to launch in-app 911 feature</a>                         | Sales, Marketing & Advertisement  |
| 280 | 04 Nov 2018 | <a href="#">Uber launches new subscription service across five US cities</a>                          | Sales, Marketing & Advertisement  |



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|-----|-------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 281 | 02 Nov 2018 | <a href="#">Uber unveils tuition perk for drivers</a>                                                                               | Sales, Marketing & Advertisement  |
| 282 | 31 Oct 2018 | <a href="#">Uber rolls out emergency feature in L.A. that lets 911 dispatchers know car's location</a>                              | Sales, Marketing & Advertisement  |
| 283 | 30 Oct 2018 | <a href="#">Uber rolls out monthly subscription service</a>                                                                         | Sales, Marketing & Advertisement  |
| 284 | 29 Oct 2018 | <a href="#">Rydoo reinvents business travel and expense management integrates with Uber for business</a>                            | Partnerships                      |
| 285 | 25 Oct 2018 | <a href="#">Uber enters Austin's e-scooter market with JUMP scooters</a>                                                            | Sales, Marketing & Advertisement  |
| 286 | 23 Oct 2018 | <a href="#">Uber to launch food delivery drones</a>                                                                                 | Sales, Marketing & Advertisement  |
| 287 | 22 Oct 2018 | <a href="#">Sonoma Clean Power and Uber creating incentives for Uber drivers to switch to electric vehicles</a>                     | Business Expansion                |
| 288 | 22 Oct 2018 | <a href="#">Uber to offer statewide rideshare in North Dakota</a>                                                                   | Sales, Marketing & Advertisement  |
| 289 | 22 Oct 2018 | <a href="#">Uber's head of corporate development Poetzsch resigns</a>                                                               | Management Changes                |
| 290 | 21 Oct 2018 | <a href="#">Uber ambitiously eyes 2021 for food-delivery drones launch</a>                                                          | Sales, Marketing & Advertisement  |
| 291 | 19 Oct 2018 | <a href="#">Uber tests Gig platform to match handy, TaskRabbit</a>                                                                  | Operations Update                 |
| 292 | 18 Oct 2018 | <a href="#">Uber launches freight trailer leasing with Powerloop</a>                                                                | Development, Launch & Termination |
| 293 | 18 Oct 2018 | <a href="#">Attorney General Hunter to give Oklahoma Uber drivers affected by 2016 data breach money after settlement agreement</a> | Operations Update                 |
| 294 | 17 Oct 2018 | <a href="#">Uber targets trucking with new trailer-rental business</a>                                                              | Sales, Marketing & Advertisement  |
| 295 | 17 Oct 2018 | <a href="#">Uber launches new app features to make service safer</a>                                                                | Sales, Marketing & Advertisement  |
| 296 | 16 Oct 2018 | <a href="#">Uber and Mapbox announce upgrade to simplify data visuals</a>                                                           | Business Expansion                |
| 297 | 11 Oct 2018 | <a href="#">Uber Freight's app for truck drivers is getting an upgrade</a>                                                          | Sales, Marketing & Advertisement  |



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|-----|-------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 298 | 11 Oct 2018 | <a href="#">Uber deploys 850 Zoom Rooms with Panacast 2 cameras</a>                                                                  | Operations Update                 |
| 299 | 11 Oct 2018 | <a href="#">Uber may reenter grocery delivery following failed Walmart pilot</a>                                                     | Business Expansion                |
| 300 | 05 Oct 2018 | <a href="#">Uber settles data breach suit with Washington State</a>                                                                  | Legal                             |
| 301 | 03 Oct 2018 | <a href="#">Uber hires another Expedia vet</a>                                                                                       | Management Changes                |
| 302 | 03 Oct 2018 | <a href="#">Uber launches electric scooter service</a>                                                                               | Sales, Marketing & Advertisement  |
| 303 | 27 Sep 2018 | <a href="#">Uber pays £113m to settle hidden data breach</a>                                                                         |                                   |
| 304 | 26 Sep 2018 | <a href="#">Uber launches Jump electric bike charging stations as part of sustainable mobility push</a>                              | Sales, Marketing & Advertisement  |
| 405 | 26 Sep 2018 | <a href="#">Uber agrees to pay Florida \$8.2 million to settle large data breach lawsuit</a>                                         |                                   |
| 306 | 26 Sep 2018 | <a href="#">Uber launches new app and bets on low-income population for growth</a>                                                   | Development, Launch & Termination |
| 307 | 26 Sep 2018 | <a href="#">Hawaii to receive \$700,000 in settlement with Uber over data breach</a>                                                 |                                   |
| 308 | 25 Sep 2018 | <a href="#">Uber launches 24-hour helpline to support customers and drivers</a>                                                      | Sales, Marketing & Advertisement  |
| 309 | 18 Sep 2018 | <a href="#">High-Tech Insurance System for UberX partner drivers</a>                                                                 | Partnerships                      |
| 310 | 12 Sep 2018 | <a href="#">Uber unveils new logo, redesigned mobile app</a>                                                                         | Development, Launch & Termination |
| 311 | 12 Sep 2018 | <a href="#">Uber firm develops a mobile payment platform based on blockchain</a>                                                     | Development, Launch & Termination |
| 312 | 10 Sep 2018 | <a href="#">Uber hires former CIT Group chief financial officer</a>                                                                  | Management Changes                |
| 313 | 10 Sep 2018 | <a href="#">Integrating with Uber for business, Rydoo makes it effortless for business travellers to connect rides with expenses</a> | Partnerships                      |
| 314 | 10 Sep 2018 | <a href="#">Hampton Inn &amp; Suites launches Uber partnership</a>                                                                   | Business Expansion                |
| 315 | 10 Sep 2018 | <a href="#">Uber appoints Rebecca Messina as chief marketing officer</a>                                                             | Management Changes                |
| 316 | 31 Aug 2018 | <a href="#">Wish, Netflix, Uber and 100 others testing WhatsApp's new business API</a>                                               | Development, Launch & Termination |
| 317 | 29 Aug 2018 | <a href="#">Travelstart (Travelstart Online Travel Operations Partners) with Uber (Uber Technologies)</a>                            | Partnerships                      |

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|-----|-------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 318 | 27 Aug 2018 | <a href="#">Uber backs away from autonomous driving</a>                                                                   | Operations Update                 |
| 319 | 23 Aug 2018 | <a href="#">Uber launches new service in Las Vegas</a>                                                                    | Sales, Marketing & Advertisement  |
| 320 | 22 Aug 2018 | <a href="#">Scarlett Hotel Group makes partnership with Uber to drive next-generation of hotel transportation</a>         | Partnerships                      |
| 321 | 21 Aug 2018 | <a href="#">Uber launches Uber Freight for shippers</a>                                                                   | Sales, Marketing & Advertisement  |
| 322 | 21 Aug 2018 | <a href="#">Uber appoints Nelson Chai as new CFO</a>                                                                      | Management Changes                |
| 323 | 20 Aug 2018 | <a href="#">Uber's vision of self-driving cars begins to blur</a>                                                         | Operations Update                 |
| 324 | 16 Aug 2018 | <a href="#">Zoho integrates with Uber for business to simplify expense reporting</a>                                      | Partnerships                      |
| 325 | 16 Aug 2018 | <a href="#">Uber names Ex-NSA General Counsel Matt Olsen as chief security officer</a>                                    | Management Changes                |
| 326 | 15 Aug 2018 | <a href="#">Uber reports Q2 losses of \$404 million, up 32 percent from Q1</a>                                            | Financial Announcements           |
| 327 | 09 Aug 2018 | <a href="#">Uber is working with UT Austin and the army to build what amount to sky taxis</a>                             | Strategic Actions                 |
| 328 | 01 Aug 2018 | <a href="#">Uber names ex-Northrop CEO Sugar as chairman</a>                                                              | Management Changes                |
| 329 | 31 Jul 2018 | <a href="#">Uber shuts down self-driving truck unit</a>                                                                   | Business Contraction              |
| 330 | 31 Jul 2018 | <a href="#">Uber to launch 'app takeover' opposing City Council's proposed cap</a>                                        | Development, Launch & Termination |
| 331 | 25 Jul 2018 | <a href="#">Uber Freight has revealed a partnership with Land O' Lakes</a>                                                | Business Expansion                |
| 332 | 25 Jul 2018 | <a href="#">Uber just lost 2 board members, including Ariana Huffington, an ally of ousted founder Travis Kalanick</a>    | Management Changes                |
| 333 | 25 Jul 2018 | <a href="#">Uber resumes testing for autonomous cars in manual mode</a>                                                   | Operations Update                 |
| 334 | 24 Jul 2018 | <a href="#">Hilton partners with Uber to expand its HHonors app</a>                                                       | Business Expansion                |
| 335 | 18 Jul 2018 | <a href="#">Uber appoints its first Chief Privacy Officer</a>                                                             | Management Changes                |
| 336 | 17 Jul 2018 | <a href="#">Uber's head of policy for flying taxis and autonomous vehicles leaves for self-driving car startup Voyage</a> | Management Changes                |
| 337 | 16 Jul 2018 | <a href="#">Uber lays off self-driving car operators in Pittsburgh, San Francisco</a>                                     | Redundancies                      |
| 338 | 13 Jul 2018 | <a href="#">Uber offers riders chance to pay with mobile payment app Venmo</a>                                            | Business Expansion                |

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| 339 | 12 Jul 2018 | <a href="#">Uber and Venmo Partner to Deliver a New Payment Experience</a>                                                                | Business Expansion               |
| 340 | 12 Jul 2018 | <a href="#">Uber is hiring dozens of 'mission specialists' to help relaunch its autonomous vehicle program after deadly Arizona crash</a> | Hirings                          |
| 341 | 11 Jul 2018 | <a href="#">Uber executive Hornsey resigns in email to staff following discrimination probe</a>                                           | Management Changes               |
| 342 | 11 Jul 2018 | <a href="#">Uber and Lyft's never-ending quest to crush price comparison apps</a>                                                         | Sales, Marketing & Advertisement |
| 343 | 10 Jul 2018 | <a href="#">Uber hires ex-DoJ lawyer as chief compliance officer</a>                                                                      | Management Changes               |
| 344 | 02 Jul 2018 | <a href="#">Allstate partners with Uber in NY</a>                                                                                         | Business Expansion               |
| 345 | 02 Jul 2018 | <a href="#">NYC Drivers for Uber, Other Apps to Get Vision Care Coverage</a>                                                              | Business Expansion               |
| 346 | 02 Jul 2018 | <a href="#">Uber announces launch of dockless bike share in Austin</a>                                                                    | Sales, Marketing & Advertisement |
| 347 | 29 Jun 2018 | <a href="#">California Passes Groundbreaking Consumer Data Privacy Law With Fines for Violations</a>                                      | Economy & Industry               |
| 348 | 27 Jun 2018 | <a href="#">Uber to launch statewide in Alabama</a>                                                                                       | Sales, Marketing & Advertisement |
| 349 | 26 Jun 2018 | <a href="#">Colorado nonprofit and Uber partner to support electric car use</a>                                                           | Business Expansion               |
| 350 | 19 Jun 2018 | <a href="#">Uber appoints Pradeep Parameswaran as new President of India</a>                                                              | Management Changes               |
| 351 | 19 Jun 2018 | <a href="#">Uber Technologies Electrifying the network</a>                                                                                | Sales, Marketing & Advertisement |
| 352 | 17 Jun 2018 | <a href="#">Uber to launch e-bikes sharing service in Seattle</a>                                                                         | Sales, Marketing & Advertisement |
| 353 | 15 Jun 2018 | <a href="#">Uber files patent on AI tech to detect drunk passengers</a>                                                                   | Intellectual property            |
| 354 | 14 Jun 2018 | <a href="#">Startup launches insurance for Uber, Lyft passengers</a>                                                                      | Partnerships                     |
| 355 | 13 Jun 2018 | <a href="#">Uber aiming to patent AI-driven technology that identifies intoxicated passengers</a>                                         | Strategic Actions                |
| 356 | 13 Jun 2018 | <a href="#">Uber, Dubai Tourism announce partnership to offer discounts</a>                                                               | Sales, Marketing & Advertisement |
| 357 | 12 Jun 2018 | <a href="#">Introducing Uber Lite Built in India</a>                                                                                      | Sales, Marketing & Advertisement |

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|-----|-------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 358 | 08 Jun 2018 | <a href="#">Uber and Lyft apply for electric scooter permits in SF</a>                                           |                                   |
| 359 | 02 Jun 2018 | <a href="#">Uber's Autonomous Fleet Could Start Using Waymo Vehicles</a>                                         | Strategic Actions                 |
| 360 | 29 May 2018 | <a href="#">Uber to continue autonomous driving program despite Arizona incident</a>                             | Development, Launch & Termination |
| 361 | 24 May 2018 | <a href="#">Uber to develop flying taxis in Paris with new €20m research centre</a>                              | Business Expansion                |
| 362 | 18 May 2018 | <a href="#">Uber imagines five-minute food deliveries with hamburger-toting drones</a>                           | Development, Launch & Termination |
| 363 | 09 May 2018 | <a href="#">Walmart and Uber close two-year partnership</a>                                                      | Business Expansion                |
| 364 | 08 May 2018 | <a href="#">Uber partnering with US army on flying car technology</a>                                            | Business Expansion                |
| 365 | 08 May 2018 | <a href="#">Uber, US Army To Test Quiet Aircraft Technology</a>                                                  | R&D                               |
| 366 | 08 May 2018 | <a href="#">NASA signs second space act agreement with Uber Technologies</a>                                     | Partnerships                      |
| 367 | 25 Apr 2018 | <a href="#">Leeds United signs partnership with Uber</a>                                                         | Business Expansion                |
| 368 | 11 Apr 2018 | <a href="#">Uber redesigns driver app</a>                                                                        | Development, Launch & Termination |
| 369 | 10 Apr 2018 | <a href="#">A New App, Built For and With Drivers</a>                                                            | Development, Launch & Termination |
| 370 | 09 Apr 2018 | <a href="#">Uber agrees to buy dockless bike-sharing startup Jump after testing the service in San Francisco</a> | Operations Update                 |
| 371 | 28 Mar 2018 | <a href="#">Uber Wins Taxi Ride-Sharing Antitrust Appeal in Philadelphia</a>                                     | Legal                             |
| 372 | 21 Mar 2018 | <a href="#">Facebook and Uber Eager to Test Drones in Kenya</a>                                                  | Business Expansion                |
| 373 | 19 Mar 2018 | <a href="#">Uber Halts Autonomous Vehicle Testing After Death</a>                                                | Operations Update                 |
| 374 | 09 Mar 2018 | <a href="#">Uber Expanding Autonomous Truck Testing in Arizona</a>                                               | Strategic Actions                 |
| 375 | 05 Mar 2018 | <a href="#">Lawsuit filed against Uber for massive data breach</a>                                               |                                   |
| 376 | 03 Mar 2018 | <a href="#">Uber Cofounder Announces Eco Cryptocurrency Project</a>                                              | Development, Launch & Termination |
| 377 | 02 Mar 2018 | <a href="#">Allstate partners with Uber Technologies</a>                                                         | Partnerships                      |
| 378 | 28 Feb 2018 | <a href="#">Uber's comp-style program could feed into worker classification dispute</a>                          | Sales, Marketing & Advertisement  |

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|-----|-------------|--------------------------------------------------------------------------------------------------------|-----------------------------------|
| 379 | 28 Feb 2018 | <a href="#">Duquesne Light, Uber announce electric vehicle partnership</a>                             | Business Expansion                |
| 380 | 22 Feb 2018 | <a href="#">Uber to launch operations in Greenville</a>                                                | Sales, Marketing & Advertisement  |
| 381 | 21 Feb 2018 | <a href="#">Uber Launches New Carpool Service in Denver</a>                                            | Sales, Marketing & Advertisement  |
| 382 | 20 Feb 2018 | <a href="#">Uber announces Cincinnati Mobility Lab, will focus on analytics</a>                        | Sales, Marketing & Advertisement  |
| 383 | 14 Feb 2018 | <a href="#">Uber to launch service in Shreveport</a>                                                   | Sales, Marketing & Advertisement  |
| 384 | 12 Feb 2018 | <a href="#">Uber, Google agree to settlement in high-profile lawsuit over autonomous driving tech</a>  | Strategic Actions                 |
| 385 | 23 Jan 2018 | <a href="#">Uber has hired a chief diversity officer</a>                                               | Management Changes                |
| 386 | 17 Jan 2018 | <a href="#">Uber Nearing Autonomous Cars Without Human Backup Driver</a>                               | Strategic Actions                 |
| 387 | 08 Jan 2018 | <a href="#">AirAsia and Uber partner for seamless, affordable, convenient travel</a>                   | Partnerships                      |
| 388 | 07 Jan 2018 | <a href="#">Uber selects NVIDIA technology to power its self-driving fleets</a>                        | Contracts & Tenders               |
| 389 | 04 Jan 2018 | <a href="#">Rare Malware Targeting Uber's Android App Uncovered</a>                                    |                                   |
| 390 | 20 Dec 2017 | <a href="#">Barney Harford joins Uber as chief operating officer</a>                                   | Management Changes                |
| 391 | 01 Dec 2017 | <a href="#">Uber security execs depart after CEO criticizes practices</a>                              | Management Changes                |
| 392 | 21 Nov 2017 | <a href="#">Uber reportedly hid massive data breach affecting millions</a>                             |                                   |
| 393 | 21 Nov 2017 | <a href="#">Uber car leasing venture cutting 228 Arizona jobs</a>                                      | Redundancies                      |
| 394 | 20 Nov 2017 | <a href="#">Uber adds live location sharing to app, plans to deploy 24,000 self-driving Volvo SUVs</a> | Sales, Marketing & Advertisement  |
| 395 | 20 Nov 2017 | <a href="#">Volvo Cars to supply tens of thousands of autonomous drive compatible cars to Uber</a>     | Contracts & Tenders               |
| 396 | 08 Nov 2017 | <a href="#">Uber reaches for the sky with plan to launch flying taxi service</a>                       | Sales, Marketing & Advertisement  |
| 397 | 08 Nov 2017 | <a href="#">Uber to launch short-haul airborne service</a>                                             | Development, Launch & Termination |
| 398 | 08 Nov 2017 | <a href="#">Uber and NASA to work together on flying cars</a>                                          | Business Expansion                |

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|-----|-------------|---------------------------------------------------------------------------------------------|-----------------------------------|
| 399 | 28 Oct 2017 | <a href="#">Uber hires ex-DoJ and Pepsi lawyer as chief legal officer</a>                   | Management Changes                |
| 400 | 26 Oct 2017 | <a href="#">Uber Visa Card to debut in US</a>                                               | Partnerships                      |
| 401 | 26 Oct 2017 | <a href="#">Uber Technologies Partners with Visa and Barclays</a>                           | Partnerships                      |
| 402 | 13 Oct 2017 | <a href="#">Uber's Mission Bay headquarters opening delayed to early 2020</a>               | Strategic Actions                 |
| 403 | 10 Oct 2017 | <a href="#">Snapchat deals Context Cards with info from TripAdvisor, OpenTable and Uber</a> | Business Expansion                |
| 404 | 30 Sep 2017 | <a href="#">Defiant Travis Kalanick appoints two members to Uber board</a>                  | Management Changes                |
| 405 | 29 Sep 2017 | <a href="#">CIB-Egypt, UBER align exclusive offers to CIB credit cardholders</a>            | Partnerships                      |
| 406 | 18 Sep 2017 | <a href="#">Uber looking to replace some top execs, get new CFO &amp; Legal</a>             | Management Changes                |
| 407 | 12 Sep 2017 | <a href="#">Uber chief legal officer to exit</a>                                            | Management Changes                |
| 408 | 11 Sep 2017 | <a href="#">Uber selects Khosrowshahi as new CEO to repair company's image</a>              | Management Changes                |
| 409 | 28 Aug 2017 | <a href="#">Uber Utilizes Technology To Enhance Safety For Drivers</a>                      | Sales, Marketing & Advertisement  |
| 410 | 28 Aug 2017 | <a href="#">Uber selects Expedia CEO to lead company out of crisis</a>                      | Management Changes                |
| 411 | 24 Aug 2017 | <a href="#">Uber launches new rewards system letting you earn free rides</a>                | Sales, Marketing & Advertisement  |
| 412 | 23 Aug 2017 | <a href="#">Uber launches new payment option, adds UPI, BHIM</a>                            | Partnerships                      |
| 413 | 15 Aug 2017 | <a href="#">Uber launching services across Golden Triangle</a>                              | Sales, Marketing & Advertisement  |
| 414 | 11 Aug 2017 | <a href="#">Uber announces expansion into Sherman</a>                                       | Sales, Marketing & Advertisement  |
| 415 | 11 Aug 2017 | <a href="#">Uber's first employee Ryan Graves steps down, but will remain on the board</a>  | Management Changes                |
| 416 | 09 Aug 2017 | <a href="#">Uber could close its US car leasing programme affecting 500 jobs</a>            | Redundancies                      |
| 417 | 31 Jul 2017 | <a href="#">Uber partners with Barclays to launch co-branded credit card</a>                | Development, Launch & Termination |
| 418 | 28 Jul 2017 | <a href="#">Uber is considering GE CEO Jeff Immelt for top role</a>                         | Management Changes                |
| 419 | 26 Jul 2017 | <a href="#">Uber goes on hiring spree</a>                                                   | Hirings                           |
| 420 | 25 Jul 2017 | <a href="#">Uber launches Driver Profile to gain rider's trust</a>                          | Sales, Marketing & Advertisement  |

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|-----|-------------|----------------------------------------------------------------------------------------|-----------------------------------|
| 421 | 21 Jul 2017 | <a href="#">Lyft to double staff numbers in drive to develop autonomous car</a>        | Business Expansion                |
| 422 | 14 Jul 2017 | <a href="#">Former SoftBank COO Nikesh Arora being considered for CEO post at Uber</a> | Management Changes                |
| 423 | 10 Jul 2017 | <a href="#">Ride-sharing app Uber to launch in Laredo this Wednesday</a>               | Sales, Marketing & Advertisement  |
| 424 | 06 Jul 2017 | <a href="#">Ride share operators roll out wheelchair accessible vehicles in Philly</a> | Sales, Marketing & Advertisement  |
| 425 | 04 Jul 2017 | <a href="#">Uber to appoint one of many great female leaders as CEO</a>                | Management Changes                |
| 426 | 30 Jun 2017 | <a href="#">Uber Technologies launches speedboat service in Croatia</a>                | Development, Launch & Termination |
| 427 | 29 Jun 2017 | <a href="#">Uber, Lyft service to begin at OIA</a>                                     | Partnerships                      |
| 428 | 28 Jun 2017 | <a href="#">Uber to offer passengers cheaper rides from airport</a>                    | Sales, Marketing & Advertisement  |
| 429 | 27 Jun 2017 | <a href="#">Uber to launch in Corpus Christi</a>                                       | Sales, Marketing & Advertisement  |
| 430 | 27 Jun 2017 | <a href="#">Uber to begin services in the Rio Grande Valley</a>                        | Sales, Marketing & Advertisement  |
| 431 | 22 Jun 2017 | <a href="#">CEO of Uber Travis Kalanick resigns</a>                                    | Management Changes                |
| 432 | 20 Jun 2017 | <a href="#">Uber rolls out in-app tipping for drivers</a>                              | Sales, Marketing & Advertisement  |
| 433 | 19 Jun 2017 | <a href="#">Uber CEO steps down, ITF calls for action</a>                              | Management Changes                |
| 434 | 15 Jun 2017 | <a href="#">Uber, Lyft cleared to launch in Alaska</a>                                 | Operations Update                 |
| 435 | 13 Jun 2017 | <a href="#">David Bonderman resigns from Uber board</a>                                | Management Changes                |
| 436 | 12 Jun 2017 | <a href="#">Uber appointed a Nestle executive to be an independent board member</a>    | Management Changes                |
| 437 | 11 Jun 2017 | <a href="#">Uber's chief business officer to resign</a>                                | Management Changes                |
| 438 | 07 Jun 2017 | <a href="#">Uber hires new exec to improve company culture</a>                         | Management Changes                |
| 439 | 06 Jun 2017 | <a href="#">Apple Music exec Bozoma Saint John joins Uber as chief brand officer</a>   | Management Changes                |
| 440 | 06 Jun 2017 | <a href="#">Uber to launch service in Salem</a>                                        | Sales, Marketing & Advertisement  |
| 441 | 01 Jun 2017 | <a href="#">MegaFon and Uber sign agreement of intent</a>                              | Partnerships                      |



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|-----|-------------|--------------------------------------------------------------------------------------------------------|-----------------------------------|
| 442 | 01 Jun 2017 | <a href="#">Uber to hire CFO as revenues top record</a>                                                | Management Changes                |
| 443 | 31 May 2017 | <a href="#">Uber fires executive at centre of Waymo row</a>                                            | Management Changes                |
| 444 | 26 May 2017 | <a href="#">Uber plans to resume ride-hailing operations in Alaska in June</a>                         | Sales, Marketing & Advertisement  |
| 445 | 23 May 2017 | <a href="#">Uber threatens to terminate contract of key autonomous vehicle engineer</a>                | Personnel Announcements           |
| 446 | 19 May 2017 | <a href="#">Uber expands to Branson</a>                                                                | Business Expansion                |
| 447 | 19 May 2017 | <a href="#">Uber names Salle Yoo chief legal officer, creating GC vacancy</a>                          | Management Changes                |
| 448 | 18 May 2017 | <a href="#">Uber launches Uber Freight, its app for long-haul trucking jobs</a>                        | Development, Launch & Termination |
| 449 | 18 May 2017 | <a href="#">Uber and Lyft are coming back to Austin</a>                                                | Business Expansion                |
| 450 | 17 May 2017 | <a href="#">Uber adds new service in Orland</a>                                                        | Sales, Marketing & Advertisement  |
| 451 | 16 May 2017 | <a href="#">Tesla turned down a major partnership with Uber last year</a>                              | Business Expansion                |
| 452 | 26 Apr 2017 | <a href="#">High-flying Uber announces plans to have air taxis in the sky by 2020</a>                  | Development, Launch & Termination |
| 453 | 26 Apr 2017 | <a href="#">Bell Helicopter Textron to Partner with Uber Technologies</a>                              | Partnerships                      |
| 454 | 25 Apr 2017 | <a href="#">Uber selects Aurora Flight Sciences to develop eVTOL aircraft for Uber Elevate Network</a> | Development, Launch & Termination |
| 455 | 25 Apr 2017 | <a href="#">UberEATS is launching in Pittsburgh</a>                                                    | Development, Launch & Termination |
| 456 | 21 Apr 2017 | <a href="#">VIA Metropolitan Transit and Uber Technologies announce partnership</a>                    | Business Expansion                |
| 457 | 27 Mar 2017 | <a href="#">Uber halts self-driving cars tests in Arizona after crash</a>                              | Operations Update                 |
| 458 | 27 Mar 2017 | <a href="#">LeasePlan Partners with Uber Technologies</a>                                              | Business Expansion                |
| 459 | 22 Mar 2017 | <a href="#">Block Advisors, H&amp;R Block partner with Uber to help drivers get their taxes won</a>    | Partnerships                      |
| 460 | 15 Mar 2017 | <a href="#">Jet Airways Partners with Uber Technologies</a>                                            | Partnerships                      |
| 461 | 09 Mar 2017 | <a href="#">Zipcar Partners with Uber Technologies</a>                                                 | Business Expansion                |
| 462 | 24 Feb 2017 | <a href="#">Waymo sues Uber for alleged theft of self-driving technology</a>                           | Legal                             |



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|-----|-------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 463 | 21 Feb 2017 | <a href="#">Intuit Canada and Uber announce national partnership</a>                                               | Business Expansion               |
| 464 | 08 Feb 2017 | <a href="#">Avis Budget signs agreement with Uber Technologies</a>                                                 | Contracts & Tenders              |
| 465 | 01 Feb 2017 | <a href="#">Cleartrip Partners with Uber</a>                                                                       | Business Expansion               |
| 466 | 31 Jan 2017 | <a href="#">Cleartrip partners with Uber</a>                                                                       | Partnerships                     |
| 467 | 15 Dec 2016 | <a href="#">Uber's autonomous car caught in traffic violation in California</a>                                    | Regulatory & Policy              |
| 468 | 15 Dec 2016 | <a href="#">MillerCoors and Uber team up to help reduce drunk driving nationwide with discounted holiday rides</a> | Business Expansion               |
| 469 | 04 Nov 2016 | <a href="#">Uber rolls out first debit card in Latin America</a>                                                   | Partnerships                     |
| 470 | 03 Nov 2016 | <a href="#">Uber launches its first Debit Card in Latin America, in partnership with Bankaool</a>                  | Partnerships                     |
| 471 | 01 Nov 2016 | <a href="#">Maven and Uber to pilot flexible car-sharing offer</a>                                                 | Operations Update                |
| 472 | 01 Nov 2016 | <a href="#">Uber to accept prepaid commuter cards for uberPOOL payments</a>                                        | Products & Brands                |
| 473 | 24 Oct 2016 | <a href="#">Uber Technologies partners with Bankaool</a>                                                           | Partnerships                     |
| 474 | 05 Oct 2016 | <a href="#">Le Travenues Technology (Ixigo) Partners with Uber Technologies and Redbus</a>                         | Partnerships                     |
| 475 | 14 Sep 2016 | <a href="#">Alberto Musalem to resign from New York Fed</a>                                                        | Management Changes               |
| 476 | 18 Aug 2016 | <a href="#">Volvo Car to form joint venture with Uber Technologies</a>                                             | Partnerships                     |
| 477 | 15 Aug 2016 | <a href="#">Acculynk launches Uber on its debit card routing platform</a>                                          | Partnerships                     |
| 478 | 19 Jul 2016 | <a href="#">DigitalGlobe partners with Uber to improve experience for riders and drivers</a>                       | Partnerships                     |
| 479 | 07 Jul 2016 | <a href="#">Metropolitan Transit System announces new partnership with Uber</a>                                    | Partnerships                     |
| 480 | 27 Jun 2016 | <a href="#">Uber partners with Pandora to offer drivers streaming service</a>                                      | Business Expansion               |
| 481 | 17 Jun 2016 | <a href="#">Choice privileges expands your extras</a>                                                              | Business Expansion               |
| 482 | 12 Jun 2016 | <a href="#">Uber Elevate announces partnership with Signature Flight Support to configure Skyport operations</a>   | Partnerships                     |
| 483 | 04 Jun 2016 | <a href="#">Wal-Mart to use Uber and Lyft for deliveries</a>                                                       | Sales, Marketing & Advertisement |
| 484 | 30 Mar 2016 | <a href="#">Hilton and Uber expand partnership, unveil app integration for simplified travel</a>                   | Business Expansion               |
| 485 | 11 Feb 2016 | <a href="#">American Airlines Partners with Uber Technologies</a>                                                  | Business Expansion               |
| 486 | 11 Jan 2016 | <a href="#">HNA Group Partners with Uber Technologies</a>                                                          | Business Expansion               |

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| 487 | 28 Dec 2015 | <a href="#">Uber partners with major Chinese auto maker</a>                                        | Partnerships       |
| 488 | 23 Dec 2015 | <a href="#">Uber partners with Chinese auto maker</a>                                              | Business Expansion |
| 489 | 02 Dec 2015 | <a href="#">Uber and Enterprise-Rent-a-Car partner to add more drivers to Denver</a>               | Business Expansion |
| 490 | 04 Nov 2015 | <a href="#">Uber Technologies Partners with ItzCash Card</a>                                       | Business Expansion |
| 491 | 14 Oct 2015 | <a href="#">Shopify partners with Uber to ensure same-day delivery</a>                             | Business Expansion |
| 492 | 01 Sep 2015 | <a href="#">Hilton and Uber partner to create a seamless travel experience</a>                     | Partnerships       |
| 493 | 13 Jul 2015 | <a href="#">Taxi aggregator Uber to accept credit card payments in India; ties up with Zaakpay</a> | Business Expansion |
| 494 | 10 Jul 2015 | <a href="#">du signs collaboration agreement with Uber Technologies</a>                            | Partnerships       |
| 495 | 19 May 2015 | <a href="#">Uber gutted Carnegie Mellon's top robotics lab to build self-driving cars</a>          | Business Expansion |
| 496 | 06 May 2015 | <a href="#">Uber to form Partnership with Foodpanda and ZO Rooms</a>                               | Business Expansion |
| 497 | 24 Feb 2015 | <a href="#">Starwood Hotels &amp; Resorts Partners with Uber Technologies</a>                      | Business Expansion |