



UNIVERSITY OF MESSINA

Department of Economics

DOCTORAL THESIS

**Designing Platform Powerhouses:
Strategies for Transaction Platforms to Gain a Competitive
Advantage and Trigger Positive Network Effects**

Author:
Najeebullah Arghistani

Supervisor:
Prof. Fabrizio Cesaroni

PhD Coordinator: Prof. Fabrizio Cesaroni

Scientific Disciplinary Sector: SECS-P/08

Academic Year 2021/2022

*A thesis submitted in fulfillment of the requirements
for the degree of Doctor of Philosophy*

Acknowledgments

Conducting this PhD has been a lifechanging experience for me, and it would not be possible without the support of many friends, my family, and colleagues during the past three years.

Prof. Fabrizio Cesaroni, my supervisor, deserves my heartfelt gratitude for his advice and encouragement throughout my PhD path. His insightful suggestions and feedback have been a source of inspiration and encouragement for me. He was much more than a supervisor. I am especially grateful for his support and presence during the Covid-19 pandemic and the events happening back in my home country, Afghanistan. In all stages, I was treated like a colleague and allowed to explore my way into the academic world while being reminded of the PhD program's aims and the importance of learning to conduct high-quality research. I extend this gratitude also towards the entire Economics department; everyone welcomed me in Messina five years ago when I started my Master's degree in International Management and supported me during the PhD program.

To mention a few names from the department, prof. Cristina Cinici, Alba Marino, and Tindara Abbate challenged me each time to improve my research and provided me with constructive feedback for all three research papers in my thesis. I also express my gratitude towards the two reviewers that have thoroughly read my thesis and provided novel feedback for improving the quality and scientific rigor of this study.

Indeed, I would like to thank the respondents from various platform businesses who were so humble to share their knowledge on how they designed their activities and value propositions so that it can serve as a guide for other practitioners, particularly those interested in designing successful platforms.

When I was deciding on the visiting period, Prof. Antonio Crupi suggested and facilitated my exchange at the University of Cambridge and to research at the Institute for Manufacturing (IfM) in the Center for Technology Management (CTM). That opportunity certainly changed my vision about the future and opened many other windows; one is my

ongoing collaboration with the Strategic Technology Innovation Management (STIM) Consortium. During the six months in Cambridge, Dr. Rob Phaal is one of the people I have found very helpful, visionary, and humble. He introduced me to technology management and the engineering components of digital platforms. Along with him, Dr. Letizia Mortara welcomed me; her input on my research and kindness throughout my visit will always be among my fondest recollections of Cambridge. During this time, I also met other young students and researchers, usually leading to cordial connections in the academic and research world.

My family has always supported me and encouraged me to pursue my academic career, especially my PhD. They counted on me and trusted my judgment from the day I went to primary school. Today, this would not be possible without the support of my parents, Khalil, Mariam, Sanam, Esmat, Zabi, and everyone else over the years.

Since I have been living away from my family for nearly ten years, certain incredible friends have always given me a sense of belonging, encouraged me, and shown genuine compassion in our friendship. Thanks, Erik; I would make those trips again in a heartbeat; thanks Matea, Berdi, Marta and Pepe; and a particular thanks to my colleagues in Mohd for putting up with me while I concentrated on my research.

Table of Contents

Acknowledgments..... 3

Table of Contents..... 5

List of figures 8

List of tables..... 9

List of abbreviations..... 10

Chapter 1. Introduction..... 11

1.1 Research Background 11

1.2 Research Objective 14

1.3 Research Scope 14

1.4 Structure of the thesis..... 15

1.5 Abstracts 16

1.6 Research Contributions 18

 1.6.1 Contributions of the Thesis 18

 1.6.2 Contributions during the PhD 19

1.7 Conclusions and outlooks for further research..... 20

1.8 References..... 21

Chapter 2. Platforms Ecosystem, a Bibliometric Analysis..... 25

2.1 Introduction..... 25

2.2 Literature Review: 29

2.3 Data and Methods 31

2.4 Results..... 34

 2.4.1 Platforms for service innovation and value co-creation..... 36

 2.4.2 Platform governance and complementors centric perspective 38

 2.4.3 Business Ecosystem and Innovation Ecosystems 39

 2.4.4 Competitive and innovation-based dynamics for ecosystems..... 41

 2.4.5 Platform business models..... 41

 2.4.6 Industry platforms 43

2.5 Discussions and directions for future research..... 44

2.5 Conclusion 46

2.6 Reference 81

Chapter 3. Sources of Competitive Advantage In Designing Digital Transaction Platforms 91

3.1 Introduction:..... 91

3.2 Theoretical background and conceptual framework 94

3.3	Method	101
3.4	Results and findings	104
3.4.1	Sicilying: Product quality as a competitive advantage.....	104
3.4.2	Icast modeling: A unique setting to digitalize the traditional model casting process	105
3.4.3	The-NTWK: A community of Platform enthusiasts	107
3.5	Discussions	109
3.6	Conclusion and future research opportunities.....	113
3.7	References.....	115
Chapter 4. Factors affecting Platform value propositions		122
4.1	Introduction.....	122
4.2	Theoretical Background.....	125
4.2.1	Platform business models and value propositions	125
4.2.2	Value proposition development	126
4.2.3	Digital infrastructure Sophistication	129
4.2.4	Existence of trust and safety mechanisms.....	130
4.2.5	Platform user network heterogeneity	131
4.2.6	Dynamic value propositions:	132
4.3	Research Method:	133
4.3.1	Calibration.....	133
4.3.2	Outcome.....	134
4.3.3	Conditions	134
4.3.4	Data source and case selection.....	135
4.4	Data processing and results.....	137
4.5	Discussions	142
4.5.1	Necessary conditions for the actor and the stakeholder perspectives	142
4.5.2	Necessary conditions for the generic value proposition perspectives.....	143
4.6	Conclusion	143
4.7	References.....	150

List of figures

Chapter 2. Bibliometric Analysis

- Figure 1. Volume of Platform papers by stream
- Figure 2 Publications in the past 15 Years
- Figure 3 visualized bibliometric network of clustered articles included in the dataset using the Bibliometric Coupling analysis technique
- Figure 4. Volume of Platform Ecosystem papers by cluster
- Figure 5. Types of Platform-based business models

Chapter 3. Sources of Competitive Advantage in Designing Digital Transaction Platforms

- Figure 1. Core interaction and the essential functions required to run the core interaction,
Source: own elaboration

Chapter 4: Factors Affecting Platform Value Propositions

- Figure 1 The configuration effects of five factors on platform business model performance

List of tables

Chapter 2. Bibliometric Analysis

- Table 1. Steps to filter the dataset
- Table 2. The 25 most influential sources
- Table 3 (Appendix A) Research agenda for platform ecosystem research
- Table 4 (Appendix B) List of research articles analyzed in the Bibliometric Analysis.

Chapter 3. Sources of Competitive Advantage in Designing Digital Transaction Platforms

- Table 1. An integrated framework of the core platform design problems and related literature references
- Table 2. Value-creating activities and the emerging competitive advantage

Chapter 4: Factors Affecting Platform Value Propositions

- Table 1. Calibration rules
- Table 2. Case description
- Table 3. Data matrix
- Table 4. MvQCA results
- Table 5. Case example quotes by the respondents
- Table 6. (Appendix A) Literature review summary

List of abbreviations

AI	Artificial Intelligence
AVP	Actor Value Proposition
AWS	Amazon Web Service
B2B	Business-to-Business
B2C	Business-to-Customer
C2C	Customer-to-Customer
CEO	Chief Executive Officer
COO	Chief Operating Officer
CTO	Chief Technology Officer
DIS	Digital infrastructure sophistication
DVP	Dynamic value proposition
IS	Information Systems
mvQCA	MultiValue Qualitative Comparative Analysis
PER	Performance
QCA	Qualitative Comparative Analysis
RBV	Resource-Based View
S-D	Service-Dominant
ST	Stakeholders Theory
SVP	Stakeholder Value Proposition
TSM	Trust and safety mechanisms
UNH	User network heterogeneity
VP	Value Proposition
VPP	Value Proposition Perspective

Chapter 1. Introduction

1.1 Research Background

The significant focus on digital platforms in information systems (IS) research, strategy, and other disciplines (Cennamo & Santaló, 2019; de Reuver, Sørensen, et al., 2018; Thomas et al., 2014a) can be explained by platform businesses disrupting long-established industry structures and undermining incumbent enterprises' positions in respective industries. Platform-based technology ecosystems are innovative ways of arranging the innovations of independent actors around a solid product system. In many domains, this collaborative arrangement outperforms traditional, vertically integrated systems because of better generativity—the ecosystem's ability to stimulate complementary innovation from autonomous, heterogeneous firms—which expands the platform's usage scope and value to users. Airbnb has over 4 million listings, which is more than the top five hotel brands combined, and Uber has a network of 7 million drivers, which dwarfs local taxi businesses; and each month, Facebook has 2 billion active users, outnumbering newspaper subscriptions (Hein, Schreieck, Riasanow, Setzke, Wiesche, Böhm, et al., 2020).

Scholars from numerous disciplines examine how digital platforms manage an ecosystem of actors to co-create value (Lusch & Nambisan, 2015a). These disciplines include economics elements from a market-based perspective (Parker et al., 2016), technology management from a technical standpoint (Tiwana et al., 2010b), and information systems from a socio-technical view (de Reuver, Sørensen, et al., 2018). The concept of platform ecosystems, along with a group of related concepts such as business models, platforms, coopetition, multisided markets, networks, technological systems, supply chains, and value networks, has increased awareness of and focused emphasis on new methods of value creation and value capture. However, because it is used together with many different constructs, there is uncertainty about how they connect in terms of boundaries, redundancy, applicability, and unit and focus of analysis (Adner, 2017b). This challenge further extends with the field's multidisciplinary and growing state of the art. For instance, there is rapid growth in the multisided markets literature and its connection with the platform ecosystem; platforms are positioned in different levels of analysis and organizational settings: within firms, across supply chains, and industry ecosystems (Gawer, 2014), complications in the integrative capabilities and the governance structure of the platform ecosystem (Helfat & Raubitschek, 2018a), disruption in platform ecosystems (Ozalp et al., 2018),

and other evolving implications of such platforms. As a result, bibliometric analysis can serve for summarizing recent literature, with the goal of first drawing a broad picture of relevant academic research. By learning from the existing state of the art, I intend to gain a proper knowledge of the conceptual challenges and, more importantly, to detect development trends and provide meaningful suggestions on future research directions in this important and evolving area.

Hein et al. (2020, p. 90) summarized different perspectives on the platform ecosystem. They proposed that “a digital platform ecosystem comprises a platform owner that implements governance mechanisms to facilitate value-creating mechanisms on a digital platform between the platform owner and an ecosystem of autonomous complementors and consumers”. As a result, platform ecosystems generate two interrelated dimensions, developing new technologies (i.e., innovation), and business development (i.e., technology commercialization) (Isckia et al., 2020). This study focuses on the business development side of the platform ecosystem since it provides access to consumers of products and services while also performing the functions of commercialization and revenue generation (Isckia et al., 2020), and leading to disintermediated industries (Wirtz et al., 2019). This perspective covers both transaction platforms and innovation platforms. Innovation platforms are technological building blocks that serve as a basis for a large number of innovators to construct supplemental services or products on top of them. Transaction platforms, on the other hand, are specialized markets that facilitate the exchange of commodities, services, and information; they operate as intermediaries between different categories of consumers who would not otherwise interact with one another (Gawer, 2014). Transaction platforms have piqued the curiosity of academics from a variety of fields, and some even contend that such platforms could serve as the fundamental organizing principle for the emerging economy (e.g., Kenney & Zysman, 2016; Parker et al., 2016). A growing body of research on transaction platforms has concentrated on leadership (Gawer & Cusumano, 2008), economics (Eisenmann et al., 2006), launch (Bhargava et al., 2013), platform competition (Tiwana, 2015) and platform governance strategies (Gorwa, 2019).

Digital transaction platforms are fundamentally changing how businesses create and distribute value to end users and, as a result, how they compete in the market (Cennamo, 2019). Saadatmand et al. (2019) proposed that understanding competitive advantage is critical for platform businesses. Key factors in determining competitive advantage in platform relate to the capacity of platform

businesses to encourage value cocreation with their network of complementors (Adner & Kapoor, 2010a); and their ability to facilitate an exchange of resources that platforms do not have direct access to (Ketonen-Oksi et al., 2016). Most of the studies on the competitive advantage of platforms have been limited to single-industry backgrounds or narrative cases (McIntyre & Srinivasan, 2017), and the components of competitive advantage are dispersed across various literature streams. As a result, it restrains more robust and generalizable implications. To the author's best knowledge, only Cennamo (2019) presented specific sources for competitive advantage in transaction platforms: the platform size, the platform's unique attributes in terms of identity, and the participant's experience while using the platform. However, more work is needed to create a clear roadmap for the fiercely attracted platform economy on how to address and relate competitive advantage to the design of a successful platform. This can be achieved by focusing on how platforms can design their value-creation activities to augment their base of users to achieve 'win most or all' dynamics in their relevant markets.

Furthermore, a strategic goal of transaction platforms is their ability to facilitate valuable interactions and attract desired users to generate positive network effects. Network effects are positive feedback loops created by connecting diverse users and market participants (M. A. Cusumano et al., 2019). A more extensive user base makes it possible for the supply and demand sides to match up more effectively, which promotes competitiveness and creates vicious feedback loops that help platforms expand and gain market share. (Alstytne et al., 2016; Hokkanen et al., 2021). Platforms achieve this goal, aided by technological advancements, by providing a value proposition to either side of the platform (Carrasco-Farré et al., 2022; Şimşek et al., 2022). Research related to value propositions of transaction platforms investigated the platform's primary value offerings, their attributes (e.g., Hokkanen et al., 2021; Ricart et al., 2020; Trabucchi et al., 2021; Walsh et al., 2020), the alignment choice of value offerings (e.g., Muzellec et al., 2015), the structure (e.g., Lofberg & Akesson, 2018; Ramos-Henríquez et al., 2021; Yu et al., 2019), and the dynamic nature of value propositions (e.g., Galvao et al., 2017). However, our understanding of which factors and what types of conditions boost or degrade platform performance and growth across user base and valuable transactions is limited and often inconsistent. In a small number of cases, researchers have focused on a few individual elements that affect value propositions while ignoring the broad range of value propositions that technology can create. We do not know how

platforms create powerful value propositions and how they contribute to a business model with many simultaneous propositions for multiple sides (Ramos-Henríquez et al., 2021).

1.2 Research Objective

Issues concerning the competitive advantage and generating positive network effects (and mitigating negative network effects) in transaction platforms impacted by the design of activities for value creation and value proposition become increasingly relevant and necessitate additional research. As a result, the goals of this study are outlined below.

- To examine and demonstrate the current state of the art of platform ecosystem literature in light of the expanding body of platform literature and the dispersion of theories and concepts surrounding this term.
- To identify the sources of competitive advantages in digital transaction platforms and the influence of potential sources on the perceived competitive advantage by the platform owners (designers).
- To identify the critical conditions associated with platform performance and an in-depth understanding of the mutual interaction of these factors for generating positive network effects.

This research focuses on creating conceptual frameworks for designing successful transaction platforms to meet the abovementioned goals. Insights into the issues in question can be gained by the analysis of value creation and value proposition of such platforms.

1.3 Research Scope

The significance of this study from a theoretical and practical perspective is twofold.

Firstly, the term "platform ecosystem" has been used frequently during the past 20 years in discussions of the academic field of technology and innovation management, and scholars in engineering and economics have shown a growing interest. Platform ecosystems combine ideas from both the product family and the multisided market streams; they are often more complicated than either a product family or a multisided market (see for an extensive review, Thomas et al., 2014). Platform ecosystems are used with business models, platforms, innovation, multisided

markets, networks, technological systems, supply chains, and value networks to provide new value creation and capture models (Hein, Schrieck, Riasanow, Setzke, Wiesche, Böhm, et al., 2020). These terms are widely used by researchers when investigating how network development and management improve efficiency as matchmakers that decrease friction or for the development of products and innovations in a collective manner. It is essential to understand how these concepts are related, whether they have a unique theoretical basis or overlap. This clarification aims to improve the theoretical foundation of this research while also boosting understanding of the concept of platform ecosystems. Furthermore, this research considers the value creation and value propositions of digital platforms that enable interactions between two or more different groups of economic agents with the potential to create value. To learn more about the sources of competitive advantage and the factors influencing the performance of the particular category of platforms in issue, digital transaction platforms, a literature review of platform ecosystems is necessary.

Secondly, existing research on digital transaction platforms concentrates on the shift of value creation from the core of the focal firm to the interaction between different actors, both from the demand side and supply side, as complementors and consumers (Hein, Schrieck, Riasanow, Setzke, Wiesche, Boehm, et al., 2020a; Murthy & Madhok, 2021). As a result, platforms provide unique value propositions in the forms of superior efficiency and cost advantage, building a community around a specific product type and matching the supply and demand sides (Tauscher & Laudien, 2017). With the existence of complexity in platform networks and the shifts in value creation (Ko et al., 2022), to gain a competitive advantage and to ensure positive network effects, a platform design is required both for solving the ‘chicken or egg’ problem in launching a platform, as well as for the continued operations to expand the user network base and increased valuable exchanges (Tura et al., 2018b). Therefore, transaction platform firms in the Business-to-Business (B2B), Business-to-Customer (B2C), and Customer-to-Customer (C2C) contexts were picked as the study's main targets to understand (i) how platforms design value-creation activities to gain a competitive advantage and (ii) to identify value proposition underlying factors for generating positive network effects.

1.4 Structure of the thesis

This thesis has four chapters, and a summary of Chapters 2 to 4 is provided below.

➤ Chapter 2: Bibliometric Analysis

First, a review of research on platform ecosystems is presented to provide a theoretical background to the transaction platforms concept. This chapter also explores the literature on platform ecosystems and other similar topics to clarify this research's core concept. Six distinct and correlative clusters are presented using the Bibliographic Coupling technique to demonstrate the journey and future opportunities of platform ecosystems in the strategic management research field.

➤ Chapter 3: Sources of Competitive Advantage in Designing Digital Transaction Platforms

This chapter integrates different strands of research to understand the genesis and design of activities better, leading to a competitive advantage in the context of digital transaction platforms. By performing an exploratory multiple case study on three successful cases of digital transaction platforms, this chapter presents how platform managers (designers) design their value-creation activities to gain a competitive advantage.

➤ Chapter 4: Factors Affecting Platform Value Propositions

This chapter focuses on the composing elements of value proposition associated with the performance of a transaction platform business model. MultiValue Qualitative Comparative Analysis (mvQCA) is considered to analyze ten platform businesses (successful and unsuccessful) that were initially reported as high-performing platform cases across different industries. The findings of this chapter reveal strategies for platform owners (designers) to increase their user network base and the number of valuable transactions in the platform.

1.5 Abstracts

- Paper 1 (Chapter 2): The platform literature has undergone ever-increasing strategic shifts over time. With studies in economics, engineering, product innovation, and information science, it is portrayed as a highly multidisciplinary phenomenon. Different boundaries and criteria were explored for analyzing platforms in the strategic management field. The shift from products and services to ecosystems as a foundation for generating value attracted the attention of scholars, particularly those concentrating on technology and innovation management. This research work draws a map of the literature on platform ecosystems in Strategic Management. Three hundred forty-nine papers were selected and analyzed with a software tool (VOS

Viewer) which allows constructing and visualizing bibliometric networks. The analysis makes six thematic clusters emerge: (1) platforms for service innovation and value co-creation, (2) platform governance and complementors-centric perspectives, (3) business and innovation ecosystems, (4) competitive and innovation-based dynamics, (5) platform business models, and (6) industry platforms. The motivations for carrying out this bibliographic work are general: getting a basic understanding of coherent themes, the emerging research clusters within the research on platform ecosystem, and highlighting research gaps in the clusters for future research.

- Paper 2 (Chapter 3): Digital Transaction Platforms are becoming the core of the platform economy and have seen an increasing academic and managerial interest, which led to the rise of platform-based business models in various industries. Platform literature has focused on decisions such as pricing, openness, platform quality, and competitive strategies; however, lacking more robust and generalizable implications for the sources of competitive advantages in digital transaction platforms. This paper combined the platform design core choices, and digital marketplace attributes to form a framework for cross-case comparison and to generalize the empirical results of three transaction platform cases. Each case in this paper presented a different competitive advantage sourced from activities related to facilitating accurate matching, building a unique infrastructure for value creation and exchange and the community-building capabilities of the platform. The competitive advantage of each platform corresponds to the activities fulfilling the needs of the specific core interactions of a platform. In the studied cases, the difference in value creation activities to support and maintain the core interaction resulted in platforms relying on diverse sources of competitive advantage. The cross-case discussion of the sources of competitive advantage in platforms and their relation to the core interaction contributes to preliminary academic and managerial implications for designing successful platforms.
- Paper 3 (Chapter 4): Value propositions are essential explanations for when platform businesses outperform traditional businesses. However, in the platform context, our understanding of which conditions and what types of conditions (i.e., causal factors) enhance or do not enhance the value proposition to foster platform performance and growth across user base and transaction (i.e., outcome) is limited and generally inconsistent. This paper

summarizes the existing platform business model literature to identify the critical conditions associated with platform performance and employs mvQCA methods to provide an in-depth understanding of the mutual interaction of these factors and platform performance. This framework can assist academics and practitioners in better understanding the underlying conditions of value proposition and their combined role in platform growth and performance. The four conditions are digital infrastructure sophistication, user network heterogeneity, trust and safety mechanisms, and dynamic value propositions. This study adds to the research on platform business models by identifying two equivalent multidimensional paths for platforms to improve their value propositions and, as a result, their performance. Finally, it concentrated on the full spectrum of value propositions that technology can enable, specific for both value proposition perspectives, the combined actor and stakeholder value propositions, and the generic value propositions.

1.6 Research Contributions

1.6.1 Contributions of the Thesis

The contributions of this research to theoretical knowledge are threefold: This thesis's first contribution is to the concept of platform ecosystems. This study's findings convey the richness of this research stream by providing a broader understanding and representation of many themes and their evolution in this domain. This study highlights the present state of the art in platform ecosystem research in light of the growing volume of platform literature and the dispersion of theories and concepts surrounding this term. It then analyzes the themes that have received the most attention from Strategic Management scholars in recent years and develops a research agenda and opportunities for future work.

Second, the findings of this study complement and extend existing theories on competitive dynamics in digital transaction platforms by revisiting and incorporating some of its major design elements into the burgeoning platform literature. As a result, it provides a strategic framework for developing successful platforms as well as a practical tool for determining value-creation activities that lead to a competitive advantage. This research also adds to our understanding of platform competition in cases where platforms have comparable core interactions. The platform in search

of a superior position can improve or perform certain groups of value-creation activities differently (than their competitors) to strengthen the most repeated exchange among platform sides.

Finally, this study contributes to the literature on transaction platforms particularly the value propositions of such businesses. It reveals four crucial elements of value propositions that are associated with improving the value offerings of platforms. It also presents strategies for the two value proposition perspectives (generic value proposition; stakeholder and actor value proposition) on how they can take leverage from a configuration of advancements in digital technologies, the network of users, and the critical role of dynamic value propositions. To summarize, this study adds to our understanding of the value proposition relevance for platform business models and their relationship to platform performance.

1.6.2 Contributions during the PhD

Conference presentations:

- Arghistani, N. (2022) Enabling multistakeholder value propositions in Platform business models. *ISPIM Connects Athens Conference -The Role of Innovation: Past, Present, Future Athens, Greece*
- Arghistani, N., (2022) Sources of competitive advantage in Digital Platforms. Presented at the *R&D Management Conference 2022, University of Trento, Italy*
- Arghistani, N., (2021) Competitive Advantage Heterogeneity In Designing Digital Transaction Platforms. Conference Proceedings. *ISPIM Connects Valencia, Spain*. LUT Scientific and Expertise Publications: ISBN 978-952-335-691-7. Order number in series 110.
- Arghistani, N. (2021) Platform Ecosystem: A bibliometric analysis. *R&D Management Conference 2021, University of Strathclyde, Strathclyde, United Kingdom*.

Submissions:

- Codini, A., Abbate, T., Arghistani, N. (2022) Fostering innovations for a better society: the role of markets for ideas. *International Journal of Technology Management* (under review)

1.7 Conclusions and outlooks for further research

The findings contribute to the scientific literature on platform businesses and could be used to present a comprehensive framework for value creation and generating competitive value propositions within platform-based business models. The bibliometric analysis (second chapter) investigates and reveals the evolution of platform ecosystem studies, presenting six thematic clusters as well as an overview of their progress over the last two decades. It identifies present research interests as well as potential future research directions.

Through the analysis of 3 case studies of transaction platforms (third chapter), this study generated a set of different sources of competitive advantage (facilitating accurate matching, building a unique infrastructure for value creation and exchange, and community building). Platforms can achieve a ‘win the most or all’ position by carefully designing certain activities that enable a platform to have efficient and repeatable core interactions. These activities enable a platform to benefit from increasing network effects by having strengths in either of the following areas (i) being able to attract users to the platform, (ii) facilitating an efficient architecture and digital environment for value cocreation, (iii) and to collect and use resourceful data about the value unit and participants for accurate matching.

In the fourth chapter, this study establishes a framework to help academics and practitioners better understand the fundamental elements of value proposition and their combined impact on platform growth and performance. This framework makes use of a mvQCA. The four requirements are dynamic value propositions, heterogeneous user networks, sophisticated digital infrastructure, and trust and safety measures.

Finally, the study can be the basis for additional inquiries into platforms for sustainable development, technology-enhanced platforms (i.e., platforms that use cutting-edge digital technologies like blockchain, IoT, etc.) to deliver novel services and carry out complicated multi-stakeholder transactions, as well as institutional policies that affect the performance of platforms.

1.8 References

- Adner, R. (2017). Ecosystem as Structure: An Actionable Construct for Strategy. *Journal of Management*, 43(1), 39–58. <https://doi.org/10.1177/0149206316678451>
- Adner, R., & Kapoor, R. (2010). Value creation in innovation ecosystems: How the structure of technological interdependence affects firm performance in new technology generations. *Strategic Management Journal*, 31(3), Article 3. <https://doi.org/10.1002/smj.821>
- Alstyne, M. W. V., Parker, G. G., & Choudary, S. P. (2016, April 1). Pipelines, Platforms, and the New Rules of Strategy. *Harvard Business Review*. <https://hbr.org/2016/04/pipelines-platforms-and-the-new-rules-of-strategy>
- Bhargava, H. K., Kim, B. C., & Sun, D. (2013). Commercialization of Platform Technologies: Launch Timing and Versioning Strategy. *Production and Operations Management*, 22(6), 1374–1388. <https://doi.org/10.1111/j.1937-5956.2012.01344.x>
- Carrasco-Farré, C., Snihur, Y., Berrone, P., & Ricart, J. E. (2022). The stakeholder value proposition of digital platforms in an urban ecosystem. *Research Policy*, 51(4), 104488. <https://doi.org/10.1016/j.respol.2022.104488>
- Cennamo, C. (2019). Competing in Digital Markets: A Platform-Based Perspective (SSRN Scholarly Paper ID 3410982). Social Science Research Network. <https://papers.ssrn.com/abstract=3410982>
- Cennamo, C., & Santaló, J. (2019). Generativity Tension and Value Creation in Platform Ecosystems. *Organization Science*, 30(3). <https://doi.org/10.1287/orsc.2018.1270>
- Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). *The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power*. HarperCollins.
- de Reuver, M., Sørensen, C., & Basole, R. C. (2018). The Digital Platform: A Research Agenda. *Journal of Information Technology*, 33(2), 124–135. <https://doi.org/10.1057/s41265-016-0033-3>
- Eisenmann, T., Parker, G., & Van Alstyne, M. (2006). Strategies for two-sided markets. *Harvard Business Review*, 84, 92-101+149.
- Galvao, A., Mascarenhas, C., Rodrigues, R. G., Marques, C. S., & Leal, C. T. (2017). A quadruple helix model of entrepreneurship, innovation and stages of economic development. In *REVIEW OF INTERNATIONAL*

- BUSINESS AND STRATEGY (No. 2; Vol. 27, Issue 2, pp. 261–282). EMERALD GROUP PUBLISHING LTD. <https://doi.org/10.1108/RIBS-01-2017-0003>
- Gawer, A. (2014). Bridging differing perspectives on technological platforms: Toward an integrative framework. In RESEARCH POLICY (Vol. 43, Issue 7, pp. 1239–1249). ELSEVIER. <https://doi.org/10.1016/j.respol.2014.03.006>
- Gawer, A., & Cusumano, M. A. (2008). How companies become platform leaders. In MIT SLOAN MANAGEMENT REVIEW (No. 2; Vol. 49, Issue 2, p. 28+). SLOAN MANAGEMENT REVIEW ASSOC, MIT SLOAN SCHOOL MANAGEMENT.
- Gorwa, R. (2019). What is platform governance? Information, Communication & Society, 22(6), 854–871. <https://doi.org/10.1080/1369118X.2019.1573914>
- Hein, A., Schreieck, M., Riasanow, T., Setzke, D. S., Wiesche, M., Boehm, M., & Krcmar, H. (2020). Digital platform ecosystems. In ELECTRONIC MARKETS (No. 1; Vol. 30, Issue 1, pp. 87–98). SPRINGER HEIDELBERG. <https://doi.org/10.1007/s12525-019-00377-4>
- Hein, A., Schreieck, M., Riasanow, T., Setzke, D. S., Wiesche, M., Böhm, M., & Krcmar, H. (2020). Digital platform ecosystems. Electronic Markets, 30(1), 87–98. <https://doi.org/10.1007/s12525-019-00377-4>
- Helfat, C. E., & Raubitschek, R. S. (2018). Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems. In RESEARCH POLICY (Vol. 47, Issue 8, pp. 1391–1399). ELSEVIER SCIENCE BV. <https://doi.org/10.1016/j.respol.2018.01.019>
- Hokkanen, H., Hänninen, M., Yrjölä, M., & Saarijärvi, H. (2021). From customer to actor value propositions: An analysis of digital transaction platforms. The International Review of Retail, Distribution and Consumer Research, 31(3), 257–279. <https://doi.org/10.1080/09593969.2021.1880463>
- Isckia, T., De Reuver, M., & Lescop, D. (2020). Orchestrating Platform Ecosystems: The Interplay of Innovation and Business Development Subsystems. In JOURNAL OF INNOVATION ECONOMICS & MANAGEMENT (Issue 32, pp. 197–223). DE BOECK UNIV. <https://doi.org/10.3917/jie.032.0197>
- Kenney, M., & Zysman, J. (2016). The Rise of the Platform Economy. Issues in Science and Technology, 32, 61–69.
- Ketonen-Oksi, S., Jussila, J. J., & Kärkkäinen, H. (2016). Social media based value creation and business models. Industrial Management & Data Systems, 116(8), 1820–1838. <https://doi.org/10.1108/IMDS-05-2015-0199>

- Ko, G., Amankwah-Amoah, J., Appiah, G., & Larimo, J. (2022). Non-market strategies and building digital trust in sharing economy platforms. *Journal of International Management*, 28(1), 100909. <https://doi.org/10.1016/j.intman.2021.100909>
- Lusch, R. F., & Nambisan, S. (2015). Service Innovation: A Service-Dominant Logic Perspective. *MIS Quarterly*, 39(1), 155–176.
- Murthy, R. K., & Madhok, A. (2021). Overcoming the Early-stage Conundrum of Digital Platform Ecosystem Emergence: A Problem-Solving Perspective. *Journal of Management Studies*, 58(7), 1899–1932. <https://doi.org/10.1111/joms.12748>
- Muzellec, L., Ronteau, S., & Lambkin, M. (2015). Two-sided Internet platforms: A business model lifecycle perspective. In *INDUSTRIAL MARKETING MANAGEMENT* (Vol. 45, pp. 139–150). ELSEVIER SCIENCE INC. <https://doi.org/10.1016/j.indmarman.2015.02.012>
- Ozalp, H., Cennamo, C., & Gawer, A. (2018). Disruption in Platform-Based Ecosystems. In *JOURNAL OF MANAGEMENT STUDIES* (Vol. 55, Issues 7, SI, pp. 1203–1241). WILEY. <https://doi.org/10.1111/joms.12351>
- Parker, G. G., Alstyne, M. W. V., & Choudary, S. P. (2016). *Platform Revolution: How Networked Markets Are Transforming the Economy and How to Make Them Work for You*. W. W. Norton & Company.
- Parker, G., Van Alstyne, M., & Jiang, X. (2016). Platform Ecosystems: How Developers Invert the Firm. *SSRN Electronic Journal*, 41. <https://doi.org/10.2139/ssrn.2861574>
- Ricart, J. E., Snihur, Y., Carrasco-Farre, C., & Berrone, P. (2020). Grassroots Resistance to Digital Platforms and Relational Business Model Design to Overcome It: A Conceptual Framework. In *STRATEGY SCIENCE* (No. 3; Vol. 5, Issue 3, pp. 271–291). INFORMS. <https://doi.org/10.1287/stsc.2020.0104>
- Saadatmand, F., Lindgren, R., & Schultze, U. (2019). Configurations of platform organizations: Implications for complementor engagement. In *RESEARCH POLICY* (No. 8, SI; Vol. 48, Issues 8, SI). ELSEVIER SCIENCE BV. <https://doi.org/10.1016/j.respol.2019.03.015>
- Şimşek, T., Öner, M. A., Kunday, Ö., & Olcay, G. A. (2022). A journey towards a digital platform business model: A case study in a global tech-company. *Technological Forecasting and Social Change*, 175, 121372. <https://doi.org/10.1016/j.techfore.2021.121372>

- Taeuscher, K., & Laudien, S. (2017, January 5). Uncovering the Nature of Platform-based Business Models: An Empirical Taxonomy.
- Thomas, L. D. W., Autio, E., & Gann, D. M. (2014). Architectural Leverage: Putting Platforms in Context. *Academy of Management Perspectives*, 28(2), 198–219. <https://doi.org/10.5465/amp.2011.0105>
- Tiwana, A. (2015). Evolutionary Competition in Platform Ecosystems. In *INFORMATION SYSTEMS RESEARCH* (No. 2; Vol. 26, Issue 2, pp. 266–281). INFORMS. <https://doi.org/10.1287/isre.2015.0573>
- Tiwana, A., Konsynski, B., & Bush, A. A. (2010). Research Commentary—Platform Evolution: Coevolution of Platform Architecture, Governance, and Environmental Dynamics. *Information Systems Research*, 21(4), 675–687. <https://doi.org/10.1287/isre.1100.0323>
- Trabucchi, D., Muzellec, L., Ronteau, S., & Buganza, T. (2021). The platforms' DNA: Drivers of value creation in digital two-sided platforms. *Technology Analysis & Strategic Management*, 0(0), 1–14. <https://doi.org/10.1080/09537325.2021.1932797>
- Tura, N., Kutvonen, A., & Ritala, P. (2018). Platform design framework: Conceptualisation and application. *Technology Analysis & Strategic Management*, 30(8), 881–894. <https://doi.org/10.1080/09537325.2017.1390220>
- Walsh, C., Saxena, D., & Muzellec, L. (2020). Airbnb: Managing trust and safety on a platform business. <https://doi.org/10.2478/ijm-2020-0004>
- Wirtz, J., So, K. K. F., Mody, M. A., Liu, S. Q., & Chun, H. H. (2019). Platforms in the peer-to-peer sharing economy. *Journal of Service Management*, 30(4), 452–483. <https://doi.org/10.1108/JOSM-11-2018-0369>

Chapter 2. Platforms Ecosystem, a Bibliometric Analysis

Abstract:

The platform literature has undergone ever-increasing strategic shifts over time. With studies in economics, engineering, product innovation, and information science, it is portrayed as a highly multidisciplinary phenomenon. Different boundaries and criteria were explored for analyzing platforms in the strategic management field. The shift from products and services to ecosystems as a foundation for generating value attracted the attention of scholars, particularly those concentrating on technology and innovation management. This research work draws a map of the literature on platform ecosystems in Strategic Management. Three hundred forty-nine papers were selected and analyzed with a software tool (VOS Viewer) which allows constructing and visualizing bibliometric networks. The analysis makes six thematic clusters emerge: (1) platforms for service innovation and value co-creation, (2) platform governance and complements-centric perspectives, (3) business and innovation ecosystems, (4) competitive and innovation-based dynamics, (5) platform business models, and (6) industry platforms. The motivations for carrying out this bibliographic work are general: getting a basic understanding of coherent themes, the emerging research clusters within the research on platform ecosystem, and highlighting research gaps in the clusters for future research.

Keywords: platform ecosystems, industry platforms, transaction platforms, innovation platforms, multisided platforms, platform governance, innovation ecosystems, business ecosystems

2.1 Introduction

The literature on platforms is highly multidisciplinary, with studies in economics, engineering, and product innovation (Gawer & Cusumano, 2014) and also in Information Science (IS) Studies (de Reuver et al., 2018). West (2003) defines platforms as a set of standard modules, layered architectures (Yoo et al., 2010), or common interfaces that enable system-wide development and innovation (K. Boudreau, 2010). The idea of a platform ecosystem has become more popular in the literature on strategy, innovation, and entrepreneurship. Platform ecosystem has been used by scholars in a variety of contexts and with a variety of names, as well as, in some cases, various meanings and purposes. Gawer (2014) urges that platforms have been conceptualized from two

dominating perspectives, engineering, and economics, and outlines a third perspective that bridges the mentioned two by emphasizing platforms as evolving organizations or meta-organizations that: (1) federate and coordinate constitutive agents who can innovate and compete; (2) create value by generating and harnessing economies of scope in supply or/and in demand; and (3) entail a technological architecture that is modular and composed of a core and a periphery.

Thomas et al. (2014b), in a systematic review, analyzed more than 900 business, economics, and management papers and observed a dramatic growth in the use of the platform in management research in recent decades, however, used interchangeably such as platform organization, platform investment, technology platform, platform technology, product industry platform, and so on. They identified four distinct streams of research on platforms from a strategic management perspective: The organization stream (the organizational structure that stores organizational capabilities), the product family stream (also known as internal platforms and supply chain platforms), the market intermediary stream (facilitator between two or more markets or groups of producers and users) and the platform ecosystem stream.

This notion views the platform as a hub or central point of governance mechanisms with a technology-based business stream (Gawer & Cusumano, 2008). While internal platforms (organizational) and product family streams had been in focus for many years and attracted the attention of scholars, there is a significant shift towards the market intermediary and platform ecosystem streams, as shown in figure 1, without a well-defined construct, and is typically more problematic as it incorporates concepts from both product family and multisided market streams, such as those of modularity and market facilitation (Thomas et al., 2014). Therefore, a lack of theoretical coherence in platform ecosystem terminology could make the research landscape even hazier. As a result, using platform ecosystems may result in a fragmented and varied theory, making it challenging to compare studies and failing to ensure a synthesis of knowledge.

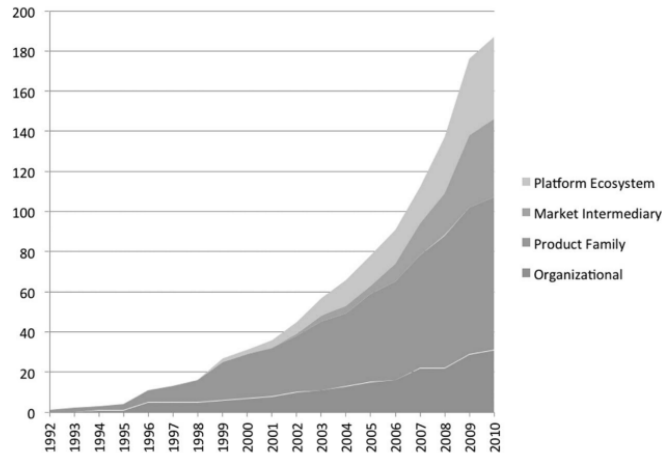


Figure 1. Volume of Platform papers by stream; Source: Thomas, L. D. W., Autio, E., & Gann, D. M. *Academy Of Management Perspectives*, Vol. 28, Issue 2, (2014) pp. 198–219

Furthermore, given the research depth of platform ecosystems, for instance: rapid growth in the multisided markets literature and its connection with the platform ecosystem, positioning in different levels of analysis and organizational settings: within firms, across supply-chains and industry ecosystems (Gawer, 2014), integrative capabilities and the governance structure of the platform ecosystem (Helfat & Raubitschek, 2018a), disruption in platform ecosystems (Ozalp et al., 2018), and many other implications of such platforms demonstrate a wide-ranging, multidisciplinary, and growing state of this field. Despite the recent expansion of the platform ecosystem literature, less focus has been placed on empirical data using bibliometric indicators (such as citation/co-citation) to comprehend the development of the platform ecosystem approach. In this regard, this study examines and demonstrates the present status of research on platform ecosystems in light of the expanding body of platform literature and the dispersion of theories and concepts surrounding this term. This study also looks at the most popular themes in the literature to find any shortcomings or gaps in the existing body of knowledge on platform ecosystems. The research uses data from citations of papers, books, and other materials found in the Thomson Reuters Web of Science database to conduct a bibliometric analysis to meet these goals.

This literature review responds to the following questions:

- What is the current state of the art of platform ecosystem literature?
- Which are the evolving literature themes related to this phenomenon?

- Which are the emerging clusters in recent years, and what is yet to be studied about each coherent cluster?

The purpose of this bibliometric literature review is to (i) capture the richness of this research stream by creating a broader understanding and image of various themes and their evolution in this area; (ii) identify the trends with the closest attention of Strategic Management in the recent years, and (iii) to formulate a research agenda and opportunities for further works. So far, to my knowledge, there has not been a similar comprehensive theoretical underpinning of platform ecosystems.

To perform this literature review, like other significant studies in Strategic Management that demonstrate the growing state of a field, I use bibliometric methods (e.g., Ramos-Rodríguez & Ruíz-Navarro, 2004; Vogel & Güttel, 2013; Randhawa et al., 2016; Apriliyanti & Alon, 2017; and very recently Crupi et al. 2020). This method includes the aggregation of large amounts of bibliographic data (for a review, see Verbeek et al. 2002) and is therefore deemed objective. In this analysis, I used bibliographic coupling (Kessler, 1963) on 349 peer-reviewed articles, which complements the widespread co-citation technique (e.g., Di Stefano et al. 2010) by shifting attention from traditions to trends in the scientific literature. The Bibliographic coupling method enhances bibliometric applications of social network analysis, which have been used predominately for visualization purposes (Vogel & Güttel, 2013).

The results of the Bibliographic Coupling imply that the literature on Platform Ecosystem is based on six thematic clusters that evolved dynamically over time, focused on the following: (1) platform for service innovation and value co-creation, (2) platform governance and complementors centric perspective, (3) business ecosystem construct and coherent structure, (4) competitive and innovation-based dynamics, (5) platform business models, and (6) Industry platforms leadership.

The following chapters present a review of platform ecosystem literature, the method used for this research, the set of data and its selection criteria, the description of obtained clusters, future research opportunities, and the conclusion. This research contributes to the broader research on platform ecosystems, providing a comprehensive picture of the developments in this field and gaps that can be filled by future research.

2.2 Literature Review

The interest in starting businesses has grown over the past 30 years, and this increase in interest has sparked innovation and dynamism for various technologies, goods, and services across various industries. Because they feature a stable core or "platform" that interfaces with a dynamic and heterogeneous set of complimentary components to produce a stream of derivative products, platform ecosystems, in this context, are found to stimulate innovation and enhance efficiency. (Jacobides et al., 2018). For cohesive and customer-focused solutions, the collaborative environment that digital platforms enable is essential (Adner, 2006).

The literature on platform ecosystems comprises great detail and many similar definitions. The platform ecosystems are described by McIntyre & Srinivasan (2017) as the platform and its network of complementors that provide complements to increase the platform's value. More recently, Jacobides et al. (2018) describe platform ecosystems as "semi-regulated marketplaces" that encourage entrepreneurship under the control and guidance of the platform sponsor. Gawer and Cusumano (2014) suggested two predominant platforms: Internal or company-specific and external or industry-wide platforms. They define internal (company or product) platforms as a set of assets organized in a common structure from which a company can efficiently develop and produce a stream of derivative products (Muffatto & Roveda, 2002). On the other hand, external (industry) platforms are products, services, or technologies that are the foundation upon which outside firms can develop their complementary products, technologies, or services. External (industry) platforms are subject to so-called network effects, which tend to improve accumulatively, resulting in the installed base of user advantage or complementary products (Eisenmann et al., 2006b).

This distinction is further improved by Cusumano et al. (2019) in transaction platforms and innovation platforms. Innovation platforms are the technological blocks for which other users (complementors) develop complementary products and services. An example is the Windows operating system, which has millions of applications developed by innovators in many countries using Microsoft's proprietary technology openly shared with potential complementors. Transaction platforms, on the other hand, are a special type of market that has the role of facilitators of exchange between different sides that could not otherwise transact with each other, provide access to a large pool of users, and identify suitable matches (Gawer, 2014). These users can be buyers

and sellers of goods or services in online marketplaces. Uber, Airbnb, and Amazon Marketplace are some examples of transaction platforms. Both types of digital platforms rely on autonomous agents to give the user significant advantages (Teece, 2018). This fundamental idea emphasizes the necessity for digital platforms to support and coordinate an ecosystem of actors made possible by structural and economic factors (Kapoor, 2018).

The sort of complementarities of products or services offered by complementors is described by economic components, i.e., when Product A cannot function without Product B or when Product A's value is increased by Product B (Hein, Schrieck, Riasanow, Setzke, Wiesche, Boehm, et al., 2020b). The existence of network effects that develop between the two sides of the market is crucial to the economic components (Gawer, 2014). This is especially important for digital platforms; Rysman (2009, p. 127) says that “in a technical sense, the literature on two-sided markets could be seen as a subset of the literature on network effects.” Network effects, in practice, produce a self-reinforcing feedback loop that increases incumbents' early advantages and fosters rivalry amongst the platforms (Gawer, 2014). Direct network effects, also known as same-side network effects, occur when a user's gain from a technology depends favorably on the number of other users of that technology, such as in a telephone network or the network of Skype users. If the benefit to users in at least one group (side A) depends on the number of additional users in the other group, there are indirect network effects (side B).

The structural elements of an ecosystem explain how actors interact with the value proposition and value creation. Actors, activities, and architectures have been the focus of three recent studies on the structural components of ecosystems (Adner, 2017a; Kapoor, 2018). The way value is jointly created in an ecosystem is determined by discrete actions called activities. The agents known as actors can operate as complementors and consumers who engage in activities and generate a variety of offers. Technological interactions defined by the architecture orchestrate an ecosystem's supply and demand sides. Platform owners provide governance mechanisms to specify the guidelines for coordinating interactions in ecosystems, depending on the ownership status of the platforms (Cusumano & Gawer, 2002; Tiwana, 2013).

2.3 Data and Methods

The method followed in this review is based on bibliometrics (i.e., the statistical analysis of scholarly communication through publications) (Garfield, Eugene, 2016; Price, 1965; Pritchard, 1969). I have used Bibliographic Coupling, which clusters articles that cite the same documents (Boyack & Klavans, 2010). It is based on the coupling of elements in bibliographic records, and the coupling strength is measured by the number of coupling units between them (Wallin, 2005). The Bibliographic coupling helps to present activities rather than recount past achievements (Vogel & Güttel, 2013), which satisfies the objectives of this literature review.

To accomplish this analysis, I built a dataset from the Thomson Reuters Web of Science database, a key database of top journals in previous studies (Fetscherin & Heinrich, 2015), using the following search strategy that allows for variations of term spelling for searching titles, abstracts and/or keywords:

Topic (title, abstract, and keywords): 'Platform*' and 'Ecosystem*.'

Categories: 'management' AND 'business'

Document types: 'articles' and 'early access'

Language: 'English'.

Kovacs et al. (2015) identify this strategy to avoid misalignments in recognizing the broad or current state of the art. Performing this analysis resulted in 349 papers that were carefully read and analyzed to identify the overall usage of the term, definition, and interrelation with the other documents in each cluster identified by the Bibliometric analysis. Table 1 presents the Steps to filter the dataset.

Table 1. Steps to filter the dataset

Step	Counts
Topic: 'Platform*' and "Ecosystem"	5916
Categories: 'management' AND 'business'	474
Document types: 'articles' and 'early access'	358
Language: 'English'	349

Platform ecosystem related research has been published in a large plethora of journals and reviews. Namely, Technological Forecasting and Social Change have published the 7.45% of the associated articles, followed by MIS Quarterly, which remains in the second position, and Strategic Management Journal in the third place. Electronic Markets stand in further place as the platform ecosystem is also studied widely by IS researchers (de Reuver, Sorensen, et al., 2018). Information systems research and The Journal Of Information Technology are involved in about 5% of the dataset. (See Table 2. The 25 most influential sources).

This distribution adds the critical insight that the platform ecosystem construct has been explored mainly in the Strategic Management related areas. This development promises significant attention from researchers from different practices inside the Strategic Management field as an integration of this construct with their practices.

About 87% of the articles in the data set were published in the last five years, supporting my earlier assertion and evidence of the significant expansion of this field of study. Only 2019 and 2020 indicate an explosion of the related research papers published, which claim 42% of the 349 articles resulted in my analysis of Web of Science (see Figure 2). Later, I will also present the development of each cluster in the latest years.

Table 2. The 25 most influential sources

Source titles	Records	% of 349
Technological forecasting and social change	26	7.45
Mis quarterly	14	4.011
Strategic management journal	14	4.011
Electronic markets	13	3.725
Information systems research	9	2.579
Technology innovation management review	9	2.579
Journal of information technology	8	2.292
Journal of service management	4	1.146
Strategy science	4	1.146

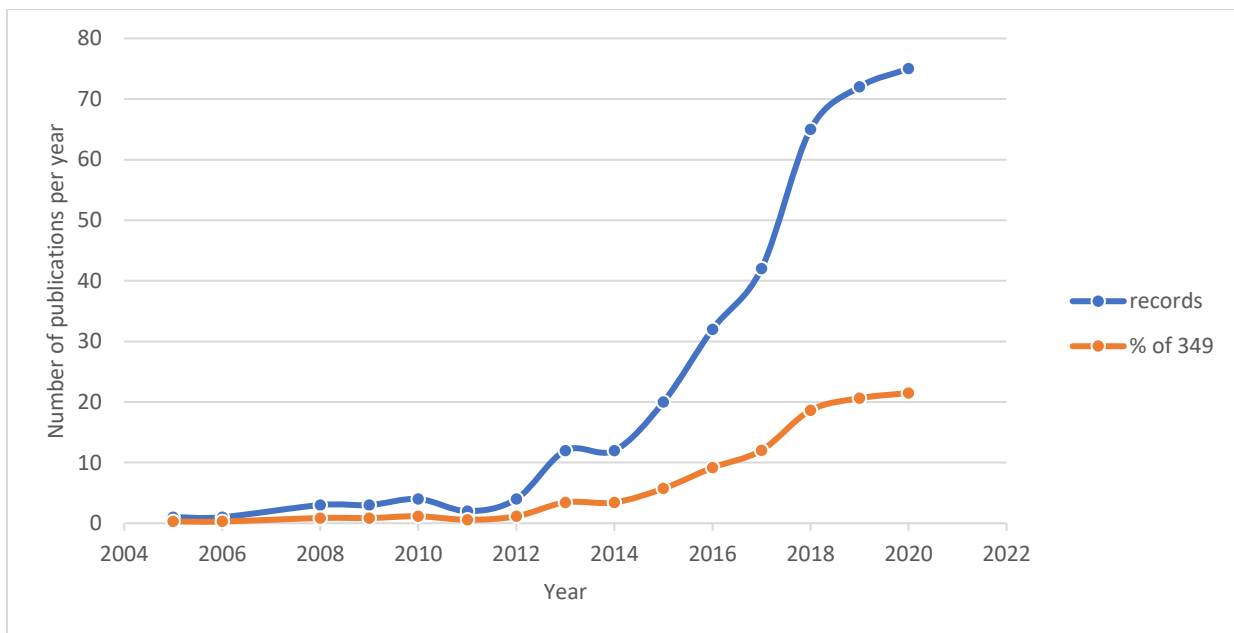


Figure 2 Publications in the past 15 Years

To carry out this research, I used VOS Viewer, a software tool developed by two researchers from the Centre for Science and Technology of Leuven University, Belgium, to construct and visualize bibliometric networks (Baglieri et al., 2019; van Eck & Waltman, 2010).

2.4 Results

Applying the Bibliometric analysis method assumes that the greater the number of references to the same documents, the greater the similarity between the citing texts. The intermediate result of bibliographic coupling is an aggregated matrix that displays all document pairs. As anticipated in the Methods section, I have carried out this research on 349 articles, of which 331 cited at least one common source. In applying the VOS Viewer Technique, I did not limit minimum citations, keeping in mind that a significant part of publications in this area are new and might not be cited yet considerably. For forming a cluster, however, following the recommendations from other scholars in this field, I have put a minimum of 20 articles per cluster. In the Bibliographic Coupling, the articles are the vertices, and an edge is established when they have at least one shared reference. We treat the Bibliographic Coupling as unweighted: the weight of the border is not affected by the number of shared references (Biscaro & Giupponi, 2014).

The results of Bibliographic Coupling, using the VOS Viewer Software current research in this field, are displayed and clustered into six thematic clusters and categorized according to the authors' independent content analysis (See Figure 3).

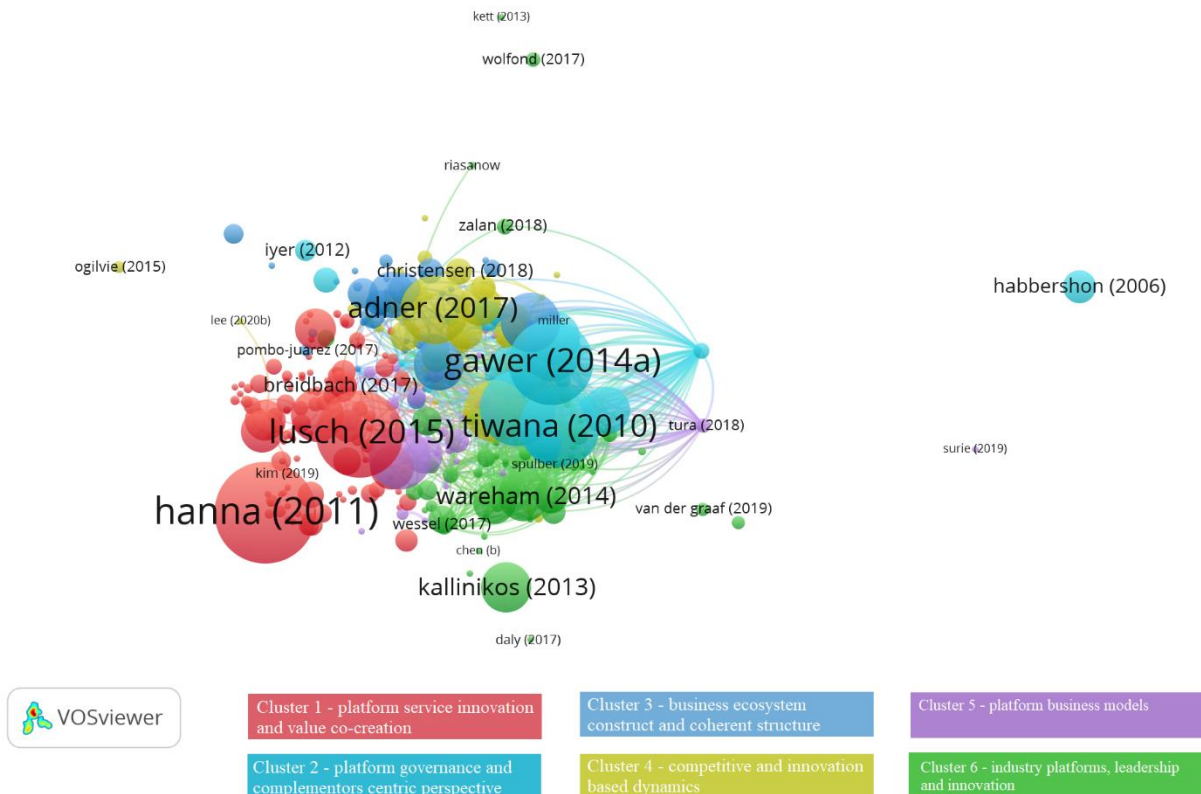


Figure 3 visualized bibliometric network of clustered articles included in the dataset using the Bibliometric Coupling analysis technique

The 331 articles are divided into 6 Clusters; the largest of them is Cluster 1- platform service innovation and value co-creation, which has 105 articles; cluster 2- platform governance and complementors centric perspective, has 69 articles. Subsequently, Cluster 3-business eco has 45 articles; cluster 4- competitive and innovation-based dynamics has 44 articles; cluster 5, platform business models have 40 articles; and finally, cluster 6, industry platforms or platforms ecosystem structure and leadership, has the lowest number of articles, 27.

How did these 6 clusters develop over time?

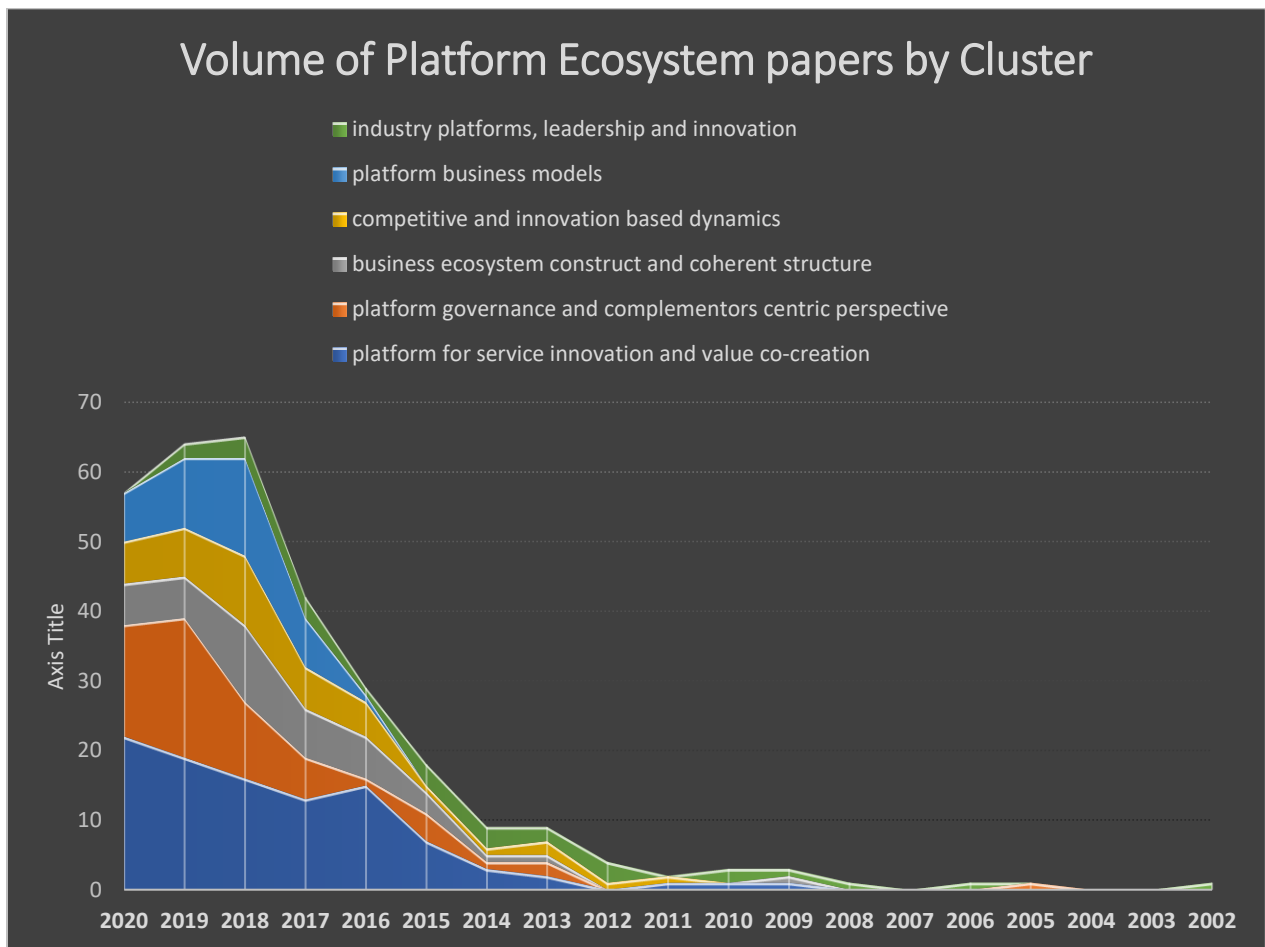


Figure 4. Volume of Platform Ecosystem papers by cluster

Cluster 1 has the highest number of published articles and had considerable growth over the past years, proving that platform-based value co-creation activities are relatively new (Fu et al., 2017).

The second cluster has received significant attention and a rise in the strategic management field, and this specific research area has become a focal topic for the numerous technology platforms that organize the complements and services that extend the overall value of a core product (Wareham et al., 2014).

The business and innovation ecosystems are the third cluster in the data analysis. It is a broader concept than that of a platform-based ecosystem. Inoue & Tsujimoto (2018) defined the business ecosystem as an economic activity with a large variety of actors corresponding with the current evolution of mega industries and larger ecosystems. Further research is encouraged in the related literature and has excellent room for additional work both in Strategic Management and Business Management fields (Hou et al., 2020). Cluster 4, which covers the different concepts of strategic management about the platform-based ecosystems, is an affluent area of study that has the potential to advance theory in the broader management research on disruption and competition (Ozalp et al., 2018), progressed in a stable shape over the past ten years and is essential for greater use in management practice and various organizational settings.

Platform business models, the fifth cluster, concentrate on commercialization within an ecosystem (Eckhardt et al., 2018) of products and services (Isckia et al., 2020) has witnessed modest attention in the last year, probably because of the shift towards disrupting and exploring the critical constructs of platforms ecosystems and towards capabilities for competition and cooperation in the different levels and among the different sides of an ecosystem, to create value for all sides.

The last cluster is the "industry platforms" literature (Cusumano & Gawer, 2002; Gawer & Cusumano, 2008, 2014) which is the backbone for the evolution of platforms ecosystem theory and practices; however, lacking newly published articles in this cluster. It can be a possibility for the shift of attention to the new clusters and research towards responding to the "future research calls" these reviews made to gain familiarity with the essential elements of platform-based ecosystems, and the evolution of this construct over time, and the birth of the new streams presented here as other clusters.

2.4.1 Platforms for service innovation and value co-creation

This cluster explores the properties of platforms for service innovation and their relation to value co-creation activities and the network effects (Fu et al., 2017), the evolution of the service

ecosystem (Banoun et al., 2016), including but not limited to digitalized networked arrangements of artifacts, persons, process and interfaces, called as the digitalized interactive platform (Ramaswamy & Ozcan, 2018). The literature on platform service overall had been limited (Fu et al., 2017), and platform service's complexity and ever-evolving nature hinder research in this area (Suarez & Cusumano, 2009). Another characteristic of such platforms is the dependence on heterogeneous and multiple resources and customers (Sampson & Froehle, 2006). Service ecosystems are “relatively self-contained, self-adjusting systems of resource-integrating actors connected by shared institutional logic and mutual value creation through service exchange” (Vargo & Akaka, 2012, p. 207). In other words, four meta-theoretical foundations exist for such ecosystems: “actor-to-actor networks, resource liquefaction, resource density, and resource integration” (Lusch & Nambisan, 2015b, p. 160). The IS literature usually uses these constructs, and their configuration represents digital platforms used in different industries. Resources/processes are (re)configured (Sampson & Froehle, 2006) at the operational level rather than the strategic level, which involves inputs from platform participants to stimulate network effect (Fu et al., 2017). According to the service ecosystem perspective, Banoun et al. (2016) urge that value creation emerges through the act of exchanges at three different levels of analysis: a macro level, where two actors exchange in the context of a dyad; a meso level, where three actors all connected, exchange in the context of the triad; and a macro level where numerous actors all exchange directly or indirectly in the context of a complex network (Chandler & Vargo, 2011). Therefore, actor engagement is a micro foundation for value co-creation (Storbacka et al., 2016). Value co-creation occurs when actors engage in service-for-service exchange and related interactions that lead to resource integration, while without actor engagement, no resource integration occurs, and therefore value cannot be co-created (J. Fehrer et al., 2015). The earliest examples in this context are social media ecosystems (Hanna et al., 2011), engagement ecosystems (Breibach et al., 2014), and Apple's IOS service system (Eaton et al., 2015). Researchers in this cluster have since explored the application of digital platforms for service innovation and value creation across a growing list of industries, certainly not limited to specific countries or contexts. Across these different service ecosystems, platforms have offered enormous opportunities by utilizing collaboration to facilitate real-time matching between multivariate wants and highly tailored products and conduct tasks that require digital engagement but may refer to both digital and physical assets (Elia et al., 2020). Digital platforms have helped revolutionize key industries

and lay new groundwork for ecosystem innovation and industry leadership (Gawer & Cusumano, 2014). Therefore, from the novel contribution of platforms in value creation, a suitable definition would be the expandable codebase of a software-based system that offers the basic functionality shared by the modules and interfaces it interoperates with.

2.4.2 Platform governance and complementors centric perspective

A burgeoning stream of research has revealed valuable insights into how platform governance choices can shape complementors' incentives and activities in contributing to platforms (Zhang et al., 2020). Complementors' value-creation activities are vital to the success of platforms (Jacobides et al., 2018; McIntyre & Srinivasan, 2017). Such actions, ranging from developing innovative complements to exchanging product or market information, can increase the attractiveness of a platform (Adner & Kapoor, 2010b; Gawer, 2011). Tiwana (2013) defines platform governance as the design and deployment of governance choices, including decision rights, incentive structures, and control mechanisms.

This cluster encompasses various developments related to platform governance, such as platform gatekeeping, which can be used to screen out imitating complementors and their offerings (K. J. Boudreau & Jeppesen, 2015), cooperation framework, which suggests that agent's competitive and cooperative incentives originate from the pursuit of personal and expected benefits (Khanna et al., 1998), and other heterogeneous platform governance strategies (K. Boudreau, 2010). Since there is fierce competition for platform complementors to face (Zhao et al., 2020a), literature in this cluster suggested different platform evolution strategies. One of these strategies is mutualism and creating new platforms (Khanagha et al., 2020). It indicates that rather than attempting to compete head-to-head, the new platform's developer, first, complements the current platform to establish a foothold before switching to partial competition once the platform has gained ground. Another strategy is creating value from the outside in or the inside out (Kyprianou, 2018) and tackling grassroots resistance to digital platforms (Ricart et al., 2020b) by providing value propositions to all stakeholders that somehow contribute to the platform.

Researchers in this cluster also tried to look close at the behaviors of end-users, third-party application developers, and their mutual influences (Song et al., 2018a) since users and app developers who participate in a platform may have different goals, tendencies, and skills from other platform contexts. It addresses how complementors engage with a partner who gains from

network effects, focusing on balancing value creation and value capture. A few examples of these issues are the dynamics of entry for digital platforms in two-sided markets (Veisdal, 2020), the use of selective promotion of complements in the platform ecosystem (Rietveld et al., 2019), and platform pricing and investment (Tan et al., 2020).

2.4.3 Business Ecosystem and Innovation Ecosystems

In simple terms, an ecosystem is a collection of businesses that interact and rely on one another. Depending on the analytical unit, scholars in this cluster have advanced their theoretical and empirical knowledge of various characteristics of an ecosystem. The first group of papers defines a business ecosystem, a context in which a business model evolves and is defined as an interdependent community including direct partners, universities, government, and NGOs, who co-evolve and share fates (Adner & Kapoor, 2010b; Gawer & Cusumano, 2014) and is more significant than simply “Platform Ecosystem”. This approach was proposed to initiate, identify, and integrate stakeholders to build value within a system (Rong et al., 2018). It encompasses complex forms of organizing and relationship buildings while the economy is marching ahead with the formation of these complex ecosystems, and therefore there is a significant gap for future research in this area (Visnjic et al., 2016). An example of a business ecosystem is cities, which are not just physical areas where firms and individuals agglomerate and conduct economic activities, formed through a complex set of overlapping relationships between companies that may represent residents (Visnjic et al., 2016). In addition, these types of platforms have been recognized in various broad industries such as the energy sector (e.g., Blasi & Sedita, 2020), aerospace (e.g., Azzam et al., 2017), media (e.g., Kostovska et al., 2020), megaprojects (e.g., Lehtinen et al., 2019), Chinese farming industry, using AI and IoT collaboration (e.g., Yang et al., 2020), smart homes for the aging population (e.g., Ehrenhard et al., 2014), smart mobility (e.g., Pulkkinen et al., 2019) and many other industries and broader and highly complex set of economies.

The second group of papers refers to the innovation ecosystem, an emerging concept (Su et al., 2018) consisting of a core innovation and the collection of upstream and downstream supporting elements (Jacobides et al., 2018). In other words, an innovation ecosystem indicates “the collaborative arrangements through which firms combine their offerings into a coherent, customer-facing solution” (Adner, 2006, p. 98). One of the reasons why most innovation initiatives fail is

that organizations often lack a coherent ecosystem around them that can support and complement their innovation efforts (Adner, 2011).

It is worth mentioning that scholars in this cluster, on various occasions, touch a third economic ecosystem called "knowledge ecosystems". The primary goal and objective of such ecosystems is the generation of new knowledge through collaborative research or the construction of knowledge bases, with an emphasis on exploration rather than exploitation (Valkokari, 2015). De Vasconcelos Gomes et al (2018) propose that despite the similarities, knowledge ecosystems and innovation ecosystems are different. Clarysse et al (2014) highlight the disconnect between the knowledge ecosystem and the business ecosystem, pointing to value creation as the fundamental difference between the two (for an extensive review also see Valkokari, 2015).

While both business and innovation ecosystems intend to develop customer-facing solutions, Zahra & Nambisan (2012, p. 220), for instance, believed the terms "business ecosystem" and "innovation ecosystem" to be interchangeable as “a group of companies - and other entities including individuals, too, perhaps - that interacts and shares a set of dependencies as it produces the goods, technologies, and services customers need”. It is feasible to identify and list certain common traits, such as a vast collection of organizations; connectivity and interdependency; and co-evolution, despite discrepancies in the notions employed by authors (see for an extensive review, de Vasconcelos Gomes et al., 2018; Jacobides et al., 2018). In this stream of research, we can find scholars that consider business ecosystems synonymous with innovation ecosystems (e.g., Gawer & Cusumano, 2014; Nambisan & Baron, 2013; Overholm, 2015), as well as that they are different from each other (e.g., Valkokari, 2015). Therefore, the literature does not provide a robust definition of innovation ecosystems (Oh et al., 2016).

Other key issues in this cluster are the influence of customer participation in business and innovation ecosystems, strategic choices for competition, and an initial trace of the emergence of such ecosystems (Nishino et al., 2018). The current state of the art in the business ecosystem literature is not sufficiently indicated above; a comprehensive list of the articles in each cluster is provided in the complete dataset in Appendix B.

2.4.4 Competitive and innovation-based dynamics for ecosystems

The theory of disruptive innovation (Christensen, 1997; Christensen & Raynor, 2003) is one of the most significant theories on how firms and industries respond to technological change (Ozalp et al., 2018). We still have less knowledge about how disruption evolves in multisided platforms (Ansari et al., 2016). This cluster sheds light on the influence of disruptions in the platform ecosystem (Ozalp et al., 2018), identifying strategies on the sharing economy business models to confront legitimacy challenges or liminal movement (Garud et al., 2020) and the impact of innovation on the relational interdependencies across the entire ecosystem (Adner & Kapoor, 2010b). Platform ecosystems have drawn attention to new models of value creation and value capture; therefore, this cluster addresses the triggers that prompt incumbents' reactions after disruption, explains how the disruption process unfolds, and how business model adaptation evolves over time (Cozzolino et al., 2018). This cluster has identified strategies for competition and growth of platform leaders and focal actors and responding to the strategic tensions from market heterogeneity when firms attempt to respond to industry disruption (Khanagha et al., 2018).

Platform ecosystems enable technology development and innovation (Jackson, 2011). In the era of Industry 4.0, the innovation of complex technology relies on technology standards, and therefore competing technology standards become vital for enterprises to gain a competitive advantage (Jiang et al., 2020). Knowledge is recreated and built continuously within a dynamic flux (Attour & Lazaric, 2020). This process ensures competitive advantage and hence, is a strategic resource for the organization (Bourdon & Bourdil, 2007), and its replication can lead to the birth of a platform ecosystem (Attour & Lazaric, 2020). Since digital innovation is characterized by convergence and generativity (Yoo et al., 2012), it blurs boundaries between industries and sectors, consumers and producers, humans and machines, products and services, and the physical and digital (Kumaraswamy et al., 2018). There is a utility in explicitly considering the impact of innovations on the relational interdependencies across the entire ecosystem (Adner & Kapoor, 2010b).

2.4.5 Platform business models

Altman & Tushman (2017) use the term "open/user innovation" as a family of strategies that include and are sometimes referred to as open innovation, user innovation, crowdsourcing, collective intelligence, and so forth. This cluster evaluates different business models associated

with platforms and evaluates their functioning and characteristics. The sharing economy, in particular, and platform business models, in general, have created industries that are no longer mediated. Sharing economy company concepts frequently make it easier for people to conduct direct business with one another by bringing people together in novel ways.

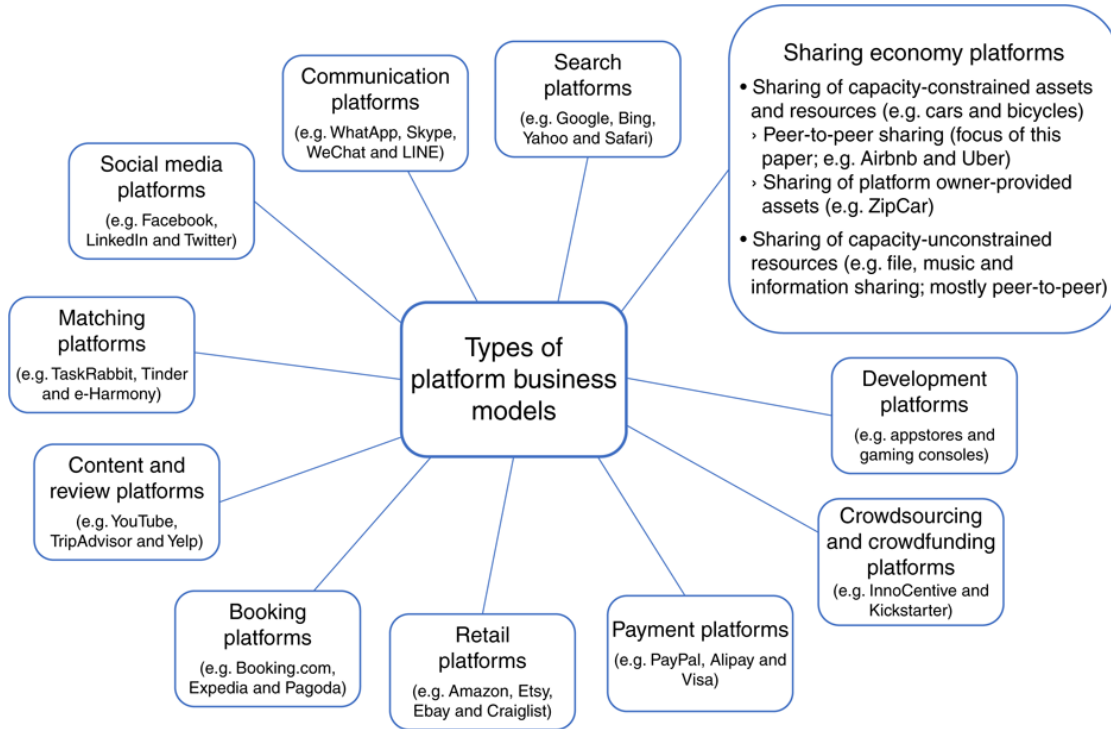


Figure 5. Types of Platform-based business models; Source: Wirtz, J., So, K.K.F., Mody, M.A., Liu, S.Q. and Chun, H.H., *Journal of Service Management*, Vol. 30 No. 4, (2019) pp. 452-483

A platform strategy (here used instead of multisided platforms) enables direct interactions between two or more distinct groups, and each side is affiliated with the platform (Hagiu & Wright, 2015a). They also suggest that a multisided market emerges when at any point in time, there are two or more separate groups of customers; the value achieved by one kind of customer increases with the number of the different types of customers; and an intermediary is required for internalizing the externalities formed by one group for the other group (Yablonsky, 2018).

Open/user innovation strategy (Bogers et al., 2017; Chesbrough & Appleyard, 2007) has a core organization coordinating activities and benefitting from inputs (innovations) from community or crowd members. The organization interacts directly with users, innovators, and designers (Altman & Tushman, 2017). Ecosystem strategy structure (Adner & Kapoor, 2010b; K. J. Boudreau, 2012;

Wareham et al., 2014) contains structure and interactions between constituent participants (Iansiti & Levien, 2004; Moore, 1993). This stream of literature on platforms ecosystem also presents other business models being formed from digital platforms at different levels of analysis, such as business ecosystems (Cha, 2020) and digital entrepreneurship platforms (He, 2019).

By contrasting the distinctive features of several peer-to-peer sharing platforms, research in this stream (e.g., Wirtz et al., 2019) found three themes along which digital platforms and pipeline business models might be contrasted: features at the market level, market economics, and firm-level features. At the market level, digital platforms usually concentrate on capturing a share of transaction value on the platform using multisided revenue models, as opposed to the one-sided revenue generation of pipeline firms. Such business models allow consumers to double as suppliers. The platform's value creation process fundamentally depends on the platform, providers, users, and complementors co-creating value. Platform and pipeline business models can be distinguished by their cost structures, with a platform's fixed and marginal costs often being lower than those of a pipeline business model (Zervas et al., 2017). The latter often have higher fixed costs since considerable stock and production equipment expenditures are typically needed. Production bottlenecks can be brought on by a lack of readily accessible resources such as land, money (low-cost debt), people, and equipment, among others (Wirtz et al., 2019). Platform business models often demand "curator" leadership strategies that prioritize: resource integration, in which leaders create a platform architecture that makes it easier to assemble a strong network of service providers and enable them to contribute their assets with limited capacity to the platform (Wirtz et al., 2019). According to Gawer and Cusumano (2014), resource orchestration in platform business models is an effective exchange mechanism that matches supply and demand, improving a network's liquidity. Platform vibrancy, in which asset providers and users co-create value, is frequently strengthened by complementors (Hagiwara & Wright, 2015).

2.4.6 Industry platforms

The phenomena of 'platformization' – the shift from products or services to the ecosystem as the basis for offering value - and associated ecosystems emerged as a significant venue for innovation, value creation, and delivery (Nambisan et al., 2019). In this stream, researchers looked into a variety of topics, including how to link platforms with their ecosystems, how to become a platform leader, how to create an industry platform, and more. Industry platforms are technological

foundation blocks upon which a group of firms or complementors develop a set of interrelated products, technologies, and services (Gawer, 2009). Research on industry platforms (Cusumano & Gawer, 2002; Gawer & Cusumano, 2008) and ecosystems (Iansiti & Levien, 2004) builds on earlier research on technology evolution and technological dominance (Tushman & Anderson, 1986; Utterback & Abernathy, 1975) and earlier research on standards and network externalities (Katz & Shapiro, 1985), it also draws on the literature on engineering design, product architecture, and modularity (Ulrich & Eppinger, 1995) and research on forms of industry dynamics. Gawer and Cusumano (2002, 2004, and 2008) have formulated strategies that firms can reach platform leadership.

This cluster broadly sees the platform's ecosystem in terms of architecture and design and suggests market-level or external-level strategies that firms can use for leadership in their respective platforms. This set of research presents a conceptual blueprint that describes how the ecosystem is partitioned into a relatively stable platform and a complementary set of modules that are encouraged to vary and the design rules binding on both (Tiwana et al., 2010a). This cluster covers the earliest papers published on platform ecosystems and with the least number of publications (compared to other streams), looking at industry platforms and ecosystems as an environment where industries can follow particular rules and how firms' scope, roles, and relationships, account for how values get created both created and appropriated (Tee & Gawer, 2009). The latest papers in this cluster investigate how businesses manage radical innovations in the context of industrial platforms. Here, two issues come into play: how to put an industry platform related to a radical innovation into practice; how a firm leads an ecosystem and the renewal of an industry platform when facing a rivalry based on a radical innovation; and, finally, under what conditions a firm should build an industry platform.

2.5 Discussions and directions for future research

It is becoming common that today the most valued and disruptive organizations are almost all multisided platforms (Kelly, 2016). In his book, Kelly defined platforms differently than a firm with definite boundaries or a marketplace with more permeable borders; instead, he emphasized that platforms are a foundation created by a firm that lets other firms build products and services upon it. The platform owners serve as typical network orchestrators, carrying out particular governance mechanisms among the different sides.

There had been significant work on the characteristics and differentiation of platforms in the initial stage of studies on platforms (e.g., Cusumano & Gawer, 2002; Gawer & Cusumano, 2008), and we got familiar with the evolution and structure of Industry platforms external platforms, and other constructs that brought together opportunities for the future research in this field. More examinations based on Industry platforms, external platforms, internal platforms, supply-chain platforms, and the ecosystem perspective triggered studies to understand the platform competition (Papachristos, 2020) and the service ecosystem perspectives (Fu et al., 2017).

Network effects and value co-creation that had been studied long before the platform's ecosystem construct quickly attracted the attention of researchers, and it further raised the curiosity to understand the service ecosystem and the influence of platform service innovation on the emergence of such ecosystems (Fu et al., 2017). Like never before, the research on this direction of platforms ecosystem started blooming, and since then, the greatest attention of researchers remained here; since 2015, there have been more than 92 research papers published in this regard that shape nearly one-third of the overall research papers analyzed in this research. In the meantime, platform governance too has attracted significant attention from researchers due to the complexity of relations between platform holders and complementors, the boundaries of a platform, and highlighting opportunities for further innovation, collaboration, and a productive environment. Extant research also concentrated on the term business ecosystem and innovation ecosystem, and from the results of this analysis, it would need to be explored more than has been done so far. Collaborations in each industry and the ecosystems that so many players form based on direct and indirect network effects and disruption of new technologies and innovations would further complicate managing these relations and indicate a significant scope of research.

In this research paper, I identified a broader picture of how research on platforms ecosystem evolved and presented the different clusters and what area of research in this field is occupied by each cluster. Further research could respond to many questions yet to be responded to on the platforms' ecosystems. As complex as this research stream, substantial gaps in how platform ecosystems operate still evolve daily. Therefore, in Appendix A, I have provided different gaps that can be responded to by further investigations. The mentioned reference may lead the researcher to build a basic understanding on which they can form their research method and considerations.

This research also has limitations as I did not present each cluster's internal image, which can be an opportunity for future studies to enlarge each cluster to discover the trends within each. Furthermore, the distinction between the business ecosystem cluster and the Industry platforms structure needs further development. These two clusters, despite the similarities, look at very different levels of analysis and carry different objectives. Using the dataset provided in Appendix B, an in-text analysis, and other techniques can help highlight the differences.

2.5 Conclusion

In summary, even with a significant value to the strategic management research, there was very little research to present a collective picture of platforms ecosystem research's coherent themes. In this study, using the Bibliographic Coupling technique, six distinct and correlative clusters show the journey of the platform ecosystem in the strategic management research field. These clusters are platforms for service innovation and value co-creation, platform governance, complementors-centric perspective, business and innovation ecosystem, competitive and innovation-based dynamics, platform business models, and industry platforms architecture and leadership. An essential contribution of this analysis is to recognize how the research on the platform ecosystem has evolved, the current attention of researchers in this area, and the research gaps for future study opportunities. Expanding and improving their concepts is still necessary to include the complete picture platform ecosystem. In order to accomplish this, research challenges include determining whether and how innovation ecosystems differ from business ecosystems and platform ecosystems; figuring out how to introduce boundaries in the use of these concepts; outlining the similarities and differences between the various uses of the term ecosystem in platforms; and balancing the levels at which the term is used, such as within firms, cities, or supplier networks.

Appendix A

Research agenda for platform ecosystem research

Cluster	Future research themes and opportunities	Reference
Platform for service innovation and value co-creation	Possibility to investigate various sorts of platform service innovations, value co-creation activities, the network effect, and statistical analysis of their relationships.	(Fu et al., 2017)
	Expanding on the fundamental aspects of the three service innovation elements (i.e., service ecosystem, service platform, and value co-creation processes)	(Lusch & Nambisan, 2015b)
	Collaborations that can improve performance inside a service ecosystem.	(Pellizzoni et al., 2019)
	Building trust in blockchain technology and outlining the tasks and interactions of human and nonhuman actors.	(S. Schneider et al., 2020)
Platform governance and complementors centric perspective	Market conditions, strategic action timing, and macro-environmental factors in platform ecosystems	(Papachristos, 2020)
	The interaction of the internal digital platform and the platform owner, the external ecosystem and the autonomous complementors, and the intermediate perspective of the ecosystem's value-creating mechanisms.	(Hein et al., 2020)
	The interaction of multi-firm networks and firm-specific resources (Nambisan & Sawhney, 2011) and how this may lead to unique types of organizational structure within and across platform ecosystem boundaries.	(Khanagha et al., 2018)
	Evaluating the effectiveness of governance mechanisms in platform ecosystems	(Yi et al., 2019)
Business ecosystem and innovation ecosystem	The evolution of genres within this bigger type of setting which involves a wider range of actors	(Inoue & Tsujimoto, 2018)
	In an innovation ecosystem, the intertwined combined dynamics of value creation and value capture.	(de Vasconcelos Gomes et al., 2018)
	Investigating various market conditions, assessing interactions among the same groups, taking into account complementor characteristics, such as series and brands of complementary products, and investigating inter-actions among connected platforms in the sector.	(Inoue & Tsujimoto, 2018b)
	Resource-based views or dynamic capabilities can be used as a theoretical framework to comprehend the constellations of resources used by various actors, how those constellations are developed jointly, how they complement one another, and	(Lehtinen et al., 2019)

	finally, what constellations of resources are required and why to establish and accomplish a system-level goal.	
Competitive and innovation-based dynamics	How platform owners handle the conflict between the incentives of complementors and internal organization units.	(Ozalp et al., 2018)
	How complementary components drive businesses to participate in the first place or adjust their involvement; how firms strategize to produce and capture value during standard-setting.	(Miller & Toh, 2020)
	Value capture strategies in a multisided platform ecosystem	(Helfat & Raubitschek, 2018a)
	Collaboration strategies for platform ecosystems at the group level of analysis	(Davis, 2016)
Platform business models	Addressing strategic leadership challenges for managers across incumbent and entrepreneurial firms establishing enterprises employing platforms, open/user innovation, and ecosystem models.	(E. J. Altman & Tushman, 2017)
	Platform design decisions and their impact on the platform's eventual success.	(Tura et al., 2018a)
	How can platform enterprises co-evolve with important stakeholders' business models? How does participation with external stakeholders influence employees' organizational identity and commitment?	(Bogers et al., 2017)
	Understanding the processes of institutional transformation and the design of platform business models that lead to the tipping point.	(J. A. Fehrer et al., 2018a)
Industry platforms or platforms, ecosystem structure, and leadership	More empirical study beyond the information technology and Internet industries is necessary to comprehend the platform ecosystem stream's boundary conditions (i.e., architectural configurations, complementary markets, and the underlying processes).	(Thomas et al., 2014b)
	Understanding the development and growth of business ecosystems, platform legitimacy, collective identity, and institutional work may assist platform leaders to choose if and how to position themselves as trustworthy brokers.	(Gawer & Cusumano, 2014)
	Further theoretical development might look at the importance of interfaces and architecture, as well as how platform design can direct innovators' attention to certain trajectories of technological advancement.	

Appendix B

List of research articles analyzed in the Bibliometric Analysis.

Author	Title	Source, vol (no), pages	Year	cluster
Lusch, Robert F.; Nambisan, Satish	Service Innovation: A Service-Dominant Logic Perspective	<i>Mis Quarterly</i> , 39(1), 155-175<	2015	1
Storbacka, Kaj; Brodie, Roderick J.; Boehmann, Tilo; Maglio, Paul P.; Nenonen, Suvi	Actor Engagement As A Microfoundation For Value Co-Creation	<i>Journal Of Business Research</i> , 69(8), 3008-3017<	2016	1
Elia, Gianluca; Margherita, Alessandro; Passiante, Giuseppina	Digital Entrepreneurship Ecosystem: How Digital Technologies And Collective Intelligence Are Reshaping The Entrepreneurial Process	<i>Technological Forecasting And Social Change</i> , 150<	2020	1
Singh, Shiwangi; Chauhan, Akshay; Dhir, Sanjay	Analyzing The Startup Ecosystem Of India: A Twitter Analytics Perspective	<i>Journal Of Advances In Management Research</i> , 17(2), 262-281<	2020	1
Hein, Andreas; Weking, Joerg; Schrieck, Maximilian; Wiesche, Manuel; Boehm, Markus; Krcmar, Helmut	Value Co-Creation Practices In Business-To-Business Platform Ecosystems	<i>Electronic Markets</i> , 29(3), 503-518<	2019	1
Ramaswamy, Venkat; Ozcan, Kerimcan	Brand Value Co-Creation In A Digitalized World: An Integrative Framework And Research Implications	<i>International Journal Of Research In Marketing</i> , 33(1), 93-106<	2016	1
Weking, Joerg; Mandalenakis, Michael; Hein, Andreas; Hermes, Sebastian; Boehm, Markus; Krcmar, Helmut	The Impact Of Blockchain Technology On Business Models - A Taxonomy And Archetypal Patterns	<i>Electronic Markets</i> , 30(2), 285-305<	2020	1
Miles, Morgan P.; Morrison, Mark	An Effectual Leadership Perspective For Developing Rural Entrepreneurial Ecosystems	<i>Small Business Economics</i> , 54(4), 933-949<	2020	1
Leminen, Seppo; Rajahonka, Mervi; Wendelin, Robert; Westerlund, Mika	Industrial Internet Of Things Business Models In The Machine-To-Machine Context	<i>Industrial Marketing Management</i> , 84, 298-311<	2020	1

Eaton, Ben; Elaluf-Calderwood, Silvia; Sorensen, Carsten	Distributed Tuning Of Boundary Resources: The Case Of Apple's Ios Service System	<i>Mis Quarterly</i> , 39(1), 217<	2015	1
Del Chiappa, Giacomo; Baggio, Rodolfo	Knowledge Transfer In Smart Tourism Destinations: Analyzing The Effects Of A Network Structure	<i>Journal Of Destination Marketing & Management</i> , 4(3), 145-150<	2015	1
Hanna, Richard; Rohm, Andrew; Crittenden, Victoria L.	We're All Connected: The Power Of The Social Media Ecosystem	<i>Business Horizons</i> , 54(3), 265-273<	2011	1
Breidbach, Christoph F.; Brodie, Roderick J.	Engagement Platforms In The Sharing Economy Conceptual Foundations And Research Directions	<i>Journal Of Service Theory And Practice</i> , 27(4), 761-777<	2017	1
Meijerink, Jeroen; Keegan, Anne	Conceptualizing Human Resource Management In The Gig Economy Toward A Platform Ecosystem Perspective	<i>Journal Of Managerial Psychology</i> , 34(4), 214-232<	2019	1
Sussan, Fiona; Acs, Zoltan J.	The Digital Entrepreneurial Ecosystem	<i>Small Business Economics</i> , 49(1), 55-73<	2017	1
Buhalis, Dimitrios; Andreu, Luisa; Gnoth, Juergen	The Dark Side Of The Sharing Economy: Balancing Value Co-Creation And Value Co-Destruction	<i>Psychology & Marketing</i> , 37(5), 689-704<	2020	1
Barrett, Michael; Oborn, Eivor; Orlikowski, Wanda	Creating Value In Online Communities: The Sociomaterial Configuring Of Strategy, Platform, And Stakeholder Engagement	<i>Information Systems Research</i> , 27(4), 704-723<	2016	1
Quero-Gervilla, Maria J.; Ventura, Rafael	Value Proposition As A Framework For Value Cocreation In Crowdfunding Ecosystems	<i>Marketing Theory</i> , 19(1), 47-63<	2019	1
Jha, Srivardhini K.; Pinsonneault, Alain; Dube, Laurette	The Evolution Of An ICT Platform-Enabled Ecosystem For Poverty Alleviation: The Case Of Ekutir	<i>Mis Quarterly</i> , 40(2), 431-445<	2016	1
Jocevski, Milan; Ghezzi, Antonio; Arvidsson, Niklas	Exploring The Growth Challenge Of Mobile Payment Platforms: A Business Model Perspective	<i>Electronic Commerce Research And Applications</i> , 40<	2020	1
Chandna, Vallari; Salimath, Manjula S.	When Technology Shapes Community In The Cultural And Craft Industries: Understanding	<i>Technovation</i> , 92-93<	2020	1

Virtual Entrepreneurship In Online Ecosystems				
Opping, Gladys Yaa Saah; Singh, Saumya; Kujur, Fedric	Potential Of Digital Technologies In Academic Entrepreneurship - A Study	<i>International Journal Of Entrepreneurial Behavior & Research</i> , 26(7), 1449-1476<	2020	1
Cukier, Wendy; Hassannezhad Chavoushi, Zohreh	Facilitating Women Entrepreneurship In Canada: The Case Of Wekh	<i>Gender In Management</i> , 35(3), 303-318<	2020	1
Martinez-Lopez, Francisco J.; Li, Yangchun; Liu, Huaming; Feng, Changyuan	Do Safe Buy Buttons And Integrated Path-To-Purchase On Social Platforms Improve Users' Shopping-Related Responses?	<i>Electronic Commerce Research And Applications</i> , 39<	2020	1
Kim, Junic; Choi, Hwanho	Value Co-Creation Through Social Media: A Case Study Of A Start-Up Company	<i>Journal Of Business Economics And Management</i> , 20(1), 1-19<	2019	1
Ramaswamy, Venkat; Ozcan, Kerimcan	Offerings As Digitalized Interactive Platforms: A Conceptual Framework And Implications	<i>Journal Of Marketing</i> , 82(4), 19-31<	2018	1
Huang, Peng; Tafti, Ali; Mithas, Sunil	Platform Sponsor Investments And User Contributions In Knowledge Communities: The Role Of Knowledge Seeding	<i>Mis Quarterly</i> , 42(1), 213-240<	2018	1
Shin, Dong-Hee; Biocca, Frank	Explicating User Behavior Toward Multi-Screen Adoption And Diffusion User Experience In The Multi-Screen Media Ecology	<i>Internet Research</i> , 27(2), 338-361<	2017	1
Breidbach, Christoph F.; Brodie, Roderick; Hollebeek, Linda	Beyond Virtuality: From Engagement Platforms To Engagement Ecosystems	<i>Managing Service Quality</i> , 24(6), 592-611<	2014	1
Malthouse, Edward C.; Buoye, Alexander; Line, Nathaniel; El-Manstrly, Dahlia; Dogru, Tarik; Kandampully, Jay	Beyond Reciprocal: The Role Of Platforms In Diffusing Data Value Across Multiple Stakeholders	<i>Journal Of Service Management</i> , 30(4), 507-518<	2019	1
Iman, Nofie	Is Mobile Payment Still Relevant In The Fintech Era?	<i>Electronic Commerce Research And Applications</i> , 30, 72-82<	2018	1

Banoun, Arnaud; Dufour, Lucas; Andiappan, Meena	Evolution Of A Service Ecosystem: Longitudinal Evidence From Multiple Shared Services Centers Based On The Economies Of Worth Framework	<i>Journal Of Business Research</i> , 69(8), 2990-2998<	2016	1
Lamine, Wadid; Mian, Sarfraz; Fayolle, Alain; Wright, Mike; Klofsten, Magnus; Etkowitz, Henry	Technology Business Incubation Mechanisms And Sustainable Regional Development	<i>Journal Of Technology Transfer</i> , 43(5), 1121-1141<	2018	1
Lee, Sanghoon; Kim, Wonjoon; Lee, Hakyoon; Jeon, Jeonghwan	Identifying The Structure Of Knowledge Networks In The Us Mobile Ecosystems: Patent Citation Analysis	<i>Technology Analysis & Strategic Management</i> , 28(4), 411-434<	2016	1
Carillo, Kevin; Scornavacca, Eusebio; Za, Stefano	The Role Of Media Dependency In Predicting Continuance Intention To Use Ubiquitous Media Systems	<i>Information & Management</i> , 54(3), 317-335<	2017	1
Jena, J.; Fulzele, Vijayta; Gupta, Rachita; Sherwani, Fahima; Shankar, Ravi; Sidharth, Sumati	A Tism Modeling Of Critical Success Factors Of Smartphone Manufacturing Ecosystem In India	<i>Journal Of Advances In Management Research</i> , 13(2), 203-224<	2016	1
Kwak, Kiho; Kim, Wonjoon; Park, Kyungbae	Complementary Multiplatforms In The Growing Innovation Ecosystem: Evidence From 3d Printing Technology	<i>Technological Forecasting And Social Change</i> , 136, 192-207<	2018	1
Pellizzoni, Elena; Trabucchi, Daniel; Buganza, Tommaso	Platform Strategies: How The Position In The Network Drives Success	<i>Technology Analysis & Strategic Management</i> , 31(5), 579-592<	2019	1
Ketonen-Oksi, Sanna; Valkokari, Katri	Innovation Ecosystems As Structures For Value Co-Creation	<i>Technology Innovation Management Review</i> , 9(2), 25-35<	2019	1
Chen, Xiangfeng; Liu, Chuanjun; Li, Shuting	The Role Of Supply Chain Finance In Improving The Competitive Advantage Of Online Retailing Enterprises	<i>Electronic Commerce Research And Applications</i> , 33<	2019	1
Singh, Shekhar; Srivastava, Sandeep	Engaging Consumers In Multichannel Online Retail Environment A Moderation Study Of Platform Type On Interaction Of E-Commerce And M-Commerce	<i>Journal Of Modelling In Management</i> , 14(1), 49-76<	2019	1

Ham, Chang-Dae; Lee, Joonghwa; Hayes, Jameson L.; Han, Young	Exploring Sharing Behaviors Across Social Media Platforms	<i>International Journal Of Market Research</i> , 61(2), 157-177<	2019	1
Minkiewicz, Joanna; Bridson, Kerrie; Evans, Jody	Co-Production Of Service Experiences: Insights From The Cultural Sector	<i>Journal Of Services Marketing</i> , 30(7), 749-761<	2016	1
Haile, Netsanet; Altmann, Joern	Structural Analysis Of Value Creation In Software Service Platforms	<i>Electronic Markets</i> , 26(2), 129-142<	2016	1
Surie, Gita	Creating The Innovation Ecosystem For Renewable Energy Via Social Entrepreneurship: Insights From India	<i>Technological Forecasting And Social Change</i> , 121, 184-195<	2017	1
Randhawa, Krithika; Wilden, Ralf; Gudergan, Siegfried	Open Service Innovation: The Role Of Intermediary Capabilities	<i>Journal Of Product Innovation Management</i> , 35(5), 808-838<	2018	1
Leminen, Seppo; Rajahonka, Mervi; Westerlund, Mika; Wendelin, Robert	The Future Of The Internet Of Things: Toward Heterarchical Ecosystems And Service Business Models	<i>Journal Of Business & Industrial Marketing</i> , 33(6), 749-767<	2018	1
Suseno, Yuliani; Laurell, Christofer; Sick, Nathalie	Assessing Value Creation In Digital Innovation Ecosystems: A Social Media Analytics Approach	<i>Journal Of Strategic Information Systems</i> , 27(4), 335-349<	2018	1
Prasad, Sanjay; Shankar, Ravi; Gupta, Rachita; Roy, Sreejit	A Tism Modeling Of Critical Success Factors Of Blockchain Based Cloud Services	<i>Journal Of Advances In Management Research</i> , 15(4), 434-456<	2018	1
Sandberg, Johan; Holmstrom, Jonny; Lyytinen, Kalle	Digitization And Phase Transitions In Platform Organizing Logics: Evidence From The Process Automation Industry	<i>Mis Quarterly</i> , 44(1), 129-153<	2020	1
Schneider, Sabrina; Leyer, Michael; Tate, Mary	The Transformational Impact Of Blockchain Technology On Business Models And Ecosystems: A Symbiosis Of Human And Technology Agents	<i>Ieee Transactions On Engineering Management</i> , 67(4), 1184-1195<	2020	1
Ben Letaifa, Soumaya; Edvardsson, Bo; Tronvoll, Bard	The Role Of Social Platforms In Transforming Service Ecosystems	<i>Journal Of Business Research</i> , 69(5), 1933-1938<	2016	1
Li, Zhuoxin; Agarwal, Ashish	Platform Integration And Demand Spillovers In Complementary Markets:	<i>Management Science</i> , 63(10), 3438-3458<	2017	1

	Evidence From Facebook's Integration Of Instagram				
Kankanhalli, Atreyi; Ye, Hua (Jonathan); Hock Hai Teo	Comparing Potential And Actual Innovators: An Empirical Study Of Mobile Data Services Innovation	<i>Mis Quarterly</i> , 39(3), 667<	2015	1	
Fu, Wenhui; Wang, Qiang; Zhao, Xiande	The Influence Of Platform Service Innovation On Value Co-Creation Activities And The Network Effect	<i>Journal Of Service Management</i> , 28(2), 348-388<	2017	1	
Ehrenhard, Michel; Wijnhoven, Fons; Van Den Broek, Tijs; Stagno, Marc Zinck	Unlocking How Start-Ups Create Business Value With Mobile Applications: Development Of An App-Enabled Business Innovation Cycle	<i>Technological Forecasting And Social Change</i> , 115, 26-36<	2017	1	
Presenza, Angelo; Abbate, Tindara; Cesaroni, Fabrizio; Appio, Francesco Paolo	Enacting Social Crowdfunding Business Ecosystems: The Case Of The Platform Meridonare	<i>Technological Forecasting And Social Change</i> , 143, 190-201<	2019	1	
Blaschke, Michael; Riss, Uwe; Haki, Kazem; Aier, Stephan	Design Principles For Digital Value Co-Creation Networks: A Service-Dominant Logic Perspective	<i>Electronic Markets</i> , 29(3), 443-472<	2019	1	
Geva, Hilah; Oestreicher-Singer, Gal; Saar-Tsechansky, Maytal	Using Retweets When Shaping Our Online Persona: Topic Modeling Approach	<i>Mis Quarterly</i> , 43(2), 501<	2019	1	
Kim, Ki Youn; Lee, Bong Gyou	Marketing Insights For Mobile Advertising And Consumer Segmentation In The Cloud Era: A Q-R Hybrid Methodology And Practices	<i>Technological Forecasting And Social Change</i> , 91, 78-92<	2015	1	
Xu, Xin; Venkatesh, Viswanath; Tam, Kar Yan; Hong, Se-Joon	Model Of Migration And Use Of Platforms: Role Of Hierarchy, Current Generation, And Complementarities In Consumer Settings	<i>Management Science</i> , 56(8), 1304-1323<	2010	1	
Keisner, Andrew; Raffo, Julio; Wunsch-Vincent, Sacha	Robotics: Breakthrough Technologies, Innovation, Intellectual Property	<i>Foresight And Sti Governance</i> , 10(2), 7-27<	2016	1	
Barravecchia, Federico; Franceschini,	A Service Network Perspective To Evaluate Service Matching In Early Design	<i>Journal Of Service Theory And Practice</i> , 28(3), 356-383<	2018	1	

Fiorenzo; Mastrogiacomo, Luca					
Krishnamurthy, Sandeep; Tripathi, Arvind K.	Monetary Donations To An Open Source Software Platform	<i>Research Policy, 38(2), 404-414<</i>	2009	1	
Kim, Dohoon	Value Ecosystem Models For Social Media Services	<i>Technological Forecasting And Social Change, 107, 13-27<</i>	2016	1	
Jose Quero, Maria; Ventura, Rafael; Kelleher, Carol	Value-In-Context In Crowdfunding Ecosystems: How Context Frames Value Co- Creation	<i>Service Business, 11(2), 405-425<</i>	2017	1	
Cantu-Ortiz, Francisco J.; Galeano, Nathalie; Mora-Castro, Patricia; Fangmeyer, James, Jr.	Spreading Academic Entrepreneurship: Made In Mexico	<i>Business Horizons, 60(4), 541-550<</i>	2017	1	
Foa, Caterina	Crowdfunding Cultural Projects And Networking The Value Creation Experience Economy Between Global Platforms And Local Communities	<i>Arts And The Market, 9(2), 235-254<</i>	2019	1	
Bhattacharya, Prasanta; Phan, Tuan Q.; Bai, Xue; Airoidi, Edoardo M.	A Coevolution Model Of Network Structure And User Behavior: The Case Of Content Generation In Online Social Networks	<i>Information Systems Research, 30(1), 117-132<</i>	2019	1	
Hallock, William; Roggeveen, Anne L.; Crittenden, Victoria	Firm-Level Perspectives On Social Media Engagement: An Exploratory Study	<i>Qualitative Market Research, 22(2), 217-226<</i>	2019	1	
Cagica Carvalho, Luisa Margarida; Galina, Simone Vasconcelos	The Role Of Business Incubators For Start-Ups Development In Brazil And Portugal	<i>World Journal Of Entrepreneurship Management And Sustainable Development, 11(4), 256-267<</i>	2015	1	
Podobnik, Vedran; Ackermann, Daniel; Grubisic, Tomislav; Lovrek, Ignac	Web 2.0 As A Foundation For Social Media Marketing: Global Perspectives And The Local Case Of Croatia	<i>Cases On Web 2.0 In Developing Countries: Studies On Implementation, Application, And Use, 342-379<</i>	2013	1	

Maekinen, Saku J.; Kanniainen, Juho; Peltola, Ilkka	Investigating Adoption Of Free Beta Applications In A Platform-Based Business Ecosystem	<i>Journal Of Product Innovation Management</i> , 31(3), 451-465<	2014	1
Rong, Ke; Ren, Qun; Shi, Xianwei	The Determinants Of Network Effects: Evidence From Online Games Business Ecosystems	<i>Technological Forecasting And Social Change</i> , 134, 45-60<	2018	1
Hakanen, Esko; Rajala, Risto	Material Intelligence As A Driver For Value Creation In Iot-Enabled Business Ecosystems	<i>Journal Of Business & Industrial Marketing</i> , 33(6), 857-867<	2018	1
Thomas, Ashish	Developing An Integrated Quality Network For Lean Operations Systems	<i>Business Process Management Journal</i> , 24(6), 1367-1380<	2018	1
Dutta, Amitava; Puvvala, Abhinay; Roy, Rahul; Seetharaman, Priya	Technology Diffusion: Shift Happens - The Case Of Ios And Android Handsets	<i>Technological Forecasting And Social Change</i> , 118, 28-43<	2017	1
Velt, Hannes; Torkkeli, Lasse; Saarenketo, Sami	The Entrepreneurial Ecosystem And Born Globals: The Estonian Context	<i>Journal Of Enterprising Communities-People And Places In The Global Economy</i> , 12(2), 117-138<	2018	1
Salomon, Victoriya	Strategies Of Startup Evaluation On Crowdfunding Platforms: The Case Of Switzerland	<i>Journal Of Innovation Economics & Management</i> , (26), 63-88<	2018	1
Zhong, Junying; Nieminen, Marko	Resource-Based Co-Innovation Through Platform Ecosystem: Experiences Of Mobile Payment Innovation In China	<i>Journal Of Strategy And Management</i> , 8(3), 283-298<	2015	1
Kabakova, Oksana; Plaksenkov, Evgeny; Korovkin, Vladimir	Strategizing For Financial Technology Platforms: Findings From Four Russian Case Studies	<i>Psychology & Marketing</i> , 33(12), 1106-1111<	2016	1
Dass, Mayukh; Kumar, Shivina	Bringing Product And Consumer Ecosystems To The Strategic Forefront	<i>Business Horizons</i> , 57(2), 225-234<	2014	1
Romanelli, Mauro	Towards Sustainable Ecosystems	<i>Systems Research And Behavioral Science</i> , 35(4), 417-426<	2018	1
Ogulin, Robert; Selen, Willem; Houghton, Luke	Coordination In A Tourism Ecosystem	<i>Emergence-Complexity & Organization</i> , 18(1)<	2016	1

Pattinson, Hugh M.	A Neo-Schumpeterian Perspective Of Innovation, Entrepreneurship And Entrepreneurial Marketing In The Age Of Digitisation	<i>International Journal Of Business Environment</i> , 8(2), 87-104<	2016	1
Rasmussen, Erik Stavnsager; Petersen, Nicolaj Hannesbo	Platforms For Innovation And Internationalization	<i>Technology Innovation Management Review</i> , 7(5), 23-31<	2017	1
Mandyoli, Bulelwa; Iwu, Chux Gervase; Nxopo, Zinzi	Is There A Nexus Between Social Entrepreneurship And The Employability Of Graduates?	<i>Foundations Of Management</i> , 9(1), 61-74<	2017	1
Biswas, Dhruves; Bhowmick, Bhaskar	Creating And Managing An Innovation Ecosystem	<i>Academic Entrepreneurship And Technological Innovation: A Business Management Perspective</i> , 218-227<	2013	1
Sarmiento, Maria; Simoes, Claudia	Trade Fairs As Engagement Platforms: The Interplay Between Physical And Virtual Touch Points	<i>European Journal Of Marketing</i> , 53(9), 1782-1807<	2019	1
Guillemot, Samuel; Privat, Helene	The Role Of Technology In Collaborative Consumer Communities	<i>Journal Of Services Marketing</i> , 31(7), 837-850<	2019	1
Bharathi, S. Vijayakumar	Forewarned Is Forearmed Assessment Of Iot Information Security Risks Using Analytic Hierarchy Process	<i>Benchmarking-An International Journal</i> , 26(8), 2443-2467<	2019	1
Au, Cheuk Hang; Tan, Barney; Sun, Yuan	Developing A P2p Lending Platform: Stages, Strategies And Platform Configurations	<i>Internet Research</i> , 30(4), 1229-1249<	2020	1
Wang, Juite; Lai, Jung-Yu	Exploring Innovation Diffusion Of Two-Sided Mobile Payment Platforms: A System Dynamics Approach	<i>Technological Forecasting And Social Change</i> , 157<	2020	1
Lee, Kyootai; Joshi, Kailash	Complementors' Decisions On Partnership Retention In Markets With Network Externalities	<i>International Journal Of Innovation Management</i> , 24(6)<	2020	1
Blasco-Arcas, Lorena; Alexander, Matthew; Sorhammar, David; Jonas, Julia M.; Raithe, Sascha; Chen, Tom	Organizing Actor Engagement: A Platform Perspective	<i>Journal Of Business Research</i> , 118, 74-85<	2020	1

Chen, Juanyi; Cai, Li; Bruton, Garry D.; Sheng, Naiheng	Entrepreneurial Ecosystems: What We Know And Where We Move As We Build An Understanding Of China	<i>Entrepreneurship And Regional Development, 32(5-6), 370-388<</i>	2020	1
Tian, Hengqi; Grover, Varun; Zhao, Jing; Jiang, Yi	The Differential Impact Of Types Of App Innovation On Customer Evaluation	<i>Information & Management, 57(7)<</i>	2020	1
Liu, Jiajia; Li, Xuerong; Wang, Shouyang	What Have We Learnt From 10 Years Of Fintech Research? A Scientometric Analysis	<i>Technological Forecasting And Social Change, 155<</i>	2020	1
Gandolfo, Alessandro	Content Shared Between Banks And Users On The Social Ecosystem: An Inductive Exploratory Inquiry	<i>Electronic Commerce Research, 20(4), 679-712<</i>	2020	1
Sanchis-Pedregosa, Carlos; Berenguer, Emma; Albort-Morant, Gema; Anton Sanz, Jorge	Guaranteed Crowdlending Loans: A Tool For Entrepreneurial Finance Ecosystem Sustainability	<i>Amfiteatru Economic, 22(55), 775-791<</i>	2020	1
Schmidt, Marie-Christin; Veile, Johannes W.; Mueller, Julian M.; Voigt, Kai-Ingo	Ecosystems 4.0: Redesigning Global Value Chains	<i>International Journal Of Logistics Management</i>		1
Chen, Juanyi; Cai, Li; Bruton, Garry D.; Sheng, Naiheng	Entrepreneurial Ecosystems: What We Know And Where We Move As We Build An Understanding Of China	<i>Entrepreneurship And Regional Development</i>		1
Aryan, Venkat; Bertling, Juergen; Liedtke, Christa	Topology, Typology, And Dynamics Of Commons-Based Peer Production: On Platforms, Actors, And Innovation In The Maker Movement	<i>Creativity And Innovation Management</i>		1
Chan, Wen Li; Mustafa, Michael James	Journal Of Entrepreneurship In Emerging Economies (Jeee): Reflecting On The Past Five Years While Thinking About The Future	<i>Journal Of Entrepreneurship In Emerging Economies</i>		1
Chen, Xueru; Hu, Xiaoji; Ben, Shenglin	How Do Reputation, Structure Design And Fintech Ecosystem Affect The Net Cash Inflow Of P2p Lending Platforms? Evidence From China	<i>Electronic Commerce Research</i>		1

Hein, Andreas; Schrieck, Maximilian; Riasanow, Tobias; Setzke, David Soto; Wiesche, Manuel; Boehm, Markus; Krcmar, Helmut	Digital Platform Ecosystems	<i>Electronic Markets, 30(1), 87-98<</i>	2020	2
Zhao, Yang; Von Delft, Stephan; Morgan-Thomas, Anna; Buck, Trevor	The Evolution Of Platform Business Models: Exploring Competitive Battles In The World Of Platforms	<i>Long Range Planning, 53(4)<</i>	2020	2
Wang, Richard D.; Miller, Cameron D.	Complementors' Engagement In An Ecosystem: A Study Of Publishers' E-Book Offerings On Amazon Kindle	<i>Strategic Management Journal, 41(1), 3-26<</i>	2020	2
Bazarhanova, Anar; Yli-Huumo, Jesse; Smolander, Kari	From Platform Dominance To Weakened Ownership: How External Regulation Changed Finnish E-Identification	<i>Electronic Markets, 30(3), 525-538<</i>	2020	2
Papachristos, George	Platform Competition: A Research Outline For Modelling And Simulation Research	<i>Journal Of Engineering And Technology Management, 56<</i>	2020	2
Ricart, Joan Enric; Snihur, Yuliya; Carrasco-Farre, Carlos; Berrone, Pascual	Grassroots Resistance To Digital Platforms And Relational Business Model Design To Overcome It: A Conceptual Framework	<i>Strategy Science, 5(3), 271-291<</i>	2020	2
Veisdal, Jorgen	The Dynamics Of Entry For Digital Platforms In Two-Sided Markets: A Multi-Case Study	<i>Electronic Markets, 30(3), 539-556<</i>	2020	2
Tan, Burcu; Anderson, Edward G., Jr.; Parker, Geoffrey G.	Platform Pricing And Investment To Drive Third-Party Value Creation In Two-Sided Networks	<i>Information Systems Research, 31(1), 217-239<</i>	2020	2
Basaure, Arturo; Vesselkov, Alexandr; Toyli, Juuso	Internet Of Things (Iot) Platform Competition: Consumer Switching Versus Provider Multihoming	<i>Technovation, 90-91<</i>	2020	2
Tavalaei, M. Mahdi	Waiting Time In Two-Sided Platforms: The Case Of The Airport Industry	<i>Technological Forecasting And Social Change, 159<</i>	2020	2
Foerderer, Jens	Interfirm Exchange And Innovation In Platform Ecosystems: Evidence From	<i>Management Science, 66(10), 4772-4787<</i>	2020	2

Apple's Worldwide Developers Conference				
Hukal, Philipp; Henfridsson, Ola; Shaikh, Maha; Parker, Geoffrey	Platform Signaling For Generating Platform Content	<i>Mis Quarterly</i> , 44(3), 1177-1205<	2020	2
Tae, C. Jennifer; Luo, Xueming; Lin, Zhijie	Capacity-Constrained entrepreneurs And Their Product Portfolio Size: The Response To A Platform Design Change On A Chinese Sharing Economy Platform	<i>Strategic Entrepreneurship Journal</i> , 14(3), 302-328<	2020	2
Fink, Lior; Shao, Jianhua; Lichtenstein, Yossi; Haefliger, Stefan	The Ownership Of Digital Infrastructure: Exploring The Deployment Of Software Libraries In A Digital Innovation Cluster	<i>Journal Of Information Technology</i> , 35(3), 251-269<	2020	2
Cennamo, Carmelo; Dagnino, Giovanni Battista; Di Minin, Alberto; Lanzolla, Gianvito	Managing Digital Transformation: Scope Of Transformation And Modalities Of Value Co-Generation And Delivery	<i>California Management Review</i> , 62(4), 5-16<	2020	2
Zahra, Shaker A.	International Entrepreneurship (Ie) In The Age Of Political Turbulence	<i>Academy Of Management Discoveries</i> , 6(2), 172-175<	2020	2
Rietveld, Joost; Schilling, Melissa A.; Bellavitis, Cristiano	Platform Strategy: Managing Ecosystem Value Through Selective Promotion Of Complements	<i>Organization Science</i> , 30(6), 1232-1251<	2019	2
Van Der Graaf, Shenja; Ballon, Pieter	Navigating Platform Urbanism	<i>Technological Forecasting And Social Change</i> , 142, 364-372<	2019	2
Shilton, Katie; Greene, Daniel	Linking Platforms, Practices, And Developer Ethics: Levers For Privacy Discourse In Mobile Application Development	<i>Journal Of Business Ethics</i> , 155(1), 131-146<	2019	2
Cennamo, Carmelo; Santalo, Juan	Generativity Tension And Value Creation In Platform Ecosystems	<i>Organization Science</i> , 30(3), 617-641<	2019	2
Li, Jiatao; Chen, Liang; Yi, Jingtao; Mao, Jiye; Liao, Jianwen	Ecosystem-Specific Advantages In International Digital Commerce	<i>Journal Of International Business Studies</i> , 50(9), 1448-1463<	2019	2

Saadatmand, Fatemeh; Lindgren, Rikard; Schultze, Ulrike	Configurations Of Platform Organizations: Implications For Complementor Engagement	<i>Research Policy</i> , 48(8)<	2019	2
Pereira, Joana; Tavalaei, M. Mahdi; Ozalp, Hakan	Blockchain-Based Platforms: Decentralized Infrastructures And Its Boundary Conditions	<i>Technological Forecasting And Social Change</i> , 146, 94-102<	2019	2
Spulber, Daniel F.	The Economics Of Markets And Platforms	<i>Journal Of Economics & Management Strategy</i> , 28(1), 159-172<	2019	2
Schmeiss, Jessica; Hoelzle, Katharina; Tech, Robin P. G.	Designing Governance Mechanisms In Platform Ecosystems: Addressing The Paradox Of Openness Through Blockchain Technology	<i>California Management Review</i> , 62(1), 121-143<	2019	2
Wan, Xing; Chen, Jing	The Relationship Between Platform Choice And Supplier's Efficiency- Evidence From China's Online To Offline (O2o)E-Commerce Platforms	<i>Electronic Markets</i> , 29(2), 153-166<	2019	2
Otto, Boris; Jarke, Matthias	Designing A Multi-Sided Data Platform: Findings From The International Data Spaces Case	<i>Electronic Markets</i> , 29(4), 561-580<	2019	2
Kenney, Martin; Rouvinen, Petri; Seppala, Timo; Zysman, John	Platforms And Industrial Change	<i>Industry And Innovation</i> , 26(8), 871-879<	2019	2
Yi, Jingtao; He, Jinqiu; Yang, Lihong	Platform Heterogeneity, Platform Governance And Complementors' Product Performance: An Empirical Study Of The Mobile Application Industry	<i>Frontiers Of Business Research In China</i> , 13(1)<	2019	2
Barach, Moshe A.; Kaul, Aseem; Leung, Ming D.; Lu, Sibio	Strategic Redundancy In The Use Of Big Data: Evidence From A Two-Sided Labor Market	<i>Strategy Science</i> , 4(4), 298-322<	2019	2
Jensen, Thomas; Hedman, Jonas; Henningsson, Stefan	How Tradelens Delivers Business Value With Blockchain Technology	<i>Mis Quarterly Executive</i> , 18(4), 221-243<	2019	2
Roma, Paolo; Vasi, Maria	Diversification And Performance In The Mobile App Market: The Role Of The Platform Ecosystem	<i>Technological Forecasting And Social Change</i> , 147, 123-139<	2019	2
Simcoe, Timothy; Watson, Jeremy	Forking, Fragmentation, And Splintering	<i>Strategy Science</i> , 4(4), 283-297<	2019	2

Li, Qi; Wang, Quansheng; Song, Peijian	The Effects Of Agency Selling On Reselling On Hybrid Retail Platforms	<i>International Journal Of Electronic Commerce</i> , 23(4), 524-556<	2019	2
Cui, Zhengyan; Ouyang, Taohua; Chen, Jing; Li, Chenxi	From Peripheral To Core: A Case Study Of A 3d Printing Firm On Business Ecosystems Reconstruction	<i>Technology Analysis & Strategic Management</i> , 31(12), 1381-1394<	2019	2
Daradkeh, Mohammad	Critical Success Factors Of Enterprise Data Analytics And Visualization Ecosystem: An Interview Study	<i>International Journal Of Information Technology Project Management</i> , 10(3), 34-55<	2019	2
De Reuver, Mark; Sorensen, Carsten; Basole, Rahul C.	The Digital Platform: A Research Agenda	<i>Journal Of Information Technology</i> , 33(2), 124-135<	2018	2
Dattee, Brice; Alexy, Oliver; Autio, Erkkko	Maneuvering In Poor Visibility: How Firms Play The Ecosystem Game When Uncertainty Is High	<i>Academy Of Management Journal</i> , 61(2), 466-498<	2018	2
Song, Peijian; Xue, Ling; Rai, Arun; Zhang, Cheng	The Ecosystem Of Software Platform: A Study Of Asymmetric Cross-Side Network Effects And Platform Governance	<i>Mis Quarterly</i> , 42(1), 121<	2018	2
Rietveld, Joost; Eggers, J. P.	Demand Heterogeneity In Platform Markets: Implications For Complementors	<i>Organization Science</i> , 29(2), 304-322<	2018	2
Wayne Gregory, Robert; Kaganer, Evgeny; Henfridsson, Ola; Ruch, Thierry Jean	It Consumerization And The Transformation Of It Governance	<i>Mis Quarterly</i> , 42(4), 1225<	2018	2
Rolland, Knut H.; Mathiassen, Lars; Rai, Arun	Managing Digital Platforms In User Organizations: The Interactions Between Digital Options And Digital Debt	<i>Information Systems Research</i> , 29(2), 419-443<	2018	2
Foerderer, Jens; Kude, Thomas; Mithas, Sunil; Heinzl, Armin	Does Platform Owner's Entry Crowd Out Innovation? Evidence From Google Photos	<i>Information Systems Research</i> , 29(2), 444-460<	2018	2
Zalan, Tatiana	Born Global On Blockchain	<i>Review Of International Business And Strategy</i> , 28(1), 19-34<	2018	2
Goldbach, Tobias; Benlian, Alexander; Buxmann, Peter	Differential Effects Of Formal And Self-Control In Mobile Platform Ecosystems: Multi-Method Findings On Third-Party Developers' Continuance	<i>Information & Management</i> , 55(3), 271-284<	2018	2

Intentions And Application Quality					
Kyprianou, Christina	Creating Value From The Outside In Or The Inside Out: How Nascent Intermediaries Build Peer-To-Peer Marketplaces	<i>Academy Of Management Discoveries</i> , 4(3), 336-370<	2018	2	
Zhou, Geng; Song, Peijian	Third-Party Apps (Tpas) And Software Platform Performance: The Moderating Role Of Competitive Entry	<i>Information & Management</i> , 55(7), 901-911<	2018	2	
Huber, Thomas L.; Kude, Thomas; Dibbern, Jens	Governance Practices In Platform Ecosystems: Navigating Tensions Between Cocreated Value And Governance Costs	<i>Information Systems Research</i> , 28(3), 563-584<	2017	2	
Wessel, Michael; Thies, Ferdinand; Benlian, Alexander	Opening The Floodgates: The Implications Of Increasing Platform Openness In Crowdfunding	<i>Journal Of Information Technology</i> , 32(4), 344-360<	2017	2	
Wolfond, Greg	A Blockchain Ecosystem For Digital Identity: Improving Service Delivery In Canada's Public And Private Sectors	<i>Technology Innovation Management Review</i> , 7(10), 35-40<	2017	2	
Qiu, Yixin; Gopal, Anandasivam; Hann, Il-Horn	Logic Pluralism In Mobile Platform Ecosystems: A Study Of Indie App Developers On The Ios App Store	<i>Information Systems Research</i> , 28(2), 225-249<	2017	2	
Lynch, Patrick; Power, Jamie; Hickey, Richard; Messrevey, Thomas	Business Model Strategies: Flexibility Trade In Low Voltage Distribution Networks	<i>Entrepreneurship And Sustainability Issues</i> , 4(3), 380-391<	2017	2	
Daly, A.; Scardamaglia, A.	Profiling The Australian Google Consumer: Implications Of Search Engine Practices For Consumer Law And Policy	<i>Journal Of Consumer Policy</i> , 40(3), 299-320<	2017	2	
Eriksson, Carina Ihlstrom; Akesson, Maria; Lund, Jesper	Designing Ubiquitous Media Services - Exploring The Two-Sided Market Of Newspapers	<i>Journal Of Theoretical And Applied Electronic Commerce Research</i> , 11(3), 1-19<	2016	2	
Tiwana, Amrit	Evolutionary Competition In Platform Ecosystems	<i>Information Systems Research</i> , 26(2), 266-281<	2015	2	

Benlian, Alexander; Hilkert, Daniel; Hess, Thomas	How Open Is This Platform? The Meaning And Measurement Of Platform Openness From The Complementors' Perspective	<i>Journal Of Information Technology, 30(3), 209- 228<</i>	2015	2
Ghazawneh, Ahmad; Henfridsson, Ola	A Paradigmatic Analysis Of Digital Application Marketplaces	<i>Journal Of Information Technology, 30(3), 198- 208<</i>	2015	2
Tiwana, Amrit	Platform Desertion By App Developers	<i>Journal Of Management Information Systems, 32(4), 40-77<</i>	2015	2
Wareham, Jonathan; Fox, Paul B.; Cano Giner, Josep Lluís	Technology Ecosystem Governance	<i>Organization Science, 25(4), 1195-1215<</i>	2014	2
Kallinikos, Jannis; Aaltonen, Aleks; Marton, Attila	The Ambivalent Ontology Of Digital Artifacts	<i>Mis Quarterly, 37(2), 357- 370<</i>	2013	2
Selander, Lisen; Henfridsson, Ola; Svahn, Fredrik	Capability Search And Redeem Across Digital Ecosystems	<i>Journal Of Information Technology, 28(3), 183- 197<</i>	2013	2
Sugai, P	Mapping The Mind Of The Mobile Consumer Across Borders - An Application Of The Zaltman Metaphor Elicitation Technique	<i>International Marketing Review, 22(6), 641-657<</i>	2005	2
Riasanow, Tobias; Jaentgen, Lea; Hermes, Sebastian; Boehm, Markus; Krcmar, Helmut	Core, Intertwined, And Ecosystem-Specific Clusters In Platform Ecosystems: Analyzing Similarities In The Digital Transformation Of The Automotive, Blockchain, Financial, Insurance And Iiot Industry	<i>Electronic Markets</i>		2
Panico, Claudio; Cennamo, Carmelo	User Preferences And Strategic Interactions In Platform Ecosystems	<i>Strategic Management Journal</i>		2
Zhang, Yuchen; Li, Jingjing; Tong, Tony W.	Platform Governance Matters: How Platform Gatekeeping Affects Knowledge Sharing Among Complementors	<i>Strategic Management Journal</i>		2
Chen, Victor Zitian; Hitt, Michael A.	Knowledge Synthesis For Scientific Management: Practical Integration For Complexity Versus Scientific Fragmentation For Simplicity	<i>Journal Of Management Inquiry</i>		2

Khanagha, Saeed; Ansari, Shahzad (Shaz); Paroutis, Sotirios; Oviedo, Luciano	Mutualism And The Dynamics Of New Platform Creation: A Study Of Cisco And Fog Computing	<i>Strategic Management Journal</i>		2
Fang, Tommy Pan; Wu, Andy; Clough, David R.	Platform Diffusion At Temporary Gatherings: Social Coordination And Ecosystem Emergence	<i>Strategic Management Journal</i>		2
Hurni, Thomas; Huber, Thomas L.; Dibbern, Jens; Krancher, Oliver	Complementor Dedication In Platform Ecosystems: Rule Adequacy And The Moderating Role Of Flexible And Benevolent Practices	<i>European Journal Of Information Systems</i>		2
Jacobides, Michael G.; Cennamo, Carmelo; Gawer, Annabelle	Towards A Theory Of Ecosystems	<i>Strategic Management Journal, 39(8), 2255-2276<</i>	2018	3
Acs, Zoltan J.; Stam, Erik; Audretsch, David B.; O'connor, Allan	The Lineages Of The Entrepreneurial Ecosystem Approach	<i>Small Business Economics, 49(1), 1-10<</i>	2017	3
De Vasconcelos Gomes, Leonardo Augusto; Figueiredo Facin, Ana Lucia; Salerno, Mario Sergio; Ikenami, Rodrigo Kazuo	Unpacking The Innovation Ecosystem Construct: Evolution, Gaps And Trends	<i>Technological Forecasting And Social Change, 136, 30-48<</i>	2018	3
Parente, Ronaldo C.; Geleilate, Jose-Mauricio G.; Rong, Ke	The Sharing Economy Globalization Phenomenon: A Research Agenda	<i>Journal Of International Management, 24(1), 52-64<</i>	2018	3
Lehtinen, Jere; Peltokorpi, Antti; Artto, Karlos	Megaprojects As Organizational Platforms And Technology Platforms For Value Creation	<i>International Journal Of Project Management, 37(1), 43-58<</i>	2019	3
Li, Yan-Ru	The Technological Roadmap Of Cisco's Business Ecosystem	<i>Technovation, 29(5), 379-386<</i>	2009	3
Papert, Marcel; Pflaum, Alexander	Development Of An Ecosystem Model For The Realization Of Internet Of Things (Iot) Services In Supply Chain Management	<i>Electronic Markets, 27(2), 175-189<</i>	2017	3
Valkokari, Katri	Business, Innovation, And Knowledge Ecosystems: How They Differ And How To Survive And Thrive Within Them	<i>Technology Innovation Management Review, 17-24<</i>	2015	3

Rong, Ke; Lin, Yong; Shi, Yongjiang; Yu, Jiang	Linking Business Ecosystem Lifecycle With Platform Strategy: A Triple View Of Technology, Application And Organisation	<i>International Journal Of Technology Management,</i> <i>62(1), 75-94<</i>	2013	3
Visnjic, Ivanka; Neely, Andy; Cennamo, Carmelo; Visnjic, Nikola	Governing The City: Unleashing Value From The Business Ecosystem	<i>California Management Review, 59(1), 109-140<</i>	2016	3
El Sawy, Omar A.; Kraemmergaard, Pernille; Amsinck, Henrik; Vinther, Anders Lerbech	How Lego Built The Foundations And Enterprise Capabilities For Digital Leadership	<i>Mis Quarterly Executive,</i> <i>15(2), 141-166<</i>	2016	3
Mantovani, Andrea; Ruiz-Aliseda, Francisco	Equilibrium Innovation Ecosystems: The Dark Side Of Collaborating With Complementors	<i>Management Science,</i> <i>62(2), 534-549<</i>	2016	3
Inoue, Yuki; Tsujimoto, Masaharu	New Market Development Of Platform Ecosystems: A Case Study Of The Nintendo Wii	<i>Technological Forecasting And Social Change, 136,</i> <i>235-253<</i>	2018	3
Song, Abraham K.	The Digital Entrepreneurial Ecosystem-A Critique And Reconfiguration	<i>Small Business Economics,</i> <i>53(3), 569-590<</i>	2019	3
Basole, Rahul C.; Park, Hyunwoo	Interfirm Collaboration And Firm Value In Software Ecosystems: Evidence From Cloud Computing	<i>Ieee Transactions On Engineering Management, 66(3), 368- 380<</i>	2019	3
Blasi, Silvia; Sedita, Silvia Rita	The Diffusion Of A Policy Innovation In The Energy Sector: Evidence From The Collective Switching Case In Europe	<i>Industry And Innovation,</i> <i>27(6), 680-704<</i>	2020	3
Kobylko, Alexander A.	Telecommunication Ecosystems: Special Features Of Management And Interaction	<i>Upravlenets-The Manager, 11(1), 15-23<</i>	2020	3
Su, Yu-Shan; Zheng, Zong-Xi; Chen, Jin	A Multi-Platform Collaboration Innovation Ecosystem: The Case Of China	<i>Management Decision,</i> <i>56(1), 125-142<</i>	2018	3
Teece, David J.	Dynamic Capabilities And (Digital) Platform Lifecycles	<i>Entrepreneurship, Innovation, And Platforms, 37, 211-225<</i>	2017	3

Gao, Yuchen; Liu, Xielin; Ma, Xuemei	How Do Firms Meet The Challenge Of Technological Change By Redesigning Innovation Ecosystem? A Case Study Of Ibm	<i>International Journal Of Technology Management</i> , 80(3-4), 241-265<	2019	3
Pulkkinen, Jukka; Jussila, Jari; Partanen, Atte; Trotskii, Igor; Laiho, Aki	Smart Mobility: Services, Platforms And Ecosystems	<i>Technology Innovation Management Review</i> , 9(9), 15-24<	2019	3
Rong, Ke; Patton, Dean; Chen, Weiwei	Business Models Dynamics And Business Ecosystems In The Emerging 3d Printing Industry	<i>Technological Forecasting And Social Change</i> , 134, 234-245<	2018	3
Kang, Jin-Su; Downing, Stephen	Keystone Effect On Entry Into Two-Sided Markets: An Analysis Of The Market Entry Of Wimax	<i>Technological Forecasting And Social Change</i> , 94, 170-186<	2015	3
Ehrenhard, Michel; Kijl, Bjorn; Nieuwenhuis, Lambert	Market Adoption Barriers Of Multi-Stakeholder Technology: Smart Homes For The Aging Population	<i>Technological Forecasting And Social Change</i> , 89, 306-315<	2014	3
Inoue, Yuki; Tsujimoto, Masaharu	Genres Of Complementary Products In Platform-Based Markets: Changes In Evolutionary Mechanisms By Platform Diffusion Strategies	<i>International Journal Of Innovation Management</i> , 22(1)<	2018	3
Bosch-Sijtsema, Petra M.; Bosch, Jan	Plays Nice With Others? Multiple Ecosystems, Various Roles And Divergent Engagement Models	<i>Technology Analysis & Strategic Management</i> , 27(8), 960-974<	2015	3
Pombo-Juarez, Laura; Konnola, Totti; Miles, Ian; Saritas, Ozcan; Schartinger, Doris; Amanatidou, Effie; Giesecke, Susanne	Wiring Up Multiple Layers Of Innovation Ecosystems: Contemplations From Personal Health Systems Foresight	<i>Technological Forecasting And Social Change</i> , 115, 278-288<	2017	3
Joo, Jaehun; Shin, M. Minsuk	Building Sustainable Business Ecosystems Through Customer Participation: A Lesson From South Korean Cases	<i>Asia Pacific Management Review</i> , 23(1), 1-11<	2018	3
Nieuwenhuis, Lambert J. M.; Ehrenhard, Michel L.; Prause, Lars	The Shift To Cloud Computing: The Impact Of Disruptive Technology On The Enterprise Software Business Ecosystem	<i>Technological Forecasting And Social Change</i> , 129, 308-313<	2018	3

Nishino, Nariaki; Okazaki, Miki; Akai, Kenju	Effects Of Ability Difference And Strategy Imitation On Cooperation Network Formation: A Study With Game Theoretic Modeling And Multi- Agent Simulation	<i>Technological Forecasting And Social Change, 136, 145-156<</i>	2018	3
Azzam, Jamal Eddine; Ayerbe, Cecile; Dang, Rani	Using Patents To Orchestrate Ecosystem Stability: The Case Of A French Aerospace Company	<i>International Journal Of Technology Management, 75(1-4), 97-120<</i>	2017	3
Attour, Amel; Barbaroux, Pierre	Architectural Knowledge And The Birth Of A Platform Ecosystem: A Case Study	<i>Journal Of Innovation Economics & Management, (19), 11- 30<</i>	2016	3
Gastaldi, Luca; Corso, Mariano	Academics As Orchestrators Of Innovation Ecosystems: The Role Of Knowledge Management	<i>International Journal Of Innovation And Technology Management, 13(5)<</i>	2016	3
Tellier, Alberic	Whatever Happened To The 'Great Escape'? Lessons From The Rise And Decline Of The Pinball Ecosystem	<i>International Journal Of Technology Management, 75(1-4), 121-141<</i>	2017	3
Zhang, Qiang; Wang, Yan	Struggling Towards Virtuous Coevolution: Institutional And Strategic Works Of Alibaba In Building The Taobao E- Commerce Ecosystem	<i>Asian Business & Management, 17(3), 208- 242<</i>	2018	3
Hallingby, Hanne Kristine	Key Success Factors For A Growing Technology Innovation System Based On Sms Application-To-Person In Norway	<i>Technology Analysis & Strategic Management, 28(10), 1123-1137<</i>	2016	3
Hou, Hong; Cui, Zhiyu; Shi, Yongjiang	Learning Club, Home Court, And Magnetic Field: Facilitating Business Model Portfolio Extension With A Multi-Faceted Corporate Ecosystem	<i>Long Range Planning, 53(4)<</i>	2020	3
Gandia, Romain; Parmentier, Guy	Managing Open Innovation Through Digital Boundary Control: The Case Of Multi- Sided Platforms In The Collaborative Economy	<i>Journal Of Innovation Economics & Management, (32), 159- 180<</i>	2020	3
Yang, Xiaoping; Cao, Dongmei; Chen, Jing; Xiao, Zuoping; Daowd, Ahmad	Ai And Iot-Based Collaborative Business Ecosystem: A Case In Chinese Fish Farming Industry	<i>International Journal Of Technology Management, 82(2), 151-171<</i>	2020	3

Rupcic, Natasa; Majic, Tomislava; Stjepandic, Josip	Emergence Of Business Ecosystems By Transformation Of Platforms Through The Process Of Organizational Learning	<i>Journal Of Industrial Integration And Management-Innovation And Entrepreneurship, 5(2), 181-203<</i>	2020	3
Feng, Nanping; Fu, Chao; Wei, Fenfen; Peng, Zhanglin; Zhang, Qiang; Zhang, Kevin H.	The Key Role Of Dynamic Capabilities In The Evolutionary Process For A Startup To Develop Into An Innovation Ecosystem Leader: An Indepth Case Study	<i>Journal Of Engineering And Technology Management, 54, 81-96<</i>	2019	3
Miri-Lavassani, Kayvan	Coopetition And Sustainable Competitiveness In Business Ecosystem: A Networks Analysis Of The Global Telecommunications Industry	<i>Transnational Corporations Review, 9(4), 281-308<</i>	2017	3
Tomas, Dias Sant'ana; De Souza Bermejo, Paulo Henrique; Moreira, Marina Figueiredo; De Souza, Wagner Vilas Boas	The Structure Of An Innovation Ecosystem: Foundations For Future Research	<i>Management Decision</i>		3
Chen, Hongquan; Jin, Zhizhou; Su, Quanke; Yue, Gaoyu	The Roles Of Captains In Megaproject Innovation Ecosystems: The Case Of The Hong Kong-Zhuhai-Macau Bridge	<i>Engineering Construction And Architectural Management</i>		3
Kostovska, Ivana; Raats, Tim; Donders, Karen; Ballon, Pieter	Going Beyond The Hype: Conceptualising "Media Ecosystem" For Media Management Research	<i>Journal Of Media Business Studies</i>		3
Alaimo, Cristina; Kallinikos, Jannis; Valderrama, Erika	Platforms As Service Ecosystems: Lessons From Social Media	<i>Journal Of Information Technology, 35(1), 25-48<</i>	2020	4
Argyres, Nicholas; Bercovitz, Janet; Zanarone, Giorgio	The Role Of Relationship Scope In Sustaining Relational Contracts In Interfirm Networks	<i>Strategic Management Journal, 41(2), 222-245<</i>	2020	4
Attour, Amel; Lazaric, Nathalie	From Knowledge To Business Ecosystems: Emergence Of An Entrepreneurial Activity During Knowledge Replication	<i>Small Business Economics, 54(2), 575-587<</i>	2020	4
Lee, Yeon W.; Moon, Hwy-Chang; Yin, Wenyan	Innovation Process In The Business Ecosystem: The Four Cooperations Practices In The Media Platform	<i>Business Process Management Journal, 26(4), 943-971<</i>	2020	4

Jiang, Hong; Gao, Sipeng; Zhao, Shukuan; Chen, Hong	Competition Of Technology Standards In Industry 4.0: An Innovation Ecosystem Perspective	<i>Systems Research And Behavioral Science</i> , 37(4), 772-783<	2020	4
Giovanini, Adilson; Bittencourt, Pablo F.; Maldonado, Mauricio Uriona	Innovation Ecosystem In Application Platforms: An Exploratory Study Of The Role Of Users	<i>Revista Brasileira De Inovacao</i> , 19<	2020	4
Kohtamaki, Marko; Parida, Vinit; Oghazi, Pejvak; Gebauer, Heiko; Baines, Tim	Digital Servitization Business Models In Ecosystems: A Theory Of The Firm	<i>Journal Of Business Research</i> , 104, 380-392<	2019	4
Matthyssens, Paul	Reconceptualizing Value Innovation For Industry 4.0 And The Industrial Internet Of Things	<i>Journal Of Business & Industrial Marketing</i> , 34(6), 1203-1209<	2019	4
Helveston, John P.; Wang, Yanmin; Karplus, Valerie J.; Fuchs, Erica R. H.	Institutional Complementarities: The Origins Of Experimentation In China's Plug-In Electric Vehicle Industry	<i>Research Policy</i> , 48(1), 206-222<	2019	4
Markman, Gideon D.; Gianiodis, Peter; Tyge Payne, G.; Tucci, Christopher; Filatotchev, Igor; Kotha, Reddi; Gedajlovic, Eric	The Who, Where, What, How And When Of Market Entry	<i>Journal Of Management Studies</i> , 56(7), 1241-1259<	2019	4
Tee, Richard	Benefiting From Modularity Within And Across Firm Boundaries	<i>Industrial And Corporate Change</i> , 28(5), 1011-1028<	2019	4
Aulkemeier, Fabian; Iacob, Maria-Eugenia; Van Hillegersberg, Jos	Platform-Based Collaboration In Digital Ecosystems	<i>Electronic Markets</i> , 29(4), 597-608<	2019	4
Salvador, Elisa; Simon, Jean-Paul; Benghozi, Pierre-Jean	Facing Disruption: The Cinema Value Chain In The Digital Age	<i>International Journal Of Arts Management</i> , 22(1), 25-40<	2019	4
Teece, David J.	Profiting From Innovation In The Digital Economy: Enabling Technologies, Standards, And Licensing Models In The Wireless World	<i>Research Policy</i> , 47(8), 1367-1387<	2018	4
Helfat, Constance E.; Raubitschek, Ruth S.	Dynamic And Integrative Capabilities For Profiting From Innovation In Digital Platform-Based Ecosystems	<i>Research Policy</i> , 47(8), 1391-1399<	2018	4

Christensen, Clayton M.; Mcdonald, Rory; Altman, Elizabeth J.; Palmer, Jonathan E.	Disruptive Innovation: An Intellectual History And Directions For Future Research	<i>Journal Of Management Studies, 55(7), 1043-1078</i> <	2018	4
Ozalp, Hakan; Cennamo, Carmelo; Gawer, Annabelle	Disruption In Platform-Based Ecosystems	<i>Journal Of Management Studies, 55(7), 1203-1241</i> <	2018	4
Cozzolino, Alessio; Verona, Gianmario; Rothaermel, Frank T.	Unpacking The Disruption Process: New Technology, Business Models, And Incumbent Adaptation	<i>Journal Of Management Studies, 55(7), 1166-1202</i> <	2018	4
Kumaraswamy, Arun; Garud, Raghu; Ansari, Shahzad (Shaz)	Perspectives On Disruptive Innovations	<i>Journal Of Management Studies, 55(7), 1025-1042</i> <	2018	4
Kim, Junic	Market Entry Strategy For A Digital Platform Provider	<i>Baltic Journal Of Management, 13(3), 390-406</i> <	2018	4
Khanagha, Saeed; Zadeh, Mohammad Taghi Ramezan; Mihalache, Oli R.; Volberda, Henk W.	Embracing Bewilderment: Responding To Technological Disruption In Heterogeneous Market Environments	<i>Journal Of Management Studies, 55(7), 1079-1121</i> <	2018	4
Winby, Stu; Mohrman, Susan Albers	Digital Sociotechnical System Design	<i>Journal Of Applied Behavioral Science, 54(4), 399-423</i> <	2018	4
Breznitz, Dan; Forman, Chris; Wen, Wen	The Role Of Venture Capital In The Formation Of A New Technological Ecosystem: Evidence From The Cloud	<i>Mis Quarterly, 42(4), 1143</i> <	2018	4
Adner, Ron	Ecosystem As Structure: An Actionable Construct For Strategy	<i>Journal Of Management, 43(1), 39-58</i> <	2017	4
Kapoor, Rahul; Agarwal, Shiva	Sustaining Superior Performance In Business Ecosystems: Evidence From Application Software Developers In The Ios And Android Smartphone Ecosystems	<i>Organization Science, 28(3), 531-551</i> <	2017	4
Ferras-Hernandez, Xavier; Tarrats-Pons, Elisenda; Arimany-Serrat, Nuria	Disruption In The Automotive Industry: A Cambrian Moment	<i>Business Horizons, 60(6), 855-863</i> <	2017	4

Gupta, Vikas; Jain, Namita	Harnessing Information And Communication Technologies For Effective Knowledge Creation Shaping The Future Of Education	<i>Journal Of Enterprise Information Management, 30(5), 831-855<</i>	2017	4
Chen, Tianxu; Qian, Lihong; Narayanan, Vadake	Battle On The Wrong Field? Entrant Type, Dominant Designs, And Technology Exit	<i>Strategic Management Journal, 38(13), 2579-2598<</i>	2017	4
West, Joel	Open Source Platforms Beyond Software: From Ict To Biotechnology	<i>Entrepreneurship, Innovation, And Platforms, 37, 337-368<</i>	2017	4
Ansari, Shahzad (Shaz); Garud, Raghu; Kumaraswamy, Arun	The Disruptor's Dilemma: Tivo And The Us Television Ecosystem	<i>Strategic Management Journal, 37(9), 1829-1853<</i>	2016	4
Davis, Jason P.	The Group Dynamics Of Interorganizational Relationships: Collaborating With Multiple Partners In Innovation Ecosystems	<i>Administrative Science Quarterly, 61(4), 621-661<</i>	2016	4
Sandstrom, Christian G.	The Non-Disruptive Emergence Of An Ecosystem For 3d Printing - Insights From The Hearing Aid Industry's Transition 1989-2008	<i>Technological Forecasting And Social Change, 102, 160-168<</i>	2016	4
Aulkemeier, Fabian; Paramartha, Mohammad Anggasta; Iacob, Maria-Eugenia; Van Hillegersberg, Jos	A Pluggable Service Platform Architecture For E-Commerce	<i>Information Systems And E-Business Management, 14(3), 469-489<</i>	2016	4
Attour, Amel; Della Peruta, Maelle	Architectural Knowledge: Key Flows And Processes In Designing An Inter-Organisational Technological Platform	<i>Knowledge Management Research & Practice, 14(1), 27-34<</i>	2016	4
Ogilvie, Timothy	How To Thrive In The Era Of Collaborative Services Entrepreneurship	<i>Research-Technology Management, 58(5), 24-33<</i>	2015	4
Gencer, Mehmet; Oba, Beyza	Open Innovation Ecosystems In The Software Industry	<i>Open Innovation Through Strategic Alliances: Approaches For Product, Technology, And Business Model Creation, 277-292<</i>	2014	4

West, Joel; Wood, David	Evolving An Open Ecosystem: The Rise And Fall Of The Symbian Platform	<i>Collaboration And Competition In Business Ecosystems</i> , 30, 27-67<	2013	4
Davis, Jason P.	The Emergence And Coordination Of Synchrony In Organizational Ecosystems	<i>Collaboration And Competition In Business Ecosystems</i> , 30, 197-237<	2013	4
Ceccagnoli, Marco; Forman, Chris; Huang, Peng; Wu, D. J.	Cocreation Of Value In A Platform Ecosystem: The Case Of Enterprise Software	<i>Mis Quarterly</i> , 36(1), 263-290<	2012	4
Park, Sangmoon	The Effects Of Entry Timing And Business Model Innovation On Performance: The Case Of The Global Mp3 Player Market	<i>Asian Journal Of Technology Innovation</i> , 19(1), 133-147<	2011	4
Garud, Raghu; Kumaraswamy, Arun; Roberts, Anna; Xu, Le	Liminal Movement By Digital Platform-Based Sharing Economy Ventures: The Case Of Uber Technologies	<i>Strategic Management Journal</i>		4
Miller, Cameron D.; Toh, Puay Khoon	Complementary Components And Returns From Coordination Within Ecosystems Via Standard Setting	<i>Strategic Management Journal</i>		4
Bai, Guo; Velamuri, S. Ramakrishna	Contextualizing The Sharing Economy	<i>Journal Of Management Studies</i>		4
Nepelski, Daniel; Van Roy, Vincent	Innovation And Innovator Assessment In R&I Ecosystems: The Case Of The Eu Framework Programme	<i>Journal Of Technology Transfer</i>		4
Trabucchi, Daniel; Buganza, Tommaso	Fostering Digital Platform Innovation: From Two To Multi-Sided Platforms	<i>Creativity And Innovation Management</i> , 29(2), 345-358<	2020	5
Kopalle, Praveen K.; Kumar, V.; Subramaniam, Mohan	How Legacy Firms Can Embrace The Digital Ecosystem Via Digital Customer Orientation	<i>Journal Of The Academy Of Marketing Science</i> , 48(1), 114-131<	2020	5
Hilbolling, Susan; Berends, Hans; Deken, Fleur; Tuertscher, Philipp	Complementors As Connectors: Managing Open Innovation Around Digital Product Platforms	<i>R & D Management</i> , 50(1), 18-30<	2020	5
Rangaswamy, Arvind; Moch, Nicole; Felten, Claudio; Van Bruggen, Gerrit; Wieringa, Jaap E.; Wirtz, Jochen	The Role Of Marketing In Digital Business Platforms	<i>Journal Of Interactive Marketing</i> , 51, 72-90<	2020	5

Isckia, Thierry; De Reuver, Mark; Lescop, Denis	Orchestrating Platform Ecosystems: The Interplay Of Innovation And Business Development Subsystems	<i>Journal Of Innovation Economics & Management, (32), 197-223<</i>	2020	5
Cha, Hongryol	A Paradigm Shift In The Global Strategy Of Mnes Towards Business Ecosystems: A Research Agenda For New Theory Development	<i>Journal Of International Management, 26(3)<</i>	2020	5
Koch, Stefan; Artmayr, Philipp	Stability And Development Of User Innovation Strategies For Video Game Producers	<i>European Journal Of Innovation Management, 23(5), 753-764<</i>	2020	5
Wirtz, Jochen; So, Kevin Kam Fung; Mody, Makarand Amrish; Liu, Stephanie Q.; Chun, Haeun Helen	Platforms In The Peer-To-Peer Sharing Economy	<i>Journal Of Service Management, 30(4), 452-483<</i>	2019	5
Laczko, Pavel; Hullova, Dusana; Needham, Andrew; Rossiter, Ann-Marie; Battisti, Martina	The Role Of A Central Actor In Increasing Platform Stickiness And Stakeholder Profitability: Bridging The Gap Between Value Creation And Value Capture In The Sharing Economy	<i>Industrial Marketing Management, 76, 214-230<</i>	2019	5
He, Xiaohong	Digital Entrepreneurship Solution To Rural Poverty: Theory, Practice And Policy Implications	<i>Journal Of Developmental Entrepreneurship, 24(1)<</i>	2019	5
Christensen, Irene; Karlsson, Christer	Open Innovation And The Effects Of Crowdsourcing In A Pharma Ecosystem	<i>Journal Of Innovation & Knowledge, 4(4), 240-247<</i>	2019	5
Surie, Aditi; Sharma, Lakshmee V.	Climate Change, Agrarian Distress, And The Role Of Digital Labour Markets: Evidence From Bengaluru, Karnataka	<i>Decision, 46(2), 127-138<</i>	2019	5
Santoso, Adhi Setyo; Prijadi, Ruslan; Balqiah, Tengku Ezni	Synergizing Multi-Sided Platform Firms And Crowds: A Typology Of An Open Innovation Mechanism In A Digital Ecosystem	<i>International Journal Of Business, 24(4), 434-454<</i>	2019	5
Pan, Jianlin; Lin, Jie	Construction Of Network Entrepreneurial Platform Leadership Characteristics Model: Based On The Grounded Theory	<i>Journal Of Business Economics And Management, 20(5), 958-978<</i>	2019	5

Tajedin, Hamed; Madhok, Anoop; Keyhani, Mohammad	A Theory Of Digital Firm- Designed Markets: Defying Knowledge Constraints With Crowds And Marketplaces	<i>Strategy Science</i> , 4(4), 323-342<	2019	5
Shim, Yongwoon; Lee, Heejin; Fomin, Vladislav	What Benefits Couldn't Joyn' Enjoy? The Changing Role Of Standards In The Competition In Mobile Instant Messengers In Korea	<i>Technological Forecasting And Social Change</i> , 139, 125-134<	2019	5
Valdez-De-Leon, Omar	How To Develop A Digital Ecosystem: A Practical Framework	<i>Technology Innovation Management Review</i> , 9(8), 43-54<	2019	5
Nambisan, Satish; Siegel, Donald; Kenney, Martin	On Open Innovation, Platforms, And Entrepreneurship	<i>Strategic Entrepreneurship Journal</i> , 12(3), 354-368<	2018	5
Eckhardt, Jonathan T.; Ciuchta, Michael P.; Carpenter, Mason	Open Innovation, Information, And Entrepreneurship Within Platform Ecosystems	<i>Strategic Entrepreneurship Journal</i> , 12(3), 369-391<	2018	5
Holgerson, Marcus; Granstrand, Ove; Bogers, Marcel	The Evolution Of Intellectual Property Strategy In Innovation Ecosystems: Uncovering Complementary And Substitute Appropriability Regimes	<i>Long Range Planning</i> , 51(2), 303-319<	2018	5
Haenninen, Mikko; Smedlund, Anssi; Mitronen, Lasse	Digitalization In Retailing: Multi-Sided Platforms As Drivers Of Industry Transformation	<i>Baltic Journal Of Management</i> , 13(2), 152- 168<	2018	5
Tura, Nina; Kutvonen, Antero; Ritala, Paavo	Platform Design Framework: Conceptualisation And Application	<i>Technology Analysis & Strategic Management</i> , 30(8), 881-894<	2018	5
Rajala, Risto; Hakanen, Esko; Mattila, Juri; Seppala, Timo; Westerlund, Mika	How Do Intelligent Goods Shape Closed-Loop Systems?	<i>California Management Review</i> , 60(3), 20-44<	2018	5
Fehrer, Julia A.; Woratschek, Herbert; Brodie, Roderick J.	A Systemic Logic For Platform Business Models	<i>Journal Of Service Management</i> , 29(4), 546- 568<	2018	5
Yablonsky, Sergey	A Multidimensional Framework For Digital Platform Innovation And Management: From Business To Technological Platforms	<i>Systems Research And Behavioral Science</i> , 35(4), 485-501<	2018	5
Lee, Changjun; Hwang, Junseok	The Influence Of Giant Platform On Content Diversity	<i>Technological Forecasting And Social Change</i> , 136, 157-165<	2018	5

Vilkkumaa, Eeva; Liesio, Juuso; Salo, Ahti; Ilmola-Sheppard, Leena	Scenario-Based Portfolio Model For Building Robust And Proactive Strategies	<i>European Journal Of Operational Research,</i> 266(1), 205-220<	2018	5
Saravanamuthu, Kala	How Risk Information And Stakeholder-Participation Affect The Sustainability Of Collaborative Decisions: A Case Study On How The Sustainability Of Stakeholder Decisions Is Affected By Different Levels Of Stakeholder Participation In Preparing Risk Information	<i>Business Strategy And The Environment, 27(7), 1067- 1078<</i>	2018	5
Santoso, Adhi Setyo; Wahyuni, Sari	Maximizing Strategic Alliances In The Multi-Sided Platform Firms	<i>International Journal Of Business, 23(1), 26-52<</i>	2018	5
Steur, Andreas J.	When A New Platform Enters A Market, What Is The Impact On Incumbents ?	<i>Technology Innovation Management Review,</i> 8(10), 44-53<	2018	5
David-West, Olayinka; Umukoro, Immanuel Ovemeso; Onuoha, Raymond Okwudiri	Platforms In Sub-Saharan Africa: Startup Models And The Role Of Business Incubation	<i>Journal Of Intellectual Capital, 19(3), 581-616<</i>	2018	5
Bogers, Marcel; Zobel, Ann-Kristin; Afuah, Allan; Almirall, Esteve; Brunswicker, Sabine; Dahlander, Linus; Frederiksen, Lars; Gawer, Annabelle; Gruber, Marc; Haefliger, Stefan; Hagedoorn, John; Hilgers, Dennis; Laursen, Keld; Magnusson, Mats G.; Majchrzak, Ann; Mccarthy, Ian P.; Moeslein, Kathrin M.; Nambisan, Satish; Piller, Frank T.; Radziwon, Agnieszka; Rossi-Lamastra, Cristina; Sims, Jonathan; Ter Wal, Anne L. J.	The Open Innovation Research Landscape: Established Perspectives And Emerging Themes Across Different Levels Of Analysis	<i>Industry And Innovation,</i> 24(1), 8-40<	2017	5

West, Joel; Bogers, Marcel	Open Innovation: Current Status And Research Opportunities	<i>Innovation-Organization & Management, 19(1), 43-50<</i>	2017	5
Altman, Elizabeth J.; Tushman, Michael L.	Platforms, Open/User Innovation, And Ecosystems: A Strategic Leadership Perspective	<i>Entrepreneurship, Innovation, And Platforms, 37, 177-207<</i>	2017	5
Korhonen, Heidi M. E.; Still, Kaisa; Seppanen, Marko; Kumpulainen, Miika; Suominen, Arho; Valkokari, Katri	The Core Interaction Of Platforms: How Startups Connect Users And Producers	<i>Technology Innovation Management Review, 7(9), 17-29<</i>	2017	5
Dufva, Mikko; Koivisto, Raija; Ilmola-Sheppard, Leena; Junno, Seija	Anticipating Alternative Futures For The Platform Economy	<i>Technology Innovation Management Review, 7(9), 6-16<</i>	2017	5
Dey, Anamika; Gupta, Anil; Singh, Gurdeep	Open Innovation At Different Levels For Higher Climate Risk Resilience	<i>Science Technology And Society, 22(3), 388-406<</i>	2017	5
Dalle, Jean-Michel; Den Besten, Matthijs; Martinez, Catalina; Maraut, Stephane	Microwork Platforms As Enablers To New Ecosystems And Business Models: The Challenge Of Managing Difficult Tasks	<i>International Journal Of Technology Management, 75(1-4), 55-72<</i>	2017	5
Koch, Stefan; Bierbamer, Michael	Opening Your Product: Impact Of User Innovations And Their Distribution Platform On Video Game Success	<i>Electronic Markets, 26(4), 357-368<</i>	2016	5
Bhargava, Hemant K.; Rubel, Olivier; Altman, Elizabeth J.; Arora, Ramnik; Boehnke, Jorn; Daniels, Kaitlin; Derdenger, Timothy; Kirschner, Bryan; Laframboise, Darin; Loupos, Pantelis; Parker, Geoffrey; Pattabhiramaiah, Adithya	Platform Data Strategy	<i>Marketing Letters</i>		5
Nambisan, Satish; Zahra, Shaker A.; Luo, Yadong	Global Platforms And Ecosystems: Implications For International Business Theories	<i>Journal Of International Business Studies, 50(9), 1464-1486<</i>	2019	6
Zhu, Feng	Friends Or Foes? Examining Platform Owners' Entry Into Complementors' Spaces	<i>Journal Of Economics & Management Strategy, 28(1), 23-28<</i>	2019	6

Parker, Geoffrey; Van Alstyne, Marshall	Innovation, Openness, And Platform Control	<i>Management Science</i> , 64(7), 3015-3032<	2018	6
Winter, Juha; Battisti, Sandro; Burstrom, Thommie; Luukkainen, Sakari	Exploring The Success Factors Of Mobile Business Ecosystems	<i>International Journal Of Innovation And Technology Management</i> , 15(3)<	2018	6
Tsai, Chung-Lin	The Timing Of Fostering Complementary Innovation: Exploring The Antecedent Of Industry Platform Emergence	<i>Technology Analysis & Strategic Management</i> , 30(10), 1121-1135<	2018	6
Parker, Geoffrey; Van Alstyne, Marshall; Jiang, Xiaoyue	Platform Ecosystems: How Developers Invert The Firm	<i>Mis Quarterly</i> , 41(1), 255<	2017	6
Muegge, Steven M.; Mezen, Mel	Business Ecosystems And New Venture Business Models: An Exploratory Study Of Participation In The Lead To Win Job-Creation Engine	<i>International Journal Of Technology Management</i> , 75(1-4), 157-192<	2017	6
Xu, Xiaohui	Platform Licensing For Electronic Commerce Ecosystems	<i>Journal Of Electronic Commerce Research</i> , 18(2), 177-188<	2017	6
Bagheri, Seyed Kamran; Di Minin, Alberto; Paraboschi, Andrea; Piccaluga, Andrea	It's Not About Being Generous	<i>Research-Technology Management</i> , 59(2), 28-35<	2016	6
Oh, Jungsuk; Koh, Byungwan; Raghunathan, Srinivasan	Value Appropriation Between The Platform Provider And App Developers In Mobile Platform Mediated Networks	<i>Journal Of Information Technology</i> , 30(3), 245-259<	2015	6
Pon, Bryan; Seppala, Timo; Kenney, Martin	One Ring To Unite Them All: Convergence, The Smartphone, And The Cloud	<i>Journal Of Industry Competition & Trade</i> , 15(1), 21-33<	2015	6
Blondel, Frederique; Edouard, Serge	Entrance Into A Platform-Dominated Market: Virtue Of An Open Strategy On The Numerical Computation Market	<i>Canadian Journal Of Administrative Sciences- Revue Canadienne Des Sciences De L Administration</i> , 32(3), 177-188<	2015	6
Gawer, Annabelle; Cusumano, Michael A.	Industry Platforms And Ecosystem Innovation	<i>Journal Of Product Innovation Management</i> , 31(3), 417-433<	2014	6
Gawer, Annabelle	Bridging Differing Perspectives On Technological Platforms:	<i>Research Policy</i> , 43(7), 1239-1249<	2014	6

	Toward An Integrative Framework			
Thomas, Llewellyn D. W.; Autio, Erkki; Gann, David M.	Architectural Leverage: Putting Platforms In Context	<i>Academy Of Management Perspectives</i> , 28(2), 198-219<	2014	6
Cennamo, Carmelo; Santalo, Juan	Platform Competition: Strategic Trade-Offs In Platform Markets	<i>Strategic Management Journal</i> , 34(11), 1331-1350<	2013	6
Viljainen, Martti; Kauppinen, Marjo	Framing Management Practices For Keystones In Platform Ecosystems	<i>Software Ecosystems: Analyzing And Managing Business Networks In The Software Industry</i> , 121-137<	2013	6
Iyer, Bala; Henderson, John C.	Business Value From Clouds: Learning From Users	<i>Mis Quarterly Executive</i> , 11(1), 51-60<	2012	6
Cusumano, Michael A.	Platforms Versus Products: Observations From The Literature And History	<i>History And Strategy</i> , 29, 35-67<	2012	6
Leblebici, Huseyin	The Evolution Of Alternative Business Models And The Legitimization Of Universal Credit Card Industry: Exploring The Contested Terrain Where History And Strategy Meet	<i>History And Strategy</i> , 29, 117-151<	2012	6
Tiwana, Amrit; Konsynski, Benn; Bush, Ashley A.	Platform Evolution: Coevolution Of Platform Architecture, Governance, And Environmental Dynamics	<i>Information Systems Research</i> , 21(4), 675-687<	2010	6
Weiss, Michael; Gangadharan, G. R.	Modeling The Mashup Ecosystem: Structure And Growth	<i>R & D Management</i> , 40(1), 40-49<	2010	6
Tee, Richard; Gawer, Annabelle	Industry Architecture As A Determinant Of Successful Platform Strategies: A Case Study Of The I-Mode Mobile Internet Service	<i>European Management Review</i> , 6(4), 217-232<	2009	6
Gawer, Annabelle; Cusumano, Michael A.	How Companies Become Platform Leaders	<i>Mit Sloan Management Review</i> , 49(2), 28<	2008	6
Habbershon, Timothy G.	Commentary: A Framework For Managing The Familiness And Agency Advantages In Family Firms	<i>Entrepreneurship Theory And Practice</i> , 30(6), 879-886<	2006	6
Cusumano, Ma; Gawer, A	The Elements Of Platform Leadership	<i>Mit Sloan Management Review</i> , 43(3), 51<	2002	6

O'mahony, Siobhan; Karp, Rebecca	From Proprietary To Collective Governance: How Do Platform Participation Strategies Evolve?	<i>Strategic Management Journal</i>	6
-------------------------------------	---	---	---

2.6 Reference

- Adner, R. (2006). Match Your Innovation Strategy To Your Innovation Ecosystem. *Harvard Business Review*, 84, 98–107; 148.
- Adner, R., & Kapoor, R. (2010). Value Creation In Innovation Ecosystems: How The Structure Of Technological Interdependence Affects Firm Performance In New Technology Generations. *Strategic Management Journal*, 31(3), 306–333. <https://doi.org/10.1002/smj.821>
- Altman, E. J., & Tushman, M. L. (2017). Platforms, Open/User Innovation, And Ecosystems: A Strategic Leadership Perspective. In Furman, J And Gawer, A And Silverman, Bs And Stern, S (Ed.), *Entrepreneurship, Innovation, And Platforms* (Vol. 37, Pp. 177–207). Emerald Group Publishing Ltd. <https://doi.org/10.1108/S0742-332220170000037007>
- Ansari, S. (Shaz), Garud, R., & Kumaraswamy, A. (2016). The Disruptor’s Dilemma: Tivo And The Us Television Ecosystem. In *Strategic Management Journal* (Vol. 37, Issue 9, Pp. 1829–1853). Wiley. <https://doi.org/10.1002/smj.2442>
- Attour, A., & Lazaric, N. (2020). From Knowledge To Business Ecosystems: Emergence Of An Entrepreneurial Activity During Knowledge Replication. In *Small Business Economics* (Vol. 54, Issues 2, Si, Pp. 575–587). Springer. <https://doi.org/10.1007/S11187-018-0035-3>
- Azzam, J. E., Ayerbe, C., & Dang, R. (2017). Using Patents To Orchestrate Ecosystem Stability: The Case Of A French Aerospace Company. In *International Journal Of Technology Management* (Vol. 75, Issues 1–4, Si, Pp. 97–120). Inderscience Enterprises Ltd. <https://doi.org/10.1504/Ijtm.2017.085695>
- Banoun, A., Dufour, L., & Andiappan, M. (2016). Evolution Of A Service Ecosystem: Longitudinal Evidence From Multiple Shared Services Centers Based On The Economies Of Worth Framework. In *Journal Of Business Research* (Vol. 69, Issue 8, Pp. 2990–2998). Elsevier Science Inc. <https://doi.org/10.1016/J.Jbusres.2016.02.032>
- Blasi, S., & Sedita, S. R. (2020). The Diffusion Of A Policy Innovation In The Energy Sector: Evidence From The Collective Switching Case In Europe. In *Industry And Innovation* (Vol. 27, Issue 6, Pp. 680–704). Routledge Journals, Taylor & Francis Ltd. <https://doi.org/10.1080/13662716.2019.1616535>
- Bogers, M., Zobel, A.-K., Afuah, A., Almirall, E., Brunswicker, S., Dahlander, L., Frederiksen, L., Gawer, A., Gruber, M., Haefliger, S., Hagedoorn, J., Hilgers, D., Laursen, K., Magnusson, M. G., Majchrzak, A., Mccarthy, I.

- P., Moeslein, K. M., Nambisan, S., Piller, F. T., ... Ter Wal, A. L. J. (2017). The Open Innovation Research Landscape: Established Perspectives And Emerging Themes Across Different Levels Of Analysis. In *Industry And Innovation* (Vol. 24, Issues 1, Si, Pp. 8–40). Routledge Journals, Taylor & Francis Ltd. <https://doi.org/10.1080/13662716.2016.1240068>
- Boudreau, K. (2010). Open Platform Strategies And Innovation: Granting Access Vs. Devolving Control. *Management Science*, 56, 1849–1872. <https://doi.org/10.1287/Mnsc.1100.1215>
- Boudreau, K. J. (2012). Let A Thousand Flowers Bloom? An Early Look At Large Numbers Of Software App Developers And Patterns Of Innovation. In *Organization Science* (Vol. 23, Issues 5, Si, Pp. 1409–1427). Informs. <https://doi.org/10.1287/Orsc.1110.0678>
- Boudreau, K. J., & Jeppesen, L. B. (2015). Unpaid Crowd Complementors: The Platform Network Effect Mirage. In *Strategic Management Journal* (Vol. 36, Issue 12, Pp. 1761–1777). Wiley. <https://doi.org/10.1002/Smj.2324>
- Bourdon, I., & Bourdil, M. (2007). Récompenses Et Gestion Des Connaissances, Des Liens Complexes ! *La Revue Des Sciences De Gestion*, N°226-227(4), 165–171.
- Cha, H. (2020). A Paradigm Shift In The Global Strategy Of Mnes Towards Business Ecosystems: A Research Agenda For New Theory Development. In *Journal Of International Management* (Vol. 26, Issue 3). Elsevier. <https://doi.org/10.1016/J.Intman.2020.100755>
- Chandler, J. D., & Vargo, S. L. (2011). Contextualization And Value-In-Context: How Context Frames Exchange. *Marketing Theory*, 11(1), 35–49. <https://doi.org/10.1177/1470593110393713>
- Chesbrough, H. W., & Appleyard, M. M. (2007). Open Innovation And Strategy. *California Management Review*, 50(1), 57–76. <https://doi.org/10.2307/41166416>
- Christensen, C. M. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms To Fail*. <https://www.hbs.edu/faculty/pages/item.aspx?num=46>
- Christensen, C. M., & Raynor, M. E. (2003). *The Innovator's Solution: Creating And Sustaining Successful Growth*. <https://www.hbs.edu/faculty/pages/item.aspx?num=15473>
- Clarysse, B., Wright, M., Bruneel, J., & Mahajan, A. (2014). Creating Value In Ecosystems: Crossing The Chasm Between Knowledge And Business Ecosystems. *Research Policy*, 43(7), 1164–1176. <https://doi.org/10.1016/J.Respol.2014.04.014>

- Cozzolino, A., Verona, G., & Rothaermel, F. T. (2018). Unpacking The Disruption Process: New Technology, Business Models, And Incumbent Adaptation. In *Journal Of Management Studies* (Vol. 55, Issues 7, Si, Pp. 1166–1202). Wiley. <https://doi.org/10.1111/Joms.12352>
- Cusumano, M. A., & Gawer, A. (2002). The Elements Of Platform Leadership. *Mit Sloan Management Review*, 43(3), 51–58. Abi/Inform Collection.
- Cusumano, M., & Gawer, A. (2002). The Elements Of Platform Leadership. In *Mit Sloan Management Review* (Vol. 43, Issue 3, P. 51+). Sloan Management Review Assoc, Mit Sloan School Management.
- Davis, J. P. (2016). The Group Dynamics Of Interorganizational Relationships: Collaborating With Multiple Partners In Innovation Ecosystems. In *Administrative Science Quarterly* (Vol. 61, Issue 4, Pp. 621–661). Sage Publications Inc. <https://doi.org/10.1177/0001839216649350>
- De Vasconcelos Gomes, L. A., Figueiredo Facin, A. L., Salerno, M. S., & Ikenami, R. K. (2018). Unpacking The Innovation Ecosystem Construct: Evolution, Gaps And Trends. In *Technological Forecasting And Social Change* (Vol. 136, Pp. 30–48). Elsevier Science Inc. <https://doi.org/10.1016/J.Techfore.2016.11.009>
- Eaton, B., Elaluf-Calderwood, S., & Sorensen, C. (2015). Distributed Tuning Of Boundary Resources: The Case Of Apple's Ios Service System. In *Mis Quarterly* (Vol. 39, Issue 1, P. 217+). Soc Inform Manage-Mis Res Cent.
- Ehrenhard, M., Kijl, B., & Nieuwenhuis, L. (2014). Market Adoption Barriers Of Multi-Stakeholder Technology: Smart Homes For The Aging Population. In *Technological Forecasting And Social Change* (Vol. 89, Pp. 306–315). Elsevier Science Inc. <https://doi.org/10.1016/J.Techfore.2014.08.002>
- Elia, G., Margherita, A., & Passiante, G. (2020). Digital Entrepreneurship Ecosystem: How Digital Technologies And Collective Intelligence Are Reshaping The Entrepreneurial Process. *Technological Forecasting And Social Change*, 150, 119791. <https://doi.org/10.1016/J.Techfore.2019.119791>
- F. Breidbach, C., Brodie, R., & Hollebeek, L. (2014). Beyond Virtuality: From Engagement Platforms To Engagement Ecosystems. *Managing Service Quality*, 24(6), 592–611. <https://doi.org/10.1108/Msq-08-2013-0158>
- Fehrer, J. A., Woratschek, H., & Brodie, R. J. (2018). A Systemic Logic For Platform Business Models. In *Journal Of Service Management* (Vol. 29, Issues 4, Si, Pp. 546–568). Emerald Group Publishing Ltd. <https://doi.org/10.1108/Josm-02-2017-0036>

- Fehrer, J., Brodie, R. J., & Smith, S. D. (2015, May). *Theorizing In Marketing Using Corpus-Linguistics: A New Methodological Framework*. 44th European Marketing Academy Conference (Emac), Leuven, Belgien. <https://eref.uni-bayreuth.de/33085/>
- Fu, W., Wang, Q., & Zhao, X. (2017). The Influence Of Platform Service Innovation On Value Co-Creation Activities And The Network Effect. In *Journal Of Service Management* (Vol. 28, Issues 2, Si, Pp. 348–388). Emerald Group Publishing Ltd. <https://doi.org/10.1108/Josm-10-2015-0347>
- Garud, R., Kumaraswamy, A., Roberts, A., & Xu, L. (2020). Liminal Movement By Digital Platform-Based Sharing Economy Ventures: The Case Of Uber Technologies. *Strategic Management Journal*, 43(3), 447–475. <https://doi.org/10.1002/Smj.3148>
- Gawer, A. (2009). Platform Dynamics And Strategies: From Products To Services. In *Chapters*. Edward Elgar Publishing. https://ideas.repec.org/h/elg/eechap/13257_3.html
- Gawer, A. (2011). *Platforms, Markets And Innovation*. Edward Elgar Publishing.
- Gawer, A., & Cusumano, M. A. (2008). How Companies Become Platform Leaders. In *Mit Sloan Management Review* (Vol. 49, Issue 2, P. 28+). Sloan Management Review Assoc, Mit Sloan School Management.
- Gawer, A., & Cusumano, M. A. (2014). Industry Platforms And Ecosystem Innovation. In *Journal Of Product Innovation Management* (Vol. 31, Issue 3, Pp. 417–433). Wiley. <https://doi.org/10.1111/Jpim.12105>
- Hagiu, A., & Wright, J. (2015a). Marketplace Or Reseller? In *Management Science* (Vol. 61, Issue 1, Pp. 184–203). Informs. <https://doi.org/10.1287/Mnsc.2014.2042>
- Hagiu, A., & Wright, J. (2015b). Multi-Sided Platforms. *International Journal Of Industrial Organization*, 43, 162–174. <https://doi.org/10.1016/J.Ijindorg.2015.03.003>
- Hanna, R., Rohm, A., & Crittenden, V. L. (2011). We're All Connected: The Power Of The Social Media Ecosystem. *Business Horizons*, 54(3), 265–273. <https://doi.org/10.1016/J.Bushor.2011.01.007>
- He, X. (2019). Digital Entrepreneurship Solution To Rural Poverty: Theory, Practice And Policy Implications. In *Journal Of Developmental Entrepreneurship* (Vol. 24, Issue 1). World Scientific Publ Co Pte Ltd. <https://doi.org/10.1142/S1084946719500043>
- Hein, A., Schrieck, M., Riasanow, T., Setzke, D. S., Wiesche, M., Boehm, M., & Krcmar, H. (2020). Digital Platform Ecosystems. In *Electronic Markets* (Vol. 30, Issue 1, Pp. 87–98). Springer Heidelberg. <https://doi.org/10.1007/S12525-019-00377-4>

- Helfat, C. E., & Raubitschek, R. S. (2018). Dynamic And Integrative Capabilities For Profiting From Innovation In Digital Platform-Based Ecosystems. In *Research Policy* (Vol. 47, Issue 8, Pp. 1391–1399). Elsevier Science Bv. <https://doi.org/10.1016/j.respol.2018.01.019>
- Iansiti, M., & Levien, R. (2004). Strategy As Ecology. *Harvard Business Review*, 82, 68–78, 126.
- Inoue, Y., & Tsujimoto, M. (2018a). Genres Of Complementary Products In Platform-Based Markets: Changes In Evolutionary Mechanisms By Platform Diffusion Strategies. In *International Journal Of Innovation Management* (Vol. 22, Issue 1). World Scientific Publ Co Pte Ltd. <https://doi.org/10.1142/S1363919618500044>
- Inoue, Y., & Tsujimoto, M. (2018b). New Market Development Of Platform Ecosystems: A Case Study Of The Nintendo Wii. In *Technological Forecasting And Social Change* (Vol. 136, Pp. 235–253). Elsevier Science Inc. <https://doi.org/10.1016/j.techfore.2017.01.017>
- Jackson, D. (2020). *What Is An Innovation Ecosystem?*
- Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards A Theory Of Ecosystems. In *Strategic Management Journal* (Vol. 39, Issue 8, Pp. 2255–2276). Wiley. <https://doi.org/10.1002/smj.2904>
- Jiang, H., Gao, S., Zhao, S., & Chen, H. (2020). Competition Of Technology Standards In Industry 4.0: An Innovation Ecosystem Perspective. In *Systems Research And Behavioral Science* (Vol. 37, Issues 4, Si, Pp. 772–783). Wiley. <https://doi.org/10.1002/sres.2718>
- Katz, M. L., & Shapiro, C. (1985). Network Externalities, Competition, And Compatibility. *The American Economic Review*, 75(3), 424–440.
- Kelly, K. (2016). *The Inevitable: Understanding The 12 Technological Forces That Will Shape Our Future*. Viking.
- Khanagha, S., Ansari, S. (Shaz), Paroutis, S., & Oviedo, L. (N.D.). Mutualism And The Dynamics Of New Platform Creation: A Study Of Cisco And Fog Computing. In *Strategic Management Journal*. Wiley. <https://doi.org/10.1002/smj.3147>
- Khanagha, S., Zadeh, M. T. R., Mihalache, O. R., & Volberda, H. W. (2018). Embracing Bewilderment: Responding To Technological Disruption In Heterogeneous Market Environments. In *Journal Of Management Studies* (Vol. 55, Issues 7, Si, Pp. 1079–1121). Wiley. <https://doi.org/10.1111/joms.12348>

- Khanna, T., Gulati, R., & Nohria, N. (1998). The Dynamics Of Learning Alliances: Competition, Cooperation, And Relative Scope. *Strategic Management Journal*, 19(3), 193–210. [https://doi.org/10.1002/\(Sici\)1097-0266\(199803\)19:3<193::Aid-Smj949>3.0.Co;2-C](https://doi.org/10.1002/(Sici)1097-0266(199803)19:3<193::Aid-Smj949>3.0.Co;2-C)
- Kostovska, I., Raats, T., Donders, K., & Ballon, P. (2020). Going Beyond The Hype: Conceptualising “Media Ecosystem” For Media Management Research. *Journal Of Media Business Studies*, 18(1), 6–26. <https://doi.org/10.1080/16522354.2020.1765668>
- Kumaraswamy, A., Garud, R., & Ansari, S. (Shaz). (2018). Perspectives On Disruptive Innovations. In *Journal Of Management Studies* (Vol. 55, Issues 7, Si, Pp. 1025–1042). Wiley. <https://doi.org/10.1111/Joms.12399>
- Kyprianou, C. (2018). Creating Value From The Outside In Or The Inside Out: How Nascent Intermediaries Build Peer-To-Peer Marketplaces. In *Academy Of Management Discoveries* (Vol. 4, Issue 3, Pp. 336–370). Acad Management. <https://doi.org/10.5465/Amd.2017.0081>
- Lehtinen, J., Peltokorpi, A., & Artto, K. (2019). Megaprojects As Organizational Platforms And Technology Platforms For Value Creation. In *International Journal Of Project Management* (Vol. 37, Issue 1, Pp. 43–58). Elsevier Sci Ltd. <https://doi.org/10.1016/J.Ijproman.2018.10.001>
- Lusch, R. F., & Nambisan, S. (2015). Service Innovation: A Service-Dominant Logic Perspective. In *Mis Quarterly* (Vol. 39, Issue 1, Pp. 155–175). Soc Inform Manage-Mis Res Cent.
- Mcintyre, D. P., & Srinivasan, A. (2017). Networks, Platforms, And Strategy: Emerging Views And Next Steps. In *Strategic Management Journal* (Vol. 38, Issue 1, Pp. 141–160). Wiley. <https://doi.org/10.1002/Smj.2596>
- Miller, C. D., & Toh, P. K. (N.D.). Complementary Components And Returns From Coordination Within Ecosystems Via Standard Setting. In *Strategic Management Journal*. Wiley. <https://doi.org/10.1002/Smj.3143>
- Moore, J. (1999). Predators And Prey: A New Ecology Of Competition. *Harvard Business Review*, 71, 75–86.
- Nambisan, S., & Sawhney, M. (2011). Orchestration Processes In Network-Centric Innovation: Evidence From The Field. *Academy Of Management Executive*, 25. <https://doi.org/10.5465/Amp.2011.63886529>
- Nambisan, S., Zahra, S. A., & Luo, Y. (2019). Global Platforms And Ecosystems: Implications For International Business Theories. In *Journal Of International Business Studies* (Vol. 50, Issues 9, Si, Pp. 1464–1486). Palgrave Macmillan Ltd. <https://doi.org/10.1057/S41267-019-00262-4>
- Nishino, N., Okazaki, M., & Akai, K. (2018). Effects Of Ability Difference And Strategy Imitation On Cooperation Network Formation: A Study With Game Theoretic Modeling And Multi-Agent Simulation. In

- Technological Forecasting And Social Change* (Vol. 136, Pp. 145–156). Elsevier Science Inc. <https://doi.org/10.1016/j.techfore.2017.02.008>
- Oh, D.-S., Phillips, F., Park, S., & Lee, E. (2016). Innovation Ecosystems: A Critical Examination. *Technovation*, 54, 1–6. <https://doi.org/10.1016/j.technovation.2016.02.004>
- Ozalp, H., Cennamo, C., & Gawer, A. (2018). Disruption In Platform-Based Ecosystems. In *Journal Of Management Studies* (Vol. 55, Issues 7, Si, Pp. 1203–1241). Wiley. <https://doi.org/10.1111/joms.12351>
- Papachristos, G. (2020). Platform Competition: A Research Outline For Modelling And Simulation Research. In *Journal Of Engineering And Technology Management* (Vol. 56). Elsevier. <https://doi.org/10.1016/j.jengtecman.2020.101567>
- Pellizzoni, E., Trabucchi, D., & Buganza, T. (2019). Platform Strategies: How The Position In The Network Drives Success. In *Technology Analysis & Strategic Management* (Vol. 31, Issue 5, Pp. 579–592). Routledge Journals, Taylor & Francis Ltd. <https://doi.org/10.1080/09537325.2018.1524865>
- Pulkkinen, J., Jussila, J., Partanen, A., Trotskii, I., & Laiho, A. (2019). Smart Mobility: Services, Platforms And Ecosystems. In *Technology Innovation Management Review* (Vol. 9, Issue 9, Pp. 15–24). Carleton Univ Graphic Services. <https://doi.org/10.22215/timreview/1265>
- Ricart, J. E., Snihur, Y., Carrasco-Farre, C., & Berrone, P. (2020). Grassroots Resistance To Digital Platforms And Relational Business Model Design To Overcome It: A Conceptual Framework. In *Strategy Science* (Vol. 5, Issue 3, Pp. 271–291). Informs. <https://doi.org/10.1287/stsc.2020.0104>
- Rietveld, J., Schilling, M. A., & Bellavitis, C. (2019). Platform Strategy: Managing Ecosystem Value Through Selective Promotion Of Complements. In *Organization Science* (Vol. 30, Issue 6, Pp. 1232–1251). Informs. <https://doi.org/10.1287/orsc.2019.1290>
- Ron Adner. (2011). *The Wide Lens: A New Strategy For Innovation*. Portfolio Penguin, New York.
- Rong, K., Ren, Q., & Shi, X. (2018). The Determinants Of Network Effects: Evidence From Online Games Business Ecosystems. In *Technological Forecasting And Social Change* (Vol. 134, Pp. 45–60). Elsevier Science Inc. <https://doi.org/10.1016/j.techfore.2018.05.007>
- Schneider, S., Leyer, M., & Tate, M. (2020). The Transformational Impact Of Blockchain Technology On Business Models And Ecosystems: A Symbiosis Of Human And Technology Agents. In *Ieee Transactions On*

- Engineering Management* (Vol. 67, Issue 4, Pp. 1184–1195). Ieee-Inst Electrical Electronics Engineers Inc. <https://doi.org/10.1109/Tem.2020.2972037>
- 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. In *Mis Quarterly* (Vol. 42, Issue 1, P. 121+). Soc Inform Manage-Mis Res Cent. <https://doi.org/10.25300/Misq/2018/13737>
- Storbacka, K., Brodie, R. J., Böhmman, T., Maglio, P. P., & Nenonen, S. (2016). Actor Engagement As A Microfoundation For Value Co-Creation. *Journal Of Business Research*, 69(8), 3008–3017. <https://doi.org/10.1016/J.Jbusres.2016.02.034>
- Su, Y.-S., Zheng, Z.-X., & Chen, J. (2018). A Multi-Platform Collaboration Innovation Ecosystem: The Case Of China. In *Management Decision* (Vol. 56, Issues 1, Si, Pp. 125–142). Emerald Group Publishing Ltd. <https://doi.org/10.1108/Md-04-2017-0386>
- Tan, B., Anderson, E. G., & Parker, G. G. (2020). Platform Pricing And Investment To Drive Third-Party Value Creation In Two-Sided Networks. *Information Systems Research*, 31(1), 217–239. <https://doi.org/10.1287/Isre.2019.0882>
- Tee, R., & Gawer, A. (2009). Industry Architecture As A Determinant Of Successful Platform Strategies: A Case Study Of The I-Mode Mobile Internet Service. In *European Management Review* (Vol. 6, Issue 4, Pp. 217–232). Wiley Periodicals, Inc. <https://doi.org/10.1057/Emr.2009.22>
- Thomas, L. D. W., Autio, E., & Gann, D. M. (2014). Architectural Leverage: Putting Platforms In Context. In *Academy Of Management Perspectives* (Vol. 28, Issue 2, Pp. 198–219). Acad Management. <https://doi.org/10.5465/Amp.2011.0105>
- Tiwana, A. (2013). Platform Ecosystems: Aligning Architecture, Governance, And Strategy. *Platform Ecosystems: Aligning Architecture, Governance, And Strategy*, 1–302.
- Tiwana, A., Konsynski, B., & Bush, A. A. (2010). Platform Evolution: Coevolution Of Platform Architecture, Governance, And Environmental Dynamics. In *Information Systems Research* (Vol. 21, Issue 4, Pp. 675–687). Informs. <https://doi.org/10.1287/Isre.1100.0323>
- Tura, N., Kutvonen, A., & Ritala, P. (2018). Platform Design Framework: Conceptualisation And Application. In *Technology Analysis & Strategic Management* (Vol. 30, Issue 8, Pp. 881–894). Routledge Journals, Taylor & Francis Ltd. <https://doi.org/10.1080/09537325.2017.1390220>

- Tushman, M. L., & Anderson, P. (1986). Technological Discontinuities And Organizational Environments. *Administrative Science Quarterly*, 31(3), 439. <https://doi.org/10.2307/2392832>
- Ulrich, K. T., & Eppinger, S. D. (1995). *Product Design And Development*. McGraw-Hill.
- Utterback, J. M., & Abernathy, W. J. (1975). A Dynamic Model Of Process And Product Innovation. *Omega*, 3(6), 639–656. [https://doi.org/10.1016/0305-0483\(75\)90068-7](https://doi.org/10.1016/0305-0483(75)90068-7)
- Valkokari, K. (2015). Business, Innovation, And Knowledge Ecosystems: How They Differ And How To Survive And Thrive Within Them. *Technology Innovation Management Review*, 5(8), 17–24. <https://doi.org/10.22215/Timreview/919>
- Veisdal, J. (2020). The Dynamics Of Entry For Digital Platforms In Two-Sided Markets: A Multi-Case Study. In *Electronic Markets* (Vol. 30, Issue 3, Pp. 539–556). Springer Heidelberg. <https://doi.org/10.1007/S12525-020-00409-4>
- Visnjic, I., Neely, A., Cennamo, C., & Visnjic, N. (2016). Governing The City: Unleashing Value From The Business Ecosystem. In *California Management Review* (Vol. 59, Issues 1, Si, Pp. 109–140). Sage Publications Inc. <https://doi.org/10.1177/0008125616683955>
- Wareham, J., Fox, P. B., & Cano Giner, J. L. (2014). Technology Ecosystem Governance. In *Organization Science* (Vol. 25, Issue 4, Pp. 1195–1215). Informs. <https://doi.org/10.1287/Orsc.2014.0895>
- Wirtz, J., So, K. K. F., Mody, M. A., Liu, S. Q., & Chun, H. H. (2019). Platforms In The Peer-To-Peer Sharing Economy. *Journal Of Service Management*, 30(4), 452–483. <https://doi.org/10.1108/Josm-11-2018-0369>
- Yablonsky, S. (2018). A Multidimensional Framework For Digital Platform Innovation And Management: From Business To Technological Platforms. In *Systems Research And Behavioral Science* (Vol. 35, Issues 4, Si, Pp. 485–501). Wiley. <https://doi.org/10.1002/Sres.2544>
- Yang, X., Cao, D., Chen, J., Xiao, Z., & Daowd, A. (2020). Ai And Iot-Based Collaborative Business Ecosystem: A Case In Chinese Fish Farming Industry. In *International Journal Of Technology Management* (Vol. 82, Issue 2, Pp. 151–171). Inderscience Enterprises Ltd.
- Yi, J., He, J., & Yang, L. (2019). Platform Heterogeneity, Platform Governance And Complementors' Product Performance: An Empirical Study Of The Mobile Application Industry. In *Frontiers Of Business Research In China* (Vol. 13, Issue 1). Springer. <https://doi.org/10.1186/S11782-019-0060-3>

- Yoo, Y., Boland, R. J., Jr., Lyytinen, K., & Majchrzak, A. (2012). Organizing For Innovation In The Digitized World. In *Organization Science* (Vol. 23, Issues 5, Si, Pp. 1398–1408). Informs. <https://doi.org/10.1287/Orsc.1120.0771>
- Zahra, S. A., & Nambisan, S. (2012). Entrepreneurship And Strategic Thinking In Business Ecosystems. *Business Horizons*, 55(3), 219–229. <https://doi.org/10.1016/J.Bushor.2011.12.004>
- Zervas, G., Proserpio, D., & Byers, J. W. (2017). The Rise Of The Sharing Economy: Estimating The Impact Of Airbnb On The Hotel Industry. *Journal Of Marketing Research*, 54(5), 687–705. <https://doi.org/10.1509/Jmr.15.0204>
- Zhang, Y., Li, J., & Tong, T. W. (N.D.). Platform Governance Matters: How Platform Gatekeeping Affects Knowledge Sharing Among Complementors. In *Strategic Management Journal*. Wiley. <https://doi.org/10.1002/Smj.3191>
- Zhao, Y., Von Delft, S., Morgan-Thomas, A., & Buck, T. (2020). The Evolution Of Platform Business Models: Exploring Competitive Battles In The World Of Platforms. In *Long Range Planning* (Vol. 53, Issue 4). Elsevier Sci Ltd. <https://doi.org/10.1016/J.Lrp.2019.101892>

Chapter 3. Sources of Competitive Advantage In Designing Digital Transaction Platforms

Abstract:

Digital Transaction Platforms are becoming the core of the platform economy and have seen an increasing academic and managerial interest, which led to the rise of platform-based business models in various industries. Platform literature has focused on decisions such as pricing, openness, platform quality, and competitive strategies; however, lacking more robust and generalizable implications for the sources of competitive advantages in digital transaction platforms. This paper combined the platform design core choices and digital marketplace attributes to form a framework for cross-case comparison and to generalize the empirical results of three transaction platform cases. Each case in this paper presented a different competitive advantage sourced from activities related to facilitating accurate matching, building a unique infrastructure for value creation and exchange and the community-building capabilities of the platform. The competitive advantage of each platform corresponds to the activities fulfilling the needs of the specific core interactions of a platform. In the studied cases, the difference in value creation activities to support and maintain the core interaction resulted in platforms relying on diverse sources of competitive advantage. The cross-case discussion of the sources of competitive advantage in platforms and their relation to the core interaction contributes to preliminary academic and managerial implications for designing successful platforms.

Keywords: Digital Platforms; Competitive advantage; Platform Design; Core Interaction; Platform Ecosystem; Digital Marketplaces; Platform business models

3.1 Introduction

Digital technologies have led to the emergence of many platforms in our economy today (Zhu et al., 2021), which have transformed the way we search for information, purchase (e.g., Amazon), consume news and media (e.g., Facebook and Twitter) and organize our trips (e.g., Airbnb, Bookings.com, Uber, and TripAdvisor) (Trabucchi, 2021). Over the years, scholars linked

platforms with different industries and caused a very complex typology to organize, Cusumano et al. (2019) categorized platforms into two types. Innovation platforms are technological building blocks that serve as a foundation for a huge number of innovators to create supplementary services or products on top of them. The second type of platform, under focus here, is digital marketplaces that facilitate the exchange of goods, services, and information, known as Transaction platforms.

The last decade has seen increasing academic and managerial interest in digital transaction platforms (M. A. Cusumano et al., 2019; G. G. Parker et al., 2016) that has led to the rise of platform-based business models in several industries, inviting a large multi-disciplinary interest into digital transaction platforms and multisided markets (Hanninen, 2020). These platforms are largely intermediaries or online marketplaces that make it possible for people and organizations to share information or to buy, sell, or access a variety of goods and services. In such platforms, value creation is shifted from the core of the focal firm to the interaction between different actors, both from the demand side and supply side, as complementors and consumers (Hein, Schrieck, Riasanow, Setzke, Wiesche, Boehm, et al., 2020a; Murthy & Madhok, 2021). A platform design is required to facilitate value creation among these groups (Tura et al., 2018b). Such designs allow the existence of platforms and are critical for platform firms to be viable and provide them with new opportunities, structures, and procedures (Fjeldstad & Snow, 2018). Among the core design choices, one is the unique competitive positioning of the platform to be subjected to ‘winner-take-all’ dynamics (Eisenmann et al., 2006c).

Strategic management scholars have emphasized the emergence and persistence of competitive advantage when firms offer greater value to customers at a lower cost than rivals (Besanko et al., 1999; Walker et al., 2013; Peteraf & Barney, 2003). However, understanding competitive advantage in the digital platform context remains a crucial concern (Saadatmand et al., 2019). That is for several reasons: (i) competitive advantage in platform firms is strongly dependent on the ability of platform firms to stimulate value cocreation with their network of complementors (Adner & Kapoor, 2010a), (ii) to exploit the positive feedback dynamics (Katz & Shapiro, 1986), (iii) resources in the platform context are either tangible or intangible, controlled internally or externally (Ketonen-Oksi et al., 2016) (iv) and that platforms need to offer incentives to the side creating higher value to improve the platform offerings and quality (Song et al., 2018b). Gaining

a competitive advantage for digital platforms can be a unique challenge due to the shifts mentioned above and the complexity of such networks (Ko et al., 2022).

Many studies related to the competitive advantage of platform firms have been limited to single-industry backgrounds or narrative cases (D. P. McIntyre & Srinivasan, 2017), and the components of competitive advantage are dispersed across various literature streams. As a result, they are restraining more robust and generalizable implications. There exists partial insight into how firms strategically design platforms for success (Gawer, 2014), and research on how platform firms are designed can extend our current understanding of how firms can augment competitive advantage and facilitate Win the Most or All positions. In addition to that, researchers on platforms focused on individual design elements that encourage user base growth and may be able to explain and forecast network effects, but not the underlying processes that result in the development of such components or the dependency between them (Andries et al., 2013). Similarly, because multi-sided platforms function in a situation that asks for highly interconnected judgments, developing a successful platform might necessitate holistic thinking, which involves paying attention to the overall architectural recipe rather than simply to individual elements (Zhao et al., 2020b).

This research aims to integrate different strands of research to better understand the genesis and design of activities, leading to a competitive advantage in the context of digital transaction platforms. Through this research, I would like to identify the sources of competitive advantages in digital marketplaces where network effects manifest differently and the subsequent influence of these sources on the perceived competitive advantage by the platform managers (designers). We already know about the sources of competitive advantage for traditional firms and how they can gain a competitive advantage over their rivals; this research contributes to whether the same models can also be replicated for digital platforms, particularly for those with the intermediary role.

This paper aims to answer the following research questions:

- How do the design elements of the digital platform business models affect the firm's competitive advantage?
- Can the platform design explain competitive advantage heterogeneity in digital platforms?

Due to a lack of explicit conceptualization and empirical support in addressing these questions, I perform an exploratory multiple case study on three successful cases of digital transaction platforms, one from each category of platform participants across value proposition & delivery dimensions: B2C, B2B, and C2C, as well as the geographical reach, local, regional and global, thanks to platform business model distinction by Tauscher & Laudien, (2018, pg p.326). This paper does not attempt to generalize the results statistically; instead, it presents empirical evidence about how three platform cases in our research designed value-creation activities to gain a competitive advantage.

The paper is structured as follows. First, I present the research's literature review and theoretical background (Section 2). Subsequently, I describe the chosen methodology (Section 3). Then, I discuss the results of the semi-structured interviews and my research findings (Section 4). It is followed by discussions around the sources of competitive advantage in each platform case (Section 5). Finally, a summary of my research and the directions for future research is presented (Section 6).

3.2 Theoretical background and conceptual framework

Digital platforms benefit from openness on three layers: the participants' layer, the platform infrastructure, and the platform owner layer (J. A. Fehrer et al., 2018b). They operate as foundational products or marketplaces that various firms can use to create complementary products & services or to enable transactions. The more innovations and transactions are happening in a platform, the more valuable the platform is (M. A. Cusumano et al., 2019). This value is generated with positive network effects, which refers to the positive impact the number of users of a platform has on the value created for each user (G. G. Parker et al., 2016). “The direct network effects (via a large number of users with whom to interact) and indirect network effects (via the availability and variety of complements) can foster the emergence and persistence of dominant platforms, and thus, strong competitive positions for their sponsoring firms” (McIntyre & Srinivasan, 2017 P. 2: 467).

The two key digital platforms categories are innovation and transaction (M. A. Cusumano et al., 2019). Innovation platforms refer to the technological blocks for which other users (complementors) develop complementary products and services. These complementors form an

innovation ecosystem around the platform (P. C. Evans & Gawer, 2016). An example is the Windows operating system, which has millions of applications developed by innovators in many countries using Microsoft's proprietary technology openly shared with potential complementors. Other examples include Intel, Salesforce, Oracle, and SAP. In the global survey of P. C. Evans & Gawer (2016), they identified 176 platform companies with a total value exceeding \$4.3 trillion. Innovation platforms counted for nearly \$911 billion, while transaction platforms summed a total market cap of \$1.1 trillion. In the same study, they found that almost all of the private companies in the survey were transaction platforms.

Transaction platforms are a special type of market that has the role of facilitators of exchange between different sides that could not otherwise transact with each other, provide access to a large pool of users, and identify suitable matches (Gawer, 2014b). These users can be buyers and sellers of goods or services in online marketplaces (M. A. Cusumano et al., 2019). The transaction platform reduces friction to facilitate interactions among these users. Various books and articles have introduced this concept, including *Invisible Engines* (2006) by Evans, Hagiu, and Schmalensee, *Matchmakers* (2016) by Evans and Schmalensee, *Platform Revolution* (2016) by Parker, Van Alstyne, Choudary, and *The Business of Platforms* (2019) by David B. Yoffie, Michael A. Cusumano, Annabelle Gawer. Uber, Airbnb, and Amazon Marketplace are some examples of transaction platforms.

In the Organization Design theory, the traditional focus on individual firms has expanded to embracing multi-firm networks, platforms, communities, and ecosystems (Snow, 2018). Among other “supra-firm” forms of organizing, a rising number of published peer-reviewed articles have been on the design of platforms, user-driven innovation processes, collaborative communities, and business ecosystems (Snow, 2018). The traditional organization forms entail a single-sided market interaction between the product firm (i.e., the supplier) and the user (i.e., the buyer). Whereas platform-based ecosystems entail (i) multisided markets, regulating the relations with complementors and users, each as different markets (or sides), (ii) and the existence of cross-side network effect, suggesting different forms, structures, and strategies to enhance the value proposition of the platform (Kapoor, 2018). Platform design helps in facilitating and regulating value creation and value capture into smaller components and tasks (Tura et al., 2018b).

As this research aims to explore competitive advantage in platform settings from a platform owner/designer's perspective, I begin with the classic Porterian viewpoint, which emphasizes a rational, quantitative, and long-term competitive advantage and profitability (Benson-Rea et al., 2013). To understand the competitive advantage of traditional firms, he defines the value activities that form the value chain to compete in a particular market. The value chain is considered essential for creating and sustaining competitive advantage and organizational structure design (Porter, 1985). In addition, Porter (1985) recognizes the differences in value chains as the primary source of competitive advantage. He also adds:

“Competitive advantage cannot be understood by looking at a firm as a whole. It stems from the many discrete activities a firm performs in designing, producing, marketing, delivering, and supporting its product. Each of these activities can contribute to a firm's relative cost position and create a basis for differentiation. Every firm is a collection of activities that are performed to design, produce, market, deliver, and support its product. All these activities can be represented using a value chain.” (Porter, 1985, pg. 33)

The traditional value chain perspective relates to the focal firm, based on specific activities carried out by that firm to offer unique value offer to the customers. This perspective looks at a chain of actors directly involved in the upstream and downstream flows of inputs and outputs from a source to a customer.

In addition, different sources of competitive advantage are identified by the market-based, resource-based, dynamic capabilities, and relational perspectives (Dietl et al., 2009). Competitive advantages are the product of strategic positioning in imperfect markets according to a market-based approach (e.g., Porter, 1980). The resource-based perspective sees firm-specific resources as the primary source of long-term competitive advantage (e.g., Barney, 1991). Temporary competitive advantages arise from risk-taking and entrepreneurial ideas in an uncertain or complicated environment, according to the dynamic capabilities approach (e.g., Eisenhardt & Martin, 2000). Competitive advantages are attributed to relationship-specific assets, knowledge-sharing routines, complementary resources and competencies, and effective governance systems, according to the relational approach (e.g., Dyer & Singh, 1998).

However, from an ecosystem, particularly from a multisided market perspective, platforms do not have direct control over the content of the product or service transacted (Van Alstyne et al., 2016).

The key (intangible) assets of a platform are the distinct sides (participants), information (Van Alstyne et al., 2016), and the interaction or exchange occurring between them (Rohn et al., 2021). These assets and the existence of direct and indirect network effects drive the exponential growth of platform-based business models. The key difference among these perspectives is the scope of the activities that creates value in the platform. In contrast to the micro (firm's internal activities) perspective, platform-based business models require a macro perspective of the external actors: the value-creating interactions among them, a governance mechanism that triggers network effects, and gaining a competitive position in their relative markets.

In platform business models, scholars emphasize value cocreation that is different from Porter's perspective and guide platform firms to meet the requirement of their dynamic ecosystem by utilizing the open business model to re-draw their boundaries and resources (Ehret et al., 2013). In these settings, competitive advantage is not in line with the resource-based view and is not primarily based on physical infrastructure or control over rare and valuable resources (Rohn et al., 2021). “The actual value cocreation takes place within the different resource-integrating processes and activities, emphasizing the role of resource integrators as the creators of intangible resources that are beneficial for the entire value network. The resources can be either tangible or intangible and internally controlled or externally drawn on for support, thus never highlighting the role of any particular member of the value networks” (Ketonen-Oksi et al., 2016, pg. 3).

Shifting to a platform-based architecture necessitates a fundamental change not only in terms of the firm's business model but also in terms of its capabilities, governance, and management (e.g., Altman & Tripsas, 2013; Van Alstyne et al., 2016; Gawer, 2021; Helfat & Raubitschek, 2018). Platform research relates a platform's competitive advantage heavily dependent on platform firms' capacity to drive value cocreation with their network of complementors and capitalize on the resulting positive feedback dynamics (e.g., Cennamo, 2019; McIntyre & Srinivasan, 2017; Saadatmand et al., 2019; Thomas et al., 2014). With network effects in platforms, they have reliable (Ablyazov & Rapgof, 2019) and sustainable sources of competitive advantages (Poniatowski et al., n.d.; Zang et al., 2019). Among these efforts, only Cennamo (2019) presents distinct sources for competitive advantage in transaction platforms: the platform size, the platform's unique attributes in terms of identity, and the participant's experience while using the platform. While empirical approaches to network effects often focus on a few high-technology industries and incorporate coarse metrics, such as total installed base size, to determine firm

growth drivers (McIntyre & Srinivasan, 2017). In reality, network dynamics are more complex in that user networks' relative strength and structure may be more informative than the absolute existence of network effects in a given setting (Afuah, 2013). Therefore, the question remains; would our knowledge so far on competitive advantage and network effects be a practical guide for designing a new platform, and would this be applicable in various industries? The existing knowledge on the sources of competitive advantage in platform setting and the theory on platform competition is merely enough to form a clear roadmap for the intensely attracted platform economy on how to address and relate competitive advantage to the design of a successful platform. This limits the possibility of platforms benefiting from a sustainable competitive advantage and investing in activities that would benefit them.

Based on existing organizational design and platform literature, Tura et al. (2018) have identified four main categories of core platform design problems that are similar across industries:

A. The platform architecture: This selection includes the primary purpose and core interaction, including main exchanges in the platform, market structure, key actors, and related missions and goals.

B. Value creation: Creating value on platforms involves design choices related to the roles of the participant actors, the value proposition(s) for those members, value-creating network effects, and the revenue model of the platform (Tura et al., 2018b). However, the roles may shift rapidly (G. G. Parker et al., 2016), and participants may have multiple roles. The platform design identifies the possible beneficiaries (Tura et al., 2018b) and determines strategies to achieve the participants' commitment (Hagiu, 2006).

C. Governance: The success of a platform-based ecosystem depends on the effective governance of the platform (Tura et al., 2018b). Its related design choices include decisions on leadership, ownership, and the related management practices of the platform (Tura et al., 2018b).

D. Platform competition: This category of decisions covers the launch and expansion of a platform, attracting users, innovation, learning, and making it accessible to existing and new members (e.g., Parker et al., 2016). It also responds to the 'chicken-and-egg' problem, where users on each side of the platform are motivated to join only once the other side is sufficiently populated (Tura et al., 2018b).

Core interactions are one of the design choices mentioned above that encompasses value production and exchange. The decision around core interaction is taken with the architecture of a platform. The platform needs to enable these activities again and again following a common template across platforms (Choudary, 2016). In a platform business, this template is formed from three key (and identified) elements of the value cocreation process: the participants (the producer and consumer), a value unit (valuable information or service to the consumer), and the filter (algorithmic tools to enable exchanging value units that are appropriate to the two sides) (Choudary, 2016). The core interaction can be similar among competing platforms; however, the activities and resources that make core interactions repeatable can be different. Core interaction corresponds with a platform's 'central activities' (e.g., Fehrer et al., 2018), namely, sharing and a non-hierarchical collaboration empowered by digital technologies.

In this research, I highlight the importance of core interaction that leads to an open infrastructure to enable and manage interaction with all design decisions, ensuring repeatability and sustainability. Different strategies that recent research proposes for the efficiency and repeatability of core interactions are the selection and prioritization of features and functionalities and the power of network effects that give the platform the possibility of becoming a dominant platform (for instance, G. Parker & Van Alstyne, 2005; Shapiro & Varian, 1999). Platforms that successfully leverage the network effects enjoy increasing profits to scale and attract more users; accordingly, these users pay more to have access to a more extensive network, and the margins for the platform improve with the growing user base (Eisenmann et al., 2006c).

Thus we can say that a platform's competitive advantage lies in activities performed around the core interaction, leading to increased network effects and allowing the platform to gain a monopolistic position. Since all platforms, regardless of their industry or size, share a common structure for economic, business, and governance features to create and capture value (Gawer, 2021a), if we categorize all activities performed around the core interaction that leads to a competitive advantage, are covered under these three functions:

- 1- As value cocreation in platforms highly depends on the participants, the platform's ability to attract a critical mass and build a network of complementors leads to a 'win the most or all' position in its relative market. This group of activities includes strategies to solve the Chicken or Egg problem (M. A. Cusumano et al., 2019), building user communities

(Katarina Stanoevska-Slabeva, 2002), and shaping a digital environment (Koch & Windsperger, 2017).

- 2- A special characteristic of a platform is an infrastructure and governing mechanism that facilitates value creation and exchange. This feature leads to easy-to-use platforms and economies of innovation and complementarity. Activities in this group relate to the platform quality and architecture to facilitate horizontal and vertical linkage among the platform users (Thomas et al., 2014c), reducing barriers to the use of the platform and rules and regulations for a safer digital environment for all users.
- 3- The third category of activities relates to the knowledge and data collection of the platform about its users and value units to match the right users with each other, and accurate and relevant data and information are exchanged in the platform. This, in other terms, is to “create mutually rewarding matches on a consistent basis” (G. G. Parker et al., 2016, pg. 48)

These three groups of activities are also called by Parker et al. (2016) as *pull, facilitate, and match* functions of a platform to encourage an increasing number of valuable core interactions. They also suggest that not all platforms are good at all three of the functions and can survive temporarily with only one of the three, and on certain occasions, the strength in one function can compensate for the other too. Figure 6 presents the synthesis of core interaction elements and the three functions to empower high volumes of core interaction.

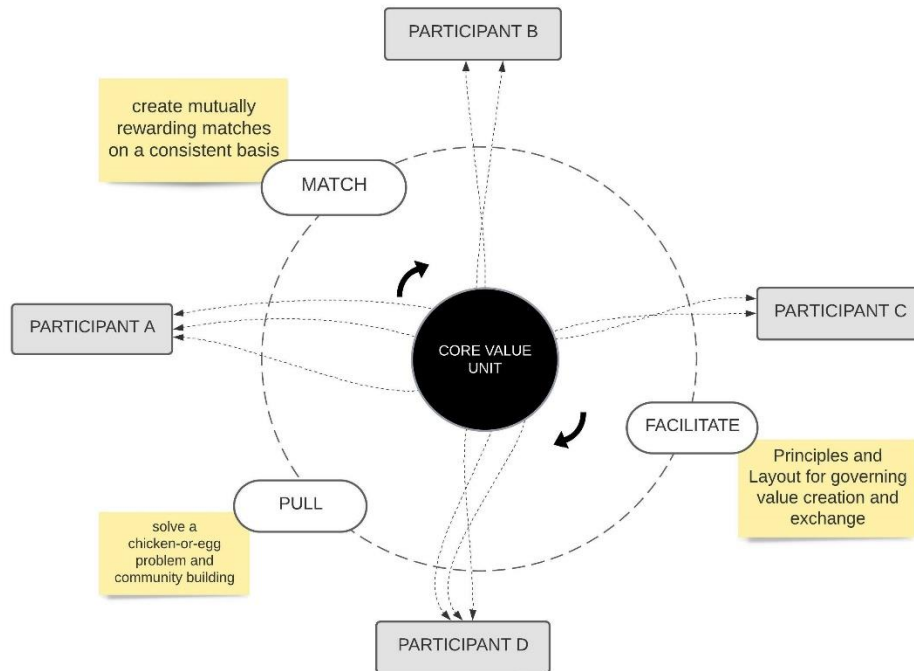


Figure 6 Core interaction and the essential functions required to run the core interaction, Source: own elaboration

Thus, research on how platform firms can design and modify their architectures can extend our current understanding of the relationship among different design elements of a platform and, in particular, recognize a practical approach to determine the competitive advantage. This can be done by focusing on how platforms can augment their base of users to achieve ‘win most or all’ dynamics in their relevant markets. This research further contributes to understanding competitive advantage and strategies in the organizational design shift, mainly where digital transaction platforms are considered. This discussion also creates curiosity about the implications of such dynamics in other forms of platforms (e.g., innovation platforms) and at the ecosystems level, where knowledge is still limited.

3.3 Method

To explore this gap in the literature, I based the research on three digital transaction platforms, representing three participant categories, B2C, B2B, and C2C, as well as the geographical reach;

local, regional, and global. The multiple case study research method was chosen as it is helpful for exploratory research and as the results of this type of research are often robust and reliable (Baxter & Jack, 2008; Eisenhardt, 1989). The main criteria in choosing these case studies had been (i) their structure as a digital transaction platform, as the majority of private platform firms use the transaction logic of platforms (Evans & Gawer, 2016), (ii) their leading position in their relative markets/niches, (iii) and the availability of platform owner/creator for a semi-constructed interview. The overall goal was to select cases where the platform design process and structure are “transparently observable” and are prospective to replicate or extend the emergent theory (Eisenhardt, 1989) about competitive advantage in these settings.

I used multiple sources for data collection for constructivist principles of qualitative analysis (Yin, 2003). The primary research data was collected through detailed semi-structured interviews with the platform owners and designers. These interviews were performed through Zoom on different dates in March 2021. Interviews lasted about one hour and were performed with the platform founders in all three cases. The semi-structured interview was chosen as an adequate way of exploring insights of the platform owners related to the design stage of the three cases. Table 1 presents the interview's general structure, based on Tura et al.'s (2018) framework, which covers all four core platform design decisions. Secondary background data was collected from the platforms' websites, press releases, and social media. The secondary data was used to understand each platform's offerings to both sides (core unit), the usability of the interface, filters for appropriate matching, and to complement the primary data related to other key decisions of platform design.

Table 1. An integrated framework of the core platform design problems and related literature references

<i>Problem focus,</i>	<i>Core design problem</i>
Platform architecture	Describes the structure of the actors, market structure, and fundamental setup of the platform
Core interaction,	What is the main purpose of the platform? What is the (core) interaction that takes place in the platform? What are the value-creating assets being transacted?
Market structure,	Which markets are involved in the platform (two-sided, multisided markets)?
Key actors,	Who are the actors representing different market structures and providing main functions?
Platform openness,	How open is the platform and what is the strategy to manage openness? How openly are the data and information shared?

Value creation logic,	Defines the benefits of the platform and how each user contributes to value creation i.e. describes value functions for platform users.
Actor roles,	Who benefits from the platform and how? What are the roles of the stakeholders and how will they change? How to achieve the commitment of the stakeholders?
Value proposition,	What are the different value propositions for different participants?
Network effects,	How do network effects work? Who is needed to enable network effects?
Revenue model,	What is the price for participating for each stakeholder?
Governance,	Describes the common rules, laws, practices, and managerial level of the platform.
Leadership,	Who manages the platform and how?
Ownership,	Who owns the platform?
Platform rules,	What types of rules are enforced? How are the services/content regulated? What consumers, producers, providers, and competitors are allowed to do?
Platform competition,	Describes the setup for launching the platform and competitive selections.
Platform launch,	How to ensure access to the platform? How to attract users from different sides of the platform? How to solve the chicken-and-egg problem?
Platform competitiveness,	How does the platform compete against incumbent solutions? What is the unique competitive advantage of the platform?
Innovation & learning,	Are platform innovations needed and how are innovation targets set and approved? Who is involved in the platform development and how?

Source: Tura, N., Kutvonen, A., & Ritala, P. *Technology Analysis & Strategic Management*, 30(8), (2018)

P.885

I used the above framework to observe the relations between different dimensions of the platform design framework with the competitive advantage of each platform and looked for within-case similarities coupled with inter-case differences. In the upcoming sections, I presented the identified recurrence in patterns and data (Miles & Huberman, 1994) that reached theoretical saturation (Yin, 2003). Cross-case searching aims to go beyond first impressions, particularly through structured and diversified lenses, to data for a correct and consistent hypothesis (Eisenhardt, 1989). Consequently, it is critical to understand the underlying theoretical grounds for the relationship's existence and to help verify the internal validity of the outcomes (Eisenhardt, 1989).

In the three cases, I highlighted resemblances in the relationship between competitive advantage and the design of specific activities that strengthened the core interaction. Eisenhardt (1989) and other scholars who used such a technique suggest that the outcome of this method is often a theory with greater internal validity, broader generalizability, and elevated conceptual level.

3.4 Results and findings

3.4.1 *Sicilying: Product quality as a competitive advantage*

“We seem to have transformed an attraction for authenticity with one for fidelity. We are more interested in whether things look real than whether they are real” (Ellard, 2015, pg. 90). *Places of the Heart: The Psychogeography of Everyday Life*

Sicilying is a fast-growing multisided platform that connects local tourism activity providers as the supply side and the tourists that seek a Sicilian experience as the demand side. The value unit exchanged is the real-time availability of about 500 different activities. They come under the B2C platforms and work only in Sicily. They focus on high-quality tourist services throughout Sicily. This platform was founded in 2012 and is based in Catania, in the eastern region of Sicily; and has an extensive understanding of Sicilian activities and a significant presence across the island. They are the first and only company in Sicily to offer an online booking engine that allows clients to book activities in real-time such as sports, wine tasting, and nature tours. They describe themselves as a company that can enable users to live the Sicilian experience. ¹

The CEO of Sicilying said about their competitive advantage: “We don't like to think of this us as ‘selling services’ but rather ‘proposing experiences to live in Sicily’ and to fully immerse our clients in Sicilian culture. We work only in Sicily, only on specialized experience in Sicily, and that is our main difference with Trip advisor... and so on, And it is our strength. ... We know our partners and know our clients; we know Sicily and we can guarantee that. If you want a coaching class with a Sicilian person, that doesn't speak English and you can go with them to the fish market and go with them to their home, if you want a local experience, we can provide it and we can satisfy your needs. ”

The core interaction of Sicilying is ‘booking the local Sicilian experience in real-time and with the lowest prices guaranteed. The platform first attracted the Sicilian activity providers and then promoted the events. Then, by gaining consumers on the demand side, the platform has been getting more attraction and interest from the activity providers interested in collaborating. Thanks to Sicilying, travelers can register for various Sicily-related experiences.

¹ “Sicily Holidays - About us | Sicilying” Sicilying website, <https://en.sicilying.com/content/about-us>, accessed January 2022.

The founder of this platform recognized the company's understanding of the Sicilian culture, and embeddedness in the local activities as their primary competitive advantage over their competitors such as TripAdvisor or other similar platform and non-platform companies.

In the tourism industry, this is related to the authenticity of the experience provided. Their competitive advantage emerges from their local knowledge in selecting specific activity providers that can provide the authentic Sicilian experience requested. Through their expertise in SEO and digital marketing, they target users potentially interested in this kind of experience.

3.4.2 Icast modeling: A unique setting to digitalize the traditional model casting process

ICAST is the first B2B Cloud Native and serverless platform dedicated to managing the entire casting process in the Italian fashion market. Behind ICAST are young enterprising minds and supporters of innovative projects that aim to provide a world of old-fashioned fashion with a touch of contemporary innovation. It all started with a question that the platform founder described as following:

“Before us, the casting was one-by-one communication by phone or email. That is similar to organizing your next holiday in the Aeolian Islands without booking.com, you have to call every agency asking for a room, asking for a picture of the room by email...the same was in the modeling market and we created this technology that was the first of the world, able to guest (host) physical casting (the normal audition) and also 100% online casting.”

In the case of ICAST, they have innovated the existing casting activities to digitalized, platformizable, and time and cost-effective processes, being the first of that type in Italy. They already control about 10-15% of castings performed in the Italian market. Some of the very famous fashion brands use them, and their value unit is the fashion model's profiles. As part of its innovative features, they are not only a pool of candidates or connecting model representatives to the casting agencies but also provide various practical features in scheduling the casting, organizing comments and feedback, and a place where the casting agencies can choose their prospective candidates. They gained a competitive position by digitalizing a complex industry that involves multiple actors in each casting process while complying with the Italian legal environment for this sector. They connect legal representatives of models and casting agencies, an operation that requires significant legal expertise and consultation.

“I think the best way to innovate is from the existing processing and hand in hand with the industry taking them to change, showing them to change, and changing with them... we are working from the most difficult places to innovate, especially a digital innovation” ICAST Founder

Before this platform was launched, the platform designers carried out two years of research to transform the traditional casting process into a digital one. The core interaction of ICAST is digitally casting models and booking them in a traditional market where the market sides are fairly less tech-friendly. That involves casting agencies and agencies and legal bodies that represent professional models.

“To develop this platform, we studied two years, we made a lot of interviews, focus groups and also attest and comparison with professionals. To streamline the process, we explored the underlying elements what was crucial, important, really needed. From this point of view, we moved as researchers...I understood that casting process was from 5 to 15 days from 500 to 10000 euro, very polluting because everything was made with and very stressful for the casting professionals and I really couldn't believe how fashion was old-fashioned, for me it was kind of normal (to imagine) to have a technology able to simplify and streamline the whole casting process...the design was made by the process (outside of ICAST in traditional way) and let's make it digital. And then we created our Backoffice based on how they were used to organize casting...user needs, and the improvements we wanted to bring in this market.” ICAST founder

Their journey started in April 2019 by inviting the casting managers to organize the casting, and once they had the demand side onboard, they also invited the modeling agencies to participate in the platform. The first casting was performed just a month later, which took 05 minutes and 07 seconds. The exact process required several days in the traditional process. In Feb 2020, they launched a free subscription to ICAST for young emerging talents. They also integrated Netwalk, a model agency management software that was aimed to assist and improve the booking process, and they reached 100 casts in February 2021. The founder of this platform described these benefits as the following:

“...we cut (reduce) 70% of time, 100% of paper, we improved the working conditions by 25% and they are saving in terms of opportunity cost 70% of their money. In this way, our technology really helped them..”

To be able to facilitate suitable models for the casting agencies, the platform has several filters required to fill at the time of launching a casting. The platform founder associated their competitive

advantage with innovating the traditional casting process, saving a considerable amount of time and cost for the casting agencies, allowing modeling agencies to propose talent, recruiters to choose the best, and keeping innovation going. They also responded to the institutional barriers, especially in the legal context, and designed a web-based technology that allows the two sides (with multiple actors) to meet through the platform and execute the casting process digitally, using a different logic than their competitors – in terms of how the platform is regulated and the continuous innovation– to lead their relative market.

“In order to build up our Backoffice legal regulations, we hired three lawyers that were from three different industries, one was of course fashion, another from technology and the third one was a normal lawyer about normal regulations between users and businesses...and we work in one of the most important cities of the world for fashion and we have 55% of the market...I think we started reaching this goal in most difficult place in the world and we are talking with users which are super used to beauty, perfection, smartness, and they are not technology friendly, if we win in Italy without being arrogant, we can do that anywhere.” ICAST founder

3.4.3 The-NTWK: A community of Platform enthusiasts

The-NTWK is a community of platform business model enthusiasts where venture capitalists, consultants, companies, academics, and entrepreneurs can connect and exchange knowledge to understand better what it takes to build and run platforms and marketplaces.

“The problem is that the knowledge of platforms, when we talk about platforms is not well known ... people know what is Airbnb, Amazon but they don't know what is behind, and also there are a lot of people, startups, entrepreneurs and also corporates they are building marketplaces and we want to help them.” The-NTWK founder

This platform connects various actors related to platform business models and organizes workshops, webinars, and online courses. Thanks to its growing community, users can book meeting with an expert according to their needs, whether for startups or existing companies that want to implement their projects. It is becoming a room for entrepreneurs to co-create, ventures to bring platform ideas into reality, academics to share their expertise, and students to learn about how platform business models operate.

“We want to be the one-stop place for everything related to platform economy so any member of the community can access recommended content and services that can help them in their digital transformation journey” Founders of The-NTWK²

The-NTWK is very similar to a LinkedIn of platform enthusiasts. Its unique value is the community they have brought together. The strength of network effects, the difficulty of multi-homing, the absence of options for rival differentiation, and niche competition all facilitate the possibility for The-NTWK to benefit the ‘winner-take-all or-most’ result as a platform business. They are a C2C platform where the roles of their users are both ‘clear’ and ‘interchangeable.’ A Ph.D. student using this platform can subscribe to a class that requires payment, filling the demand side, and the same student can also create and write content for The-NTWK, supplying the value unit, which is the knowledge on platforms. The core interaction of this platform is the exchange of knowledge between several categories of users interested in the platform's business models, a recent and evolving topic. The-NTWK founder described their journey of solving the chicken or egg problem:

“We started with another value unit which was not the social network and was expert as a service, so we started as a booker service, we were compiling all the experts around and inviting them to join the Then-NTWK, we attracted the producer side first, it was word of mouth and LinkedIn....Then, we never done any action to acquire demand for consulting, because we realized that before a person is going to contact a consultant, they have to know the consultants. I was talking to a CEO of a multinational and they didnt know our experts, so we needed a room, a space to know each other, and then we moved from expert as a service to content creators. Then it was good because experts and consultants had articles, they already were writing, they said yes to writing (on the platform) and so on. Now we are trying to get the demand side.”

By facilitating interaction and building a community for platform business model researchers, this platform managed to grow its network rapidly. They continuously add courses, and events, allowing users to post and get access to the knowledge and expertise they need about Platforms. These interactions and discoverability lead to the growth of this platform through the network effect. A variety of activities and topic ranges, including online courses, nodes, service providing, feed sharing, and even summits, allow and enable users to engage in specific ones to meet and

² “About us” The-NTWK website, <https://www.the-ntwk.com/about-us> , accessed January 2022

interact with their like-minded community. It also collects data from partners and users to provide them with accurate matches for their intended purposes. Thanks to their user-friendly web-based platform logic, they allow the usage of the interface for the different types of users for their intended purpose. Be it posting content, organizing sessions through the platform, classes, nodes, and so on.

3.5 Discussions

Platform business models have changed the traditional business-to-customer relationship to an actor-to-actor direction, from the traditional value chain logic to a more dynamic open platform concept (J. A. Fehrer et al., 2018b). A platform business model looks at the two or multiple participant groups not just as customers to collect revenue from but “incurs cost in serving both groups and can collect revenue from each, although one side is often subsidized” (Eisenmann et al., 2006 pg. 2). When a platform is designing its architecture, it must first identify the core interaction—the one interaction that frequently happens among platform users—and then build an open infrastructure to support and manage that interaction, with all design choices ensuring the platform's core interaction's sustainability and repeatability. In this research, to understand the sources of competitive advantage in platform settings, I analyzed the design of three transaction platform cases and identified activities that lead to their competitive advantage, shown in Table 2, and described below:

Table 2 Value-creating activities and the emerging competitive advantage

Platform	Core Interaction	Match	Facilitate	Pull	Competitive advantage
Sicilying	Real-time availability of Sicilian experience through connecting tourism activity providers and travelers	through the local knowledge selecting specific activity providers that can provide the authentic Sicilian experience requested, and through SEO and digital marketing, meeting the clients that would be particularly interested in this kind of experience	A web-based platform for booking and presenting real-time availability of events, lowest pricing,	The platform first attracted activities providers and then promoted the events on the platform. Then, by gaining consumers on the demand side, the platform has led to more activity providers interested in collaborating. While for users, they can register for a large variety of Sicily-related experiences.	Product/Service Quality (Authenticity of experience)
ICAST Modelling	listing Model details for casting through connecting model representatives and casting agencies	They attract casting agencies, Agencies, and Bookers that represent professional models and models. To be able to facilitate the suitable models for the casting agencies, the platform has several filters required to fill at the time of launching a casting.	Through responding to the institutional barriers and innovating the existing process, the platform designed a web-based technology that allows the two sides to meet through the platform and arrange the casting process digitally.	Offering the Casting managers to organize the casting, inviting the modeling agencies, and then taking them on board	Platform Quality (Unique technological and organizational arrangement for the casting industry)
The-NTWK	Platforms knowledge exchange between platform researchers, academics, students, entrepreneurs, venture capitalists, and consultants	Variety of activities and topic ranges, including online courses, nodes, service providing, feed sharing, and even summits allow and enable users to engage in specific ones to meet and interact with their like-minded community. As well as data collection from partners and users to provide them with accurate matches for their intended purposes.	A user-friendly web-based platform that allows the usage of the interface for the different types of users for their intended purpose. Be it posting content, organizing sessions through the platform, classes, nodes, etc.	This platform, by facilitating interaction and building a community for platform business model researchers, managed to grow its network rapidly. They continuously add courses and events, allow users to post, and get in touch with the knowledge and expertise they need about Platforms. These interactions and discoverability lead to this platform's growth through the network effect.	Community building around the 'digital platforms' topic

The first case is Sicilying, a digital platform that connects the local Sicilian tourist activity providers with the travelers that visit Sicily. Their competitive advantage lies in specific functions and features of the platform that lead to facilitating a large pool of authentic Sicilian experience to the users and similarly offer the activities providers the possibility to get exposed to the specific travelers interested in such experience. Tourism literature related this to authenticity perceptions and perceived brand authenticity (Napoli et al., 2016). Sicilying focuses on product quality as a critical driver of their success, and in such industries where product quality makes a difference, the most prominent platforms are those with the best quality (D. P. McIntyre, 2011). Both theoretical and empirical data demonstrate that perceived product quality impacts purchase intentions in the existing literature (Boulding & Kirmani, 1993; Rao et al., 1999; Wells et al., 2011). Thanks to the knowledge of the Sicilying platform CEO about the Sicilian culture and embeddedness in local life, they can identify specific activities and activity providers by facilitating the number of core interactions occurring in the platform increase.

Consequently, they profit from the positive network effects. Regarding platform literature, activities that Sicilying perceived as their competitive advantage falls under the ‘matching’ function. For Sicilying, ‘matching’ means they can guarantee a perfect match between tourists' needs and the Sicilian experience providers' offerings. That is the result of the quality of their offers based on the authenticity of the experience. When the core interaction is a local touristic experience, a strict selection of providers is needed to maintain high-quality standards. Since Sicilying does such, the authenticity of the expected experience is assured before users book an experience on the platform. This control of the quality of providers can be achieved if the platform managers and activity providers are located close to one another; because of informal and tacit knowledge of the reliability of potential activity, providers can be obtained through the co-localization of actors. As a result, it attracts travelers that would like to live the Sicilian experience, and by having participants on the demand side, the platform is an attractive marketplace for the activity providers to join the platform, the best way for them to meet customers. In addition to other strategic benefits, this function gives the platform leverage over activity providers to offer the lowest price to the platform's demand-side users.

In the second case, ICAST modeling is the first platform in Italy that allows the casting process to be performed all-digital and to be the LinkedIn of models. They were the first platform to innovate the traditional casting process that required days instead of minutes and continue to innovate. A

casting manager can profit from using the platform, both in terms of transaction cost, to get access to a large pool of models, and to cast specific models that fulfill the requirements of a casting event. Similarly, for the model agencies and model representatives, the platform allows them to be candidates for casting events and for meeting the casting agencies. Thanks to their first-mover advantage, emerging positive feedback loops, and continuous innovation of their technology, they gained a superior position in the market (Shapiro, 1999). A dominating market position based on innovation and a superior value proposition to customers is broadly regarded from the perspective of competitive economics (Shapiro, 2011). They applied a new process (the use of digital technologies) (Kerin et al., 1992) to the existing way of casting. In addition, they responded to the institutional requirements existing in the casting environment, the legal representation of models, and the unique logic of connecting the casting agencies not directly with the models but through the modelling agencies and representatives. This in platform literature is connected to the ‘facilitate’ function. This function represents activities that ensure a unique infrastructure (technology) to facilitate value creation and exchange, with intrusive rules for the platform participants. It took ICAST founders a few years to study the casting market, and to gain first-hand experience in this sector (referring to the platform founder’s experience in the industry before creating the platform), to be able to develop functions that could optimize the traditional casting process as well as facilitating an all online casting. In detail, they have a cloud-native platform, thanks to their partnership with Amazon Web Service (AWS), and in addition to the platform interface, they offer two different backoffices. The agency backoffice is based on the agency’s experience and needs, and the casting manager’s backoffice is based on their needs. There are touchpoints in this backoffice process for the two sides, but the casting process is entirely different. In the meantime, the platform does not influence the decision of the casting managers and cannot see interactions between the different sides. It, however, still uses only specific tools to measure the usability of the backoffice instruments for improving interactions and the casting process. ICAST’s unique arrangement of technical and organizational regulations proved critical for them to facilitate a core interaction that involved two sophisticated business sides with distinct needs and lower tech habits.

The NTWK is the third case in this research. It is the one-stop place for everyone interested in platform business models. Their competitive advantage lies in activities that allow them to attract a growing community of platform enthusiasts. This advantage over rivals is explained in a

straightforward example by (Cusumano et al., 2019, pg. 48): “if people want to stop using LinkedIn and move to a new professional network, they must convince their professional contacts to move with them. Otherwise, the new platform will have relatively little value.” The NTWK grows rapidly by continuously adding tools to the users for arranging and performing a variety of activities and topic ranges, including courses, service providing, seminars, and summits that attract target users to engage with each other and co-create value. It inherits features through which users can meet and engage in like-minded communities. Community building and attracting users is the ‘pull’ function of platforms. In platforms where the community-building activities of a platform make a difference, users place a higher value on platforms with a more significant number of other users (Cennamo & Santalo, 2013). The increased value accrues to network members is contingent on two elements: the number of other participants in the network with whom they can interact (Eisenman, 2007) and the broader range of complementary products and services. (Evans, 2003; Rochet & Tirole, 2003). The resulting direct network effects (due to a large number of users with whom to interact) and indirect network effects (due to the availability and variety of complements) can work together to foster the emergence and persistence of dominant platforms, as well as solid competitive positions for their sponsors (Bonardi & Durand, 2003; Eisenmann et al., 2011).

In each case, activities leading to competitive advantage corresponded to the needs of the specific core interactions that each platform facilitated. Each case presented a different competitive advantage sourced from activities related to facilitating accurate matching (Sicilying), building a unique infrastructure, value creation and exchange, and meeting the institutional requirements (ICAST) and the community-building skills of the platform (The-NTWK). Each platform performed different activities to support and maintain the core interaction to be more efficient and repeatable, and such a difference resulted in various competitive advantages for the three cases in my analysis.

3.6 Conclusion and future research opportunities

The findings in this research contribute to the understanding of designing platforms and work as a practical guide for determining activities that lead to a competitive advantage. This research focuses on the sources of competitive advantage across the organization's design shift toward digital platforms, specifically transaction platforms.

Platforms can achieve a ‘win the most or all’ position by carefully designing certain activities that enable a platform to have efficient and repeatable core interactions. Since platform business models suggest a different perspective than the traditional Porterian value chain concept, the competitive advantage heterogeneity originates from the different activities platform needs to perform to have repeatable and effective core interactions. These activities enable a platform to benefit from increasing network effects by having strengths in either of the following areas (i) being able to attract users to the platform, (ii) facilitating an efficient architecture and digital environment for value cocreation, (iii) and to collect and use resourceful data about the value unit and participants for accurate matching.

Similar to every research, my analysis also has limitations. The sources of competitive advantage in each platform case are based on the perception of the platform owners. This research focuses on the design features and role of a transaction platform. It is an opportunity for future research to extend the implications of the three functions to innovation platforms as well. I also did not examine the importance of adding additional core interactions to the existing ones and continuous innovation to gain a superior position over the rivals. I propose that the additional core interactions will fall under the ‘facilitate’ function of platforms, as the secondary core interactions and continuous innovation complement the ability of a platform to facilitate value creation and exchange (G. G. Parker et al., 2016).

Another key implication of this research is to advance the knowledge on platforms competition where platforms have similar core interactions. The platform in search of a superior position can improve or perform certain activities differently, strengthening the most repeated exchange among platform sides. This research has focused on the design stage of digital transaction platforms, and it raises the question of the evolution of competitive advantages with the growth of the platform, its market structure, and conditions.

In conclusion, platform research is a growing and crucial area of study that practitioners and academics may use to utilize platform logic in various industries. The investigation of platform enterprises' sources of competitive advantage has the potential to yield theoretical insights that will be extremely helpful to both academics and platform designers.

3.7 References

- Ablyazov, T., & Rapgof, V. (2019). *Digital Platforms As The Basis Of A New Ecological System Of Socio-Economic Development*. 497, 012002. <https://doi.org/10.1088/1757-899x/497/1/012002>
- Adner, R., & Kapoor, R. (2010). Value Creation In Innovation Ecosystems: How The Structure Of Technological Interdependence Affects Firm Performance In New Technology Generations. *Strategic Management Journal*, 31(3), Article 3. <https://doi.org/10.1002/smj.821>
- Afuah, A. (2013). Are Network Effects Really All About Size? The Role Of Structure And Conduct. *Strategic Management Journal*, 34(3), 257–273. <https://doi.org/10.1002/smj.2013>
- Altman, E., & Tripsas, M. (2013). Product To Platform Transitions: Organizational Identity Implications. *Ssrn Electronic Journal*. <https://doi.org/10.2139/ssrn.2364523>
- Andries, P., Debackere, K., & Van Looy, B. (2013). Simultaneous Experimentation As A Learning Strategy: Business Model Development Under Uncertainty. *Strategic Entrepreneurship Journal*, 7(4), 288–310. <https://doi.org/10.1002/sej.1170>
- Barney, J. (1991). Firm Resources And Sustained Competitive Advantage. *Journal Of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design And Implementation For Novice Researchers. *The Qualitative Report*, 13(4), 544–559. <https://doi.org/10.46743/2160-3715/2008.1573>
- Benson-Rea, M., Brodie, R., & Sima, H. (2013). The Plurality Of Co-Existing Business Models: Investigating The Complexity Of Value Drivers. *Industrial Marketing Management*, 42, 717–729. <https://doi.org/10.1016/j.indmarman.2013.05.011>
- Besanko, D., Dranove, D., & Shanley, M. (1999). *Economics Of Strategy*.
- Bonardi, J.-P., & Durand, R. (2003). Managing Network Effects In High-Tech Markets. *Academy Of Management Perspectives*, 17(4), 40–52. <https://doi.org/10.5465/ame.2003.11851827>
- Boulding, W., & Kirmani, A. (1993). A Consumer-Side Experimental Examination Of Signaling Theory. *Journal Of Consumer Research*, 20, 111–123. <https://doi.org/10.1086/209337>
- Cennamo, C. (2019). *Competing In Digital Markets: A Platform-Based Perspective* (Ssrn Scholarly Paper Id 3410982). Social Science Research Network. <https://papers.ssrn.com/abstract=3410982>

- Cennamo, C., & Santalo, J. (2013). Platform Competition: Strategic Trade-Offs In Platform Markets. In *Strategic Management Journal* (No. 11; Vol. 34, Issue 11, Pp. 1331–1350). Wiley. <https://doi.org/10.1002/smj.2066>
- Choudary, S. P. (2016). *Platform Scale: How An Emerging Business Model Helps Startups Build Large Empires With Minimum Investment*. Platform Thinking Labs. <https://openlibrary.telkomuniversity.ac.id/pustaka/116573/platform-scale-how-an-emerging-business-model-helps-startups-build-large-empires-with-minimum-investment.html>
- Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). *The Business Of Platforms: Strategy In The Age Of Digital Competition, Innovation, And Power*. Harpercollins.
- Dietl, H., Royer, S., & Stratmann, U. (2009). Value Creation Architectures And Competitive Advantage: Lessons From The European Automobile Industry. *California Management Review*, 51, 24–48. <https://doi.org/10.2307/41166492>
- Dyer, J. H., & Singh, H. (1998). The Relational View: Cooperative Strategy And Sources Of Interorganizational Competitive Advantage. *The Academy Of Management Review*, 23(4), 660–679. <https://doi.org/10.2307/259056>
- Ehret, M., Kashyap, V., & Wirtz, J. (2013). Business Models: Impact On Business Markets And Opportunities For Marketing Research. *Industrial Marketing Management*, 42, 649–655. <https://doi.org/10.1016/j.indmarman.2013.06.003>
- Eisenhardt, K. M. (1989). Building Theories From Case Study Research. *The Academy Of Management Review*, 14(4), 532–550. <https://doi.org/10.2307/258557>
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic Capabilities: What Are They? *Strategic Management Journal*, 21(10–11), 1105–1121. [https://doi.org/10.1002/1097-0266\(200010/11\)21:10/11<1105::Aid-Smj133>3.0.Co;2-E](https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::Aid-Smj133>3.0.Co;2-E)
- Eisenman, T. (2007). *Managing Networked Businesses*. Harvard Business School Publishing. Note For Educators 5-807-104. Harvard Business School Publishing: Brighton, Ma. <https://www.hbs.edu/faculty/pages/item.aspx?num=32941>
- Eisenmann, T., Parker, G., & Van Alstyne, M. (2011). Platform Envelopment. In *Strategic Management Journal* (No. 12; Vol. 32, Issue 12, Pp. 1270–1285). Wiley. <https://doi.org/10.1002/smj.935>

- Eisenmann, T., Parker, G., & Van Alstyne, M. W. (2006). Strategies For Two-Sided Markets. In *Harvard Business Review* (No. 10; Vol. 84, Issue 10, P. 92+). Harvard Business School Publishing Corporation.
- Ellard, C. (2015). *Places Of The Heart: The Psychogeography Of Everyday Life*. Bellevue Literary Press.
- Evans, D. S. (2003). Some Empirical Aspects Of Multi-Sided Platform Industries. *Review Of Network Economics*, 2(3). <https://doi.org/10.2202/1446-9022.1026>
- Evans, P. C., & Gawer, A. (2016). *The Rise Of The Platform Enterprise*. 30.
- Fehrer, J. A., Woratschek, H., & Brodie, R. J. (2018). A Systemic Logic For Platform Business Models. In *Journal Of Service Management* (No. 4, Si; Vol. 29, Issues 4, Si, Pp. 546–568). Emerald Group Publishing Ltd. <https://doi.org/10.1108/Josm-02-2017-0036>
- Fjeldstad, Ø. D., & Snow, C. C. (2018). Business Models And Organization Design. *Long Range Planning*, 51(1), 32–39. <https://doi.org/10.1016/j.lrp.2017.07.008>
- Gawer, A. (2014). Bridging Differing Perspectives On Technological Platforms: Toward An Integrative Framework. *Research Policy*, 43(7), 1239–1249. <https://doi.org/10.1016/j.respol.2014.03.006>
- Gawer, A. (2021). *Digital Platforms And Ecosystems: Remarks On The Dominant Organizational Forms Of The Digital Age* (Ssrn Scholarly Paper Id 3900105). Social Science Research Network. <https://papers.ssrn.com/abstract=3900105>
- Hagiu, A. (2006). Pricing And Commitment By Two-Sided Platforms. *The Rand Journal Of Economics*, 37(3), 720–737. <https://doi.org/10.1111/j.1756-2171.2006.tb00039.x>
- Hanninen, M. (2020). Review Of Studies On Digital Transaction Platforms In Marketing Journals. In *International Review Of Retail Distribution And Consumer Research* (No. 2; Vol. 30, Issue 2, Pp. 164–192). Routledge Journals, Taylor & Francis Ltd. <https://doi.org/10.1080/09593969.2019.1651380>
- Hein, A., Schreieck, M., Riasanow, T., Setzke, D. S., Wiesche, M., Boehm, M., & Krcmar, H. (2020). Digital Platform Ecosystems. In *Electronic Markets* (No. 1; Vol. 30, Issue 1, Pp. 87–98). Springer Heidelberg. <https://doi.org/10.1007/s12525-019-00377-4>
- Helfat, C. E., & Raubitschek, R. S. (2018). Dynamic And Integrative Capabilities For Profiting From Innovation In Digital Platform-Based Ecosystems. In *Research Policy* (No. 8; Vol. 47, Issue 8, Pp. 1391–1399). Elsevier Science Bv. <https://doi.org/10.1016/j.respol.2018.01.019>

- Kapoor, R. (2018). Ecosystems: Broadening The Locus Of Value Creation. *Journal Of Organization Design*, 7(1), 12. <https://doi.org/10.1186/S41469-018-0035-4>
- Katarina Stanoevska-Slabeva. (2002). Toward A Community-Oriented Design Of Internet Platforms. *International Journal Of Electronic Commerce*, 6(3), 71–95. <https://doi.org/10.1080/10864415.2002.11044244>
- Katz, M. L., & Shapiro, C. (1986). Technology Adoption In The Presence Of Network Externalities. *Journal Of Political Economy*, 94(4), 822–841.
- Ketonen-Oksi, S., Jussila, J. J., & Kärkkäinen, H. (2016). Social Media Based Value Creation And Business Models. *Industrial Management & Data Systems*, 116(8), 1820–1838. <https://doi.org/10.1108/Imds-05-2015-0199>
- Ko, G., Amankwah-Amoah, J., Appiah, G., & Larimo, J. (2022). Non-Market Strategies And Building Digital Trust In Sharing Economy Platforms. *Journal Of International Management*, 28(1), 100909. <https://doi.org/10.1016/J.Intman.2021.100909>
- Koch, T., & Windsperger, J. (2017). Seeing Through The Network: Competitive Advantage In The Digital Economy. *Journal Of Organization Design*, 6(1), 6. <https://doi.org/10.1186/S41469-017-0016-Z>
- Mcintyre, D. P. (2011). In A Network Industry, Does Product Quality Matter? *Journal Of Product Innovation Management*, 28(1), 99–108. <https://doi.org/10.1111/J.1540-5885.2010.00783.X>
- Mcintyre, D. P., & Srinivasan, A. (2017). Networks, Platforms, And Strategy: Emerging Views And Next Steps. *Strategic Management Journal*, 38(1), 141–160. <https://doi.org/10.1002/Smj.2596>
- M.E. Porter. (1980). *Competitive Strategy: Techniques For Analyzing Industries And Competitors*. Boston, Ma: The Free Press. <https://www.hbs.edu/faculty/pages/item.aspx?num=195>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. Sage.
- Murthy, R. K., & Madhok, A. (2021). Overcoming The Early-Stage Conundrum Of Digital Platform Ecosystem Emergence: A Problem-Solving Perspective. *Journal Of Management Studies*, 58(7), 1899–1932. <https://doi.org/10.1111/Joms.12748>
- Napoli, J., Dickinson-Delaporte, S., & Beverland, M. B. (2016). The Brand Authenticity Continuum: Strategic Approaches For Building Value. *Journal Of Marketing Management*, 32(13–14), 1201–1229. <https://doi.org/10.1080/0267257x.2016.1145722>
- Parker, G. G., Alstyne, M. W. V., & Choudary, S. P. (2016). *Platform Revolution: How Networked Markets Are Transforming The Economy And How To Make Them Work For You*. W. W. Norton & Company.

- Parker, G., & Van Alstyne, M. (2005). Two-Sided Network Effects: A Theory Of Information Product Design. *Management Science*, 51, 1494–1504. <https://doi.org/10.1287/Mnsc.1050.0400>
- Peteraf, M. A., & Barney, J. B. (2003). Unraveling The Resource-Based Tangle. *Managerial And Decision Economics*, 24(4), 309–323. <https://doi.org/10.1002/Mde.1126>
- Poniatowski, M., Luettenberg, H., Beverungen, D., & Kundisch, D. (N.D.). Three Layers Of Abstraction: A Conceptual Framework For Theorizing Digital Multi-Sided Platforms. *Information Systems And E-Business Management*. <https://doi.org/10.1007/S10257-021-00513-8>
- Porter, M. (1985). Competitive Advantage: Creating And Sustaining Superior Performance. *Undefined*. <https://www.semanticscholar.org/paper/Competitive-Advantage%3a-Creating-And-Sustaining-Porter/F5d6857c5e18f546fed8ba6a5826619cdf55f6c7>
- Rao, A. R., Qu, L., & Ruekert, R. W. (1999). Signaling Unobservable Product Quality Through A Brand Ally. *Journal Of Marketing Research*, 36(2), 258–268. <https://doi.org/10.1177/002224379903600209>
- Rochet, J.-C., & Tirole, J. (2003). Platform Competition In Two-Sided Markets. *Journal Of The European Economic Association*, 1(4), 990–1029. <https://doi.org/10.1162/154247603322493212>
- Rohn, D., Bican, P. M., Brem, A., Kraus, S., & Clauss, T. (2021). Digital Platform-Based Business Models – An Exploration Of Critical Success Factors. *Journal Of Engineering And Technology Management*, 60, 101625. <https://doi.org/10.1016/J.Jengtecman.2021.101625>
- Saadatmand, F., Lindgren, R., & Schultze, U. (2019). Configurations Of Platform Organizations: Implications For Complementor Engagement. In *Research Policy* (No. 8, Si; Vol. 48, Issues 8, Si). Elsevier Science Bv. <https://doi.org/10.1016/J.Respol.2019.03.015>
- Shapiro, C. (1999). *Information Rules: A Strategic Guide To The Network Economy / Carl Shapiro, Hal R. Varian*. Harvard Business School Press.
- Shapiro, C. (2011). *Competition And Innovation: Did Arrow Hit The Bull's Eye?* (Pp. 361–404) [Nber Chapters]. National Bureau Of Economic Research, Inc. <https://econpapers.repec.org/bookchap/nbrnberch/12360.htm>
- Shapiro, C., & Varian, H. (1999). *The Art Of Standards Wars*. <https://doi.org/10.2307/41165984>
- Snow, C. C. (2018). Research In Journal Of Organization Design, 2012–2018. *Journal Of Organization Design*, 7(1), 9. <https://doi.org/10.1186/S41469-018-0033-6>

- 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. In *Mis Quarterly* (No. 1; Vol. 42, Issue 1, P. 121+). Soc Inform Manage-Mis Res Cent. <https://doi.org/10.25300/Misq/2018/13737>
- Taeuscher, K., & Laudien, S. M. (2018). Understanding Platform Business Models: A Mixed Methods Study Of Marketplaces. In *European Management Journal* (No. 3; Vol. 36, Issue 3, Pp. 319–329). Elsevier Sci Ltd. <https://doi.org/10.1016/J.Emj.2017.06.005>
- Thomas, L. D. W., Autio, E., & Gann, D. M. (2014). Architectural Leverage: Putting Platforms In Context. In *Academy Of Management Perspectives* (No. 2; Vol. 28, Issue 2, Pp. 198–219). Acad Management. <https://doi.org/10.5465/Amp.2011.0105>
- Trabucchi, D. (N.D.). Platform-Driven Innovation: Unveiling Research And Business Opportunities. *Creativity And Innovation Management*. Retrieved June 20, 2021, From https://www.academia.edu/45041068/Platform_Driven_Innovation_Unveiling_Research_And_Business_Opportunities
- Tura, N., Kutvonen, A., & Ritala, P. (2018). Platform Design Framework: Conceptualisation And Application. *Technology Analysis & Strategic Management*, 30(8), 881–894. <https://doi.org/10.1080/09537325.2017.1390220>
- Van Alstyne, M. W., Parker, G. G., & Choudary, S. P. (2016). Pipelines, Platforms, And The New Rules Of Strategy. In *Harvard Business Review* (No. 4; Vol. 94, Issue 4, P. 54+). Harvard Business School Publishing Corporation.
- Walker, G., Madsen, T., & Hoopes, D. (2013). *Competitive Heterogeneity*. <https://doi.org/10.1057/9781137294678.0228>
- Wells, J., Parboteeah, V., & Valacich, J. (2011). Online Impulse Buying: Understanding The Interplay Between Consumer Impulsiveness And Website Quality. *Journal Of The Association For Information Systems*, 12(1). <https://doi.org/10.17705/1jais.00254>
- Yin, R. K. (2003). *Case Study Research: Design And Methods*. Sage.
- Zang, Z., Tan, K., Yang, X., Wang, C., & Li, G. (2019). Social And Economic Benefits Of Doctors On Online Health-Care Platforms Based On The Social Capital Theory. In *Nankai Business Review International* (No. 1; Vol. 11, Issue 1, Pp. 121–140). Emerald Group Publishing Ltd. <https://doi.org/10.1108/Nbri-11-2018-0069>

- Zhao, Y., Von Delft, S., Morgan-Thomas, A., & Buck, T. (2020). The Evolution Of Platform Business Models: Exploring Competitive Battles In The World Of Platforms. *Long Range Planning*, 53(4), 101892. <https://doi.org/10.1016/j.lrp.2019.101892>
- Zhu, F., Li, X., Valavi, E., & Iansiti, M. (2021). Network Interconnectivity And Entry Into Platform Markets. *Information Systems Research*, Isre.2021.1010. <https://doi.org/10.1287/isre.2021.1010>

Chapter 4. Factors affecting Platform value propositions

Abstract:

Value propositions are essential explanations for when platform businesses outperform traditional businesses. However, in the platform context, our understanding of which conditions and what types of conditions (i.e., causal factors) enhance or do not enhance the value proposition to foster platform performance and growth across user base and transaction (i.e., outcome) is limited and generally inconsistent. This paper summarizes the existing platform business model literature to identify the critical conditions associated with platform performance and employs mvQCA methods to provide an in-depth understanding of the mutual interaction of these factors and platform performance. This framework can assist academics and practitioners in better understanding the underlying conditions of value proposition and their combined role in platform growth and performance. The four conditions are digital infrastructure sophistication, user network heterogeneity, trust and safety mechanisms, and dynamic value propositions. This study adds to the research on platform business models by identifying two equivalent multidimensional paths for platforms to improve their value propositions and, as a result, their performance. Finally, it concentrated on the full spectrum of value propositions that technology can enable, specific for both value proposition perspectives, the combined actor and stakeholder value propositions, and the generic value propositions.

Keywords: digital platforms, transaction platforms, value propositions, stakeholder value propositions, dynamic value propositions, network effects

4.1 Introduction

Platform business models shaped new or existing markets in different industries and attracted attention from practitioners and researchers across ICT, Economics, Marketing, and Strategy domains (J. A. Fehrer et al., 2018b; Ricart et al., 2020a; Trabucchi et al., 2021). The benefits of platform business models are associated with facilitating efficient, faster, and low-cost transactions

(Rohn et al., 2021). That is enabled by the advancements in technology and by offering a value proposition to each side of the platform to generate positive feedback loops, known as network effects (Carrasco-Farré et al., 2022; Şimşek et al., 2022).

We find these value propositions in one of the following forms: superior efficiency and cost advantage, building a community around a specific product type, matching the supply and demand sides, creating a platform as a novel efficient sales and marketing channel, and building entirely new markets (i.e., crowdfunding platforms) (Taeuscher & Laudien, 2017). Many researchers position value proposition as a central feature of a business model (Carrasco-Farré et al., 2022). Naturally, that is also the case for platform businesses, as value proposition can be an essential instrument for increasing the platform's user base and, as a result, determines how valuable a platform is (Hokkanen et al., 2021).

Research on platform business models (related to value propositions) explored the key value offerings of platforms, their attributes, the alignment choice of value offerings, the structure, and the dynamic nature of value propositions. Attributes of value proposition include recent works on the characteristics of platform value offerings for the platform's success. These features are inclusivity or actor value propositions (Hokkanen et al., 2021; Ricart et al., 2020a), the existence of trust and safety mechanisms (Trabucchi et al., 2021; Walsh et al., 2020), benefits to the society and local stakeholders (Carrasco-Farré et al., 2022; Ricart et al., 2020a), and value offerings that can build a community of its users (Trabucchi et al., 2021). Few researchers also explored shifts in the direction of value offering. They explored cases when a platform initially starts with loose value offerings (to solve the chicken or egg problem), then adjusts the offerings to the consumer side; subsequently, it moves focus to the business side and finally embraces value propositions to both sides (Muzellec et al., 2015).

Another crucial aspect is the structure of value propositions in platforms. That includes (i) resources which can be: modularized technical interfaces, standards, or services, and (ii) their integration through a unified portal for co-creation or also called building a value package (explicitly communicable) (Lofberg & Akesson, 2018; Muzellec et al., 2015; Ramos-Henríquez et al., 2021; Yu et al., 2019).

Understanding how to create superior value propositions is firmly connected with a firm's performance, and it results in competitive advantage (Payne & Frow, 2014). Eisenmann et al.

(2006) propose that platform businesses secure audience (users) by offering novel value propositions and the existing competitive price strategy. Value propositions are essential explanations for when platform businesses outperform traditional businesses (Rohn et al., 2021). However, in the platform context, our understanding of which conditions and what types of conditions (i.e., causal factors) enhance or do not enhance the value proposition to foster platform performance and growth across user base and transaction (i.e., outcome) is limited and generally inconsistent. In other words, the existing research has focused on the ‘practice’ of value delivery and lacks exploring the requirements for successful value delivery. We do not know explicitly the composing concepts of impactful value propositions in platforms and how they contribute to a business model with different simultaneous propositions for the multiple sides (Ramos-Henríquez et al., 2021). Finally, most research articles have concentrated individually on a few key points while ignoring the full spectrum of value propositions technology can create. This leads to my research questions:

What are the composing elements of value proposition associated with the performance of a platform business model?

Moreover, how to best configure them for a platform business to generate positive network effects while tackling the negative ones?

I seek to address these questions from the perspective that the platform performance is likely to result from a combination of causal factors (composing concepts of value proposition), and the output (performance and growth) that I am trying to explain may occur as a result of numerous alternative combinations of causes; this is a circumstance called equifinality (Befani, 2013; Furnari et al., 2021). I do this by using the relatively recent methodology of MultiValue Qualitative Comparative Analysis (mvQCA) (Cronqvist & Berg-Schlosser, 2009) by analyzing ten platform businesses (successful and unsuccessful) that were initially reported as high-performing platform cases across different industries. For each platform, mvQCA provides an appropriate method of analyzing core and auxiliary requirements of the configurational impacts on the platform performance and discovers which equivalent combinations of factors best explain the outcome of interest.

This research adds to the existing body of knowledge by advancing theory and practice. My effort contributes to the literature on platform business models and, in particular, the value propositions of such businesses. It reveals four crucial factors of value propositions and value creation mechanisms of platforms that are associated with improving the value offerings of platforms. Using a mvQCA compares the combination of these conditions and presents equivalent paths that result in platforms growing their critical mass and facilitating an increasing number of valuable interactions between the different sides.

In the next section, I will review the existing empirical literature on the value propositions of platform business models and, in so doing, determine a theoretical framework of potential causal (and interrelated) conditions affecting the value propositions. In the subsequent sections, I present the research design and empirical settings for a mvQCA and discuss the results. Finally, the conclusions and implications for theory and practice are proposed.

4.2 Theoretical Background

4.2.1 Platform business models and value propositions

Platform businesses are a particular type of market that facilitate exchange between different actors that could not otherwise conduct a transaction with each other (Gawer, 2014b). This exchange can be in the forms of information or a variety of goods and services; the more such exchanges occur in a platform – thanks to the growing user base on both sides, functionalities, content, and services – the more it becomes valuable (M. A. Cusumano et al., 2019). Such business models are adopted for the unique benefits they offer to platform owners and entrepreneurs in terms of exponential growth and the possibility to capture value through diverse mechanisms. To the users of platforms (or the different sides), this value is mainly translated into accurate matching, reducing friction in transactions, advertising, and complementary services (M. A. Cusumano et al., 2019). In other words, a platform business model's value propositions lead to positive network effects and outperform traditional business models (Rohn et al., 2021). Research on the platform value propositions is relatively recent and often combines the business model literature with the theory of the two-sided market (e.g., Hokkanen et al., 2021; Trabucchi et al., 2021; Yu et al., 2019), stakeholders theory (e.g., Oba et al., 2018), the resource-based view (e.g., Carrasco-Farré et al., 2022), and Service-Dominant (S-D) logic (e.g., Manser Payne et al., 2021; Markfort et al., 2021). Their contribution highlights the novel use of a platform's intermediary role for value co-creation

in different industries. A detailed classification of corresponding literature to platform value propositions is given in Appendix A. This table presents multidisciplinary attention to the value propositions of platform business models.

Understanding the underlying critical conditions for value proposition is vital since it enables platform firms to deliver efficient value and exploit network externalities. However, it is ambiguous regarding the factors associated with the positive network effects and a growing critical mass and platform network. The nearest attempt to answer this question is that of Trabucchi et al. (2021), which explores the value creation drivers. Another relevant perspective is the recent developments of stakeholder value proposition (e.g., Carrasco-Farré et al., 2022), actor value proposition (Hokkanen et al., 2021), the role of trust and safety mechanisms in different industries, especially where the sharing economy platforms are in the spotlight (e.g., Ert et al., 2016; Kim et al., 2008; Mao et al., 2020), the user network heterogeneity and its ability to facilitate a variety of solutions to the platform users (Ricart et al., 2020), and finally responding to the innovative dynamics of technology and markets through periodical reconstruction of value proposition (Cosma et al., 2021).

These factors, however, lack a defined framework that contains the fundamental prerequisites for strengthening platform value propositions. Furthermore, even when certain value proposition aspects are offered to influence platform value propositions (e.g., trust, data-driven VP, stakeholder value proposition), the function of causal complexity is generally ignored.

4.2.2 Value proposition development

The term "value proposition" was used in the early literature to refer to a deliverable value to customers that a supplier produced, launched, and communicated by one party to another and believed to be valuable to and accepted by the customers (Ballantyne et al., 2011). It was later linked with better offers than the competitors (Lanning, 1998) and presented as a value discipline (Treacy & Wiersema, 1995) consisting of three generic approaches to value, operational excellence, customer intimacy, and product leadership. That perspective further shifted in platform businesses towards formulating different value propositions for each side of a platform business model (Muzellec et al., 2015). The broader sense of the value proposition in platforms is not just the embedded quality of products but constructing a collaborative infrastructure and establishing common knowledge and shared meaning of the institutional arrangements (J. A. Fehrer et al.,

2018b). Based on the resource-based view, one dominant perspective is the generic value proposition, described by Tauscher & Laudien (2018). They specifically looked at the intermediary role of platforms and randomly analyzed 100 platforms that facilitated transactions between the supply and demand sides. These platforms broadly offered one of the following value proposition categories: price/cost/efficiency, emotional value, and social value. Their analysis described platforms with a unique value proposition to the demand side and a unique value proposition to the supply side. Such value propositions are called ‘core’ (Hevner & Malgonde, 2019). This perspective is similar to the “supplier-crafted generic strategy” of Ballantyne et al. (2011). A platform to propose from either of the three categories of value propositions needs to clearly understand the needs of participating sides of the platform. Therefore, it has crucial implications for platform managers in evaluating their potential growth and efficiency and developing competitive strategies (Tauscher & Laudien, 2018). This perspective, on the other hand, has limitations. One presents unilateral initiatives that “deflect attention from individual customer-based strategies” (Ballantyne et al., 2011, p. 204). It also ignores the different sets of users within each group and the multiple roles of each user in the same platforms that are intermediaries (Hokkanen et al., 2021). Last but not least, it gives inadequate attention to the negative externalities of platform value propositions.

Some of the above constraints are responded to by a relatively recent perspective that extends the value propositions of platforms from dyadic value propositions to ‘actor value proposition’ (Hokkanen et al., 2021) and ‘stakeholder value proposition’ (Carrasco-Farré et al., 2022; Ricart et al., 2020a). These perspectives broaden the overall conceptualization of platform business models, shifting from a "business-to-customer" to an "actor-to-actor" perspective (J. A. Fehrer et al., 2018b) and taking into consideration the market and non-market stakeholders (Ricart et al., 2020a).

An Actor Value Proposition (AVP) is a competitive statement of the proposed value to a specific group of actors on either side of the platform. For example, digital marketplace platforms can distinguish between the categories of buyers and the categories of sellers, and, therefore, based on the role they perform, a distinctive value proposition can be offered to each category (Hokkanen et al., 2021). In platform settings, a consumer can simultaneously perform both the buyer and seller roles, and this perspective is centered on the multitude of participating actors. The concept of AVP is not very different from the Customer Value Proposition in non-platform business models (e.g.,

Payne et al., 2017), with the consumers' needs at the core of decision-making for firms. The Stakeholder Value Proposition (SVP) refers to how platforms deliver value not just to the multiple users of the platform but also to the local outsiders, public authorities, and the local environment (Ricart et al., 2020a). Building upon the importance of the actors' role mentioned earlier, in the SVP, platforms can offer local outsiders new roles and responsibilities to develop a strong relationship, gain legitimacy and prevent grassroots movements against the platforms (Ricart et al., 2020a). In addition, this perspective holds the platform accountable for the negative network effects from stakeholder discontent when using local resources and the local workforce.

The combination of AVP and SVP serves as a management tool for coordinating resources within the platform and externally to position itself in the market and build an overall positive interpretation of its value propositions. Furthermore, this combination is making platforms more flexible and attentive to the demands of both internal and external actors.

Therefore, I propose that an adequately defined value proposition has a considerable impact on the platform performance and is central to the design of a platform business model to reach a shared value proposition understanding between the demand and supply sides. That is at least for three reasons (Payne et al., 2017). (i) What resources and information do the platform need to share with the users (on either side) to facilitate a co-creation; (ii) the necessity for a reasoned value package that differs from and outperforms the offerings with which it competes (and aligned to the specific user needs) and finally (iii) the communication strategy for emphasizing benefits that platform users would find crucial for them.

Building on the existing research, using a complementary lens of The Resource-Based View (RBV) and Stakeholders Theory (ST) (Freeman et al., 2021; McGahan, 2021), I present four underlying factors (shown in Figure 1) that have been proven to have a favorable or unfavorable influence on triggering positive network effects (platform performance). Although other, more specialized, platform design characteristics may be identified, the following have received explicit empirical examination in platform value proposition research, and they have also been conceptualized. Bringing together these factors significantly contributes to comparing earlier studies and permits further empirical investigation.

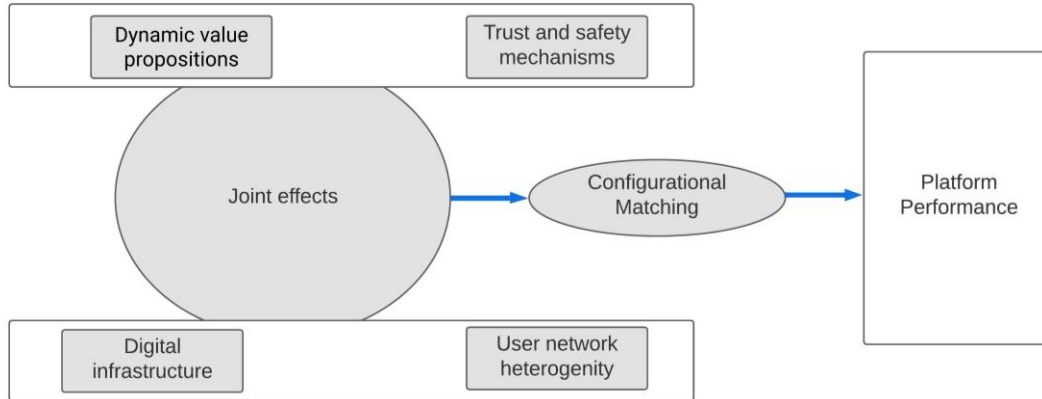


Figure 7 The configuration effects of five factors on platform business model performance

4.2.3 Digital infrastructure Sophistication

Digital technologies have transformed business and changed the nature of strategy since digitalized products have the capacity for new features and functions, incorporating digital modules into physical products (Vaska et al., 2021). The role of technology in platform business models is fundamental, as such business models rely on a web platform to run and necessitate digital infrastructure to facilitate an exchange between the different actors. A common structural feature of platforms is their modular technology architecture which is a crucial enabler for innovation, new ways of value creation, and the development of new value propositions (Gawer, 2014b). As a result, digital technology's role is crucial for platform business models' competitiveness. Since the focus of this research is on the value delivery and value proposition, digital transformation challenges the core capabilities and competencies of platform businesses in the way they deliver value, manage relations with users of a platform, overall Interactivity of digital channels, innovate their operations and building new capabilities on the top of their existing ones (Vaska et al., 2021).

Technology sophistication is already associated with firm performance (M.E. Porter, 1980) and organizational structure (Covin et al., 1990). Recent efforts in this regard look at the sophistication of Web 2.0 technology in triggering network effects and platforms attracting more users. For instance, Holland & Gutierrez-Leefmans, (2018) presents three levels of Web 2.0 sophistication for platforms, User-generated content, Interactivity, and the existence of other technologies such as search technology, matching technology, mobile responsive design, and the use of social media.

They highlight opportunities emerging from the Web 2.0 sophistication in the value proposition of platforms and online success.

However, research on the platform's value proposition did not limit to Web 1.0 or 2.0. In the last few years, we have been looking into the subsequent phases of the internet's evolution, distinguished by decentralization and user sovereignty, as well as the enrichment of the user experiences and value that users obtain from platform business models. Especially today, we can find many examples where platform businesses use Artificial Intelligence to learn the individual needs of users and offer unique value propositions (e.g., Manser Payne et al., 2021), or they use Blockchain technology to improve user experience, ecosystem creation (e.g., Ning & Yuan, 2021). Other examples are creating decentralized, participatory, and open governance systems and facilitating automated intelligent business transactions (Zutshi et al., 2021).

This research, therefore, proposes that for an efficient value proposition, digital platforms rely on the technology benefits that act not just as a backbone but can standardize and enhance the user experience and perceived quality. The sophisticated infrastructure, therefore, can integrate other technologies that lead to highly personalized propositions and grow the user network base.

4.2.4 Existence of trust and safety mechanisms

Trust, reliability, and safety while using the platform businesses are critical elements for all participants, regardless of their role in each transaction. These dimensions cover the perceived operational quality, the consistent delivery, and the overall trust in using the platform. The role of trust and user perception are not recent developments (for an extensive review, see Kim et al., 2008; Dellarocas, 2003). The criticality of these elements is recently explored in platform business models (e.g., Walsh et al., 2020; Mao et al., 2020; Ert et al., 2016) for several reasons. Platform businesses link different actors; someone hosts strangers at their accommodation, patients share their data, fashion models share their profiles, and someone purchases a used car; if we look at all sorts of transactions that occur, trust is crucial either towards either side, towards the platform itself, or the service or products delivered through the platform.

Trabucchi et al. (2021) found establishing a trustworthy environment as one of the critical requirements for success in platform businesses. To do that, platform firms add policies and features that minimize risks actors anticipate from using the platforms (Hokkanen et al., 2021).

One way to reduce uncertainty is by sophisticated rating technologies for mutual evaluation, giving all actors the control to contribute to the platform governance (J. A. Fehrer et al., 2018b). This mechanism can ensure the activity of the other user, the service, and even the behavior, to develop a trustworthy environment. Such a process results in triggering positive network effects and boosting trust. Other relevant tools are identity verification, secure interactions through the platform, safe financial transactions, fraud detection, and offering risk-reducing policies (such as free returns or AirCover by Airbnb) as damage protection mechanisms. Similar to (Kang et al., 2016), I propose that by adopting trust and safety mechanisms, platforms can attract more users to participate, increasing the influence of positive network effects and overcoming gaps that cause negative network effects.

4.2.5 Platform user network heterogeneity

The resource-based view (RBV) identifies networking partnerships and strategic alliances as factors influencing a company's ability to expand (Powell et al., 1996). This is due to a more diverse pool of resources, which allows access to a more extensive network of contacts, information, and expertise. (Cosma et al., 2021). The border between the traditional firms and the platforms is in the existence of indirect network effects; it means that the benefits of involvement for users are contingent on user participation on the other side of the market, or in other terms, “each member of a group values more the service if there are more members of the other group” (Sanchez-Cartas & León, 2021, p. 457). The multiple sides are already fragmented in the platform businesses, and users within each group tend to have heterogenous preferences; the platform firms, to respond to that, attract the right mix of user networks to fill the supply gap (D. McIntyre et al., 2021). An initial impression, in this case, is the dependency on the network size for attracting end users. However, the large size of one side may increase the search cost for the other (D. McIntyre et al., 2021). Cosma et al. (2021) found that the variety of platform networks influences the probability of success for platform businesses. Their research was based on crowdfunding platforms, where the role of user network heterogeneity could be associated with the strategic resources and competitive advantage of platforms. The variety of user network groups (on either side) or a variety of actors, therefore, improves the platform performance in different process phases of engagement among users. Ultimately, a positive loop emerges, and value propositions

for the heterogenous demands of users attract heterogenous suppliers (and vice versa) to grow the critical mass.

4.2.6 *Dynamic value propositions*

Technological change is a key enabler for firms to develop platform business models; they can use digital technologies to facilitate matchmaking that otherwise would not be possible. In addition, they also benefit an exponential growth from network effects facilitated by digital technologies. Advances in technology, therefore, compel managers to look for alternative strategic responses to continuously re-evaluate their value propositions to meet the best user demands (Galvao et al., 2017). To build a more user-centric model, a flexible business model is needed at different levels of value creation and value delivery, thus, resulting in an innovative customer value proposition and self-reinforcing value for all sides. Carrasco-Farré et al. (2022) proposed that value propositions in platform businesses are dynamic components reconstructed with crucial stakeholders. Even if their contribution points to the stakeholder value proposition perspective, the application of dynamic characteristics is found relevant in other studies about platform businesses (e.g., McIntyre et al., 2021; Sanchez-Cartas & León, 2021; Tauscher & Laudien, 2017; Muzellec et al., 2015). The overall use of platform businesses is novel for continuous dynamic interactions. Particularly for value propositions, Ricart et al. (2020) refer to the need for specific mechanisms to guarantee adjustment, reconfiguration, and rebalancing of value delivery among stakeholders, to confront the negative network effects and achieve positive results. In addition, platforms need certain dynamic capabilities (innovation, scanning/sensing, and integrative capabilities) to respond to the pace of innovation for new opportunities and pressure from competitors (Helfat & Raubitschek, 2018b).

Last but not least, the orientation dynamics of the value proposition is another relevant consideration for platform business models. Platform businesses often begin with a clear value proposition for the end users. They shift focus to their business partners and eventually begin to reassess the services that underpin their value proposition in a way that includes both business partners and consumer audiences (for an extensive review, see Muzellec et al., 2015).

At this stage, considering the above conditions, it is unclear what influence the combination of the above components has or how they interact to produce the outcome. Understanding how individual factors interact to result in platform growth and performance is crucial to understanding how value

proposition underlying conditions influence the occurrence of core interactions and platforms reaching critical mass. mvQCA method complements this approach and is equipped to investigate the systematic interaction.

4.3 Research Method

The traditional case-oriented approach focuses on examining specific cases using extensive contextual knowledge. Such knowledge is derived from intensive qualitative engagement with cases, frequently based on purposefully selected small- to intermediate-N samples (Berg-Schlosser, 2012). The Qualitative Comparative Analysis (QCA) technique can be used with various sample sizes, and the number of cases alone does not justify its use (C. Q. Schneider & Wagemann, 2012). Condition-oriented applications understand cases in terms of a well-defined set of conditions, and findings are primarily interpreted as patterns across cases, with no in-depth, qualitative treatment of individual cases (Thomann & Maggetti, 2020). It aims to merge the qualitative (case-oriented) and quantitative (variable-oriented) analysis methodologies to get a more scientific result. QCA is also beneficial because it works well to configure business models that affect a firm's performance (Aversa et al., 2015). To summarize, QCA is a helpful technique for investigating the "joint effect" and "interaction relationship" of various variables from a holistic perspective (Liang et al., 2022).

MvQCA addresses the requirement to use only dichotomous presence/absence conditions (Cronqvist & Berg-Schlosser, 2009) by including multi-categorical conditions. The criteria for setting multicategory conditions is that there are enough variables to differentiate but not enough to stop being parsimonious. Conditions, however, can also be dichotomous. One or two multivalued conditions are frequently used, while the others are dichotomous. The primary analytical steps are provided in Appendix B. The QCA analysis was carried out using Tosmana software version 1.6.

4.3.1 Calibration

Based on the evaluation of ten case studies, membership scores were assigned to the four drivers (digital infrastructure sophistication, user network heterogeneity, trust and safety mechanisms, and dynamic value propositions) and the outcome (the performance of platforms associated with generating positive network effects). As a result, we used natural numbers such as 0, 1, and 2 to categorize the four drivers and the outcome (Table 1).

4.3.2 *Outcome*

A common definition of platform business models is their technology which reduces the transaction cost and facilitates valuable exchanges that otherwise would not happen (Sanchez-Cartas & León, 2021). Their role has been usually emphasized as intermediaries in a certain context in which the joined user sides mutually benefit from the growth of either size (D. McIntyre et al., 2021). A critical strategic aim of such business models is their ability to facilitate the proper interactions and attract desired participants to encourage strongly associated network effects. A more extensive user network facilitates the better matching of the supply and demand side and leads to competitiveness and vicious feedback loops for platforms to grow and position themselves in the market (Alstyne et al., 2016; Hokkanen et al., 2021). In this research, I considered the growth ratio across these two dimensions (valuable transactions and the user network) as indicators for whether these platforms happened to grow in the last year. Platforms with higher growth ratios in building their user base and valuable transaction than the previous year are assigned a membership score of 1, and where they failed to do so, they are assigned a score of 0.

4.3.3 *Conditions*

As indicated in building the theoretical framework, I select four primary condition variables, digital infrastructure sophistication, user network heterogeneity, trust and safety mechanisms, and dynamic features of value propositions.

1. The digital sophistication of the platform is the interface that enables engagement between the different sides of a platform. As described in the theoretical framework, the three levels are basic (user-generated content and Interactivity), intermediate (transaction and the use of different technologies, e.g., search technology, database technology, matching technology, mobile responsive design, use of social media such as Facebook, Twitter), advanced (the use of Artificial intelligence, Machine learning, and Blockchains, and other sophisticated web 3.0 or advanced tools), adapted from Holland & Gutierrez-Leefmans, (2018).
2. For the user network heterogeneity, I considered the diversity across user role types that engage in a platform business (e.g., supplier/brand, consumer, service provider, or a combination of these actors; Hokkanen et al., 2021), functional segments (i.e., variety of products/services offered by the platform; McIntyre et al., 2021) and geographical

assortment (e.g., local/regional/global; Taeuscher & Laudien, 2018) to distinguish between high levels of heterogeneity versus low. I assigned a score of 1 to platforms that show at least two of the above criteria and a score of 0 to platforms that meet only one criterion.

3. The third condition is the existence of trust and safety mechanisms that platforms use for identity verification, reputational mechanisms, and tools for payment security and scam protection, adapted from Walsh et al. (2020). Like the previous condition, I assigned a score of 1 to the platforms with at least two out of three tools and a score of 0 for the platforms with just one of the three tools.
4. Finally, the last boundary is the dynamic characteristics of value propositions across three dimensions, activities that continuously improve value propositions (Carrasco-Farré et al., 2022), a strategic shift in the value proposition alignment from users to business and vice versa (Muzellec et al., 2015), and actions by the platforms to tackle the negative network effects (Williams & Aitken, 2011). Table 1 reports variable calibration rules.

Table 1. Calibration rules

Condition	Abbreviation	Description
Digital infrastructure sophistication	DIS	Advanced=2, moderate=1, basic=0
User network heterogeneity	UNH	High=1, low=0
Trust and safety mechanisms	TSM	High=1, low=0
Dynamic value proposition	DVP	High=1, low=0
Output (performance)	PER	High=1, low=0

4.3.4 Data source and case selection

A sample of 10 platforms, consistent with the “intermediate-N” sample between 10 and 15 cases (Rihoux & Ragin, 2009a), is considered for this research. These cases are platform business models that had a successful start, identified through news websites, national ranking for innovation, and crowdfunding platforms (as platforms that have reached their investment goals successfully). Although these platforms are not representative of all platform business models but display characteristics that are common to many platform firms. The data is collected through 7 questionnaires filled by the CEOs or key managers of these platforms, six virtual interviews, and two in-person meetings. Each interview lasted about 40-50 minutes. Secondary data consisted of

newspaper articles, white papers, company documents or reports, and LinkedIn posts of the platforms, allowing us to triangulate the data, increasing the robustness of our analysis and reducing the limitations of single sources (Eisenhardt, 1989; Yin, 2003). I also carefully reviewed the updates or changes in value propositions of the studied platform businesses. Table 2 provides an overview of the cases, their respective markets, and details on the respondents.

Table 2 Case description

Case	Platform Type	Description	Country	Founding Year	Respondent from the Platform
Case 1	C2C and B2C	A community of digital business model enthusiasts to exchange knowledge on digital business (platforms, marketplaces, NFTs, Metaverse, DAOs,...)	Spain	2020	CEO
Case 2	C2C and B2C	A digital Marketplace for made-by-hand products from Afghan Artisans and a fundraising platform where donors can purchase a package of aid for the registered deserving members of the platform in Afghanistan	Afghanistan	2018	CTO
Case 3	B2B and B2C	A platform that aggregates sustainable and innovative mobility services (own vehicles and that of other providers) for individual users and businesses (to offer to their employees or clients) and a marketplace to earn mobility credits to get around freely.	Italy	2018	Marketing Director
Case 4	B2B	A platform with which construction companies can create a "digital warehouse" where they can insert everything present in their physical warehouse and put the goods there for sale or rent to other construction companies.	Italy	2016	CEO, Sales Manager
Case 5	B2C	Food delivery platform	Italy	2019	COO
Case 6	C2C and B2C	Drive-sharing platform for unused vehicles	Italy	2018	Cofounder (operations)
Case 7	B2B and B2C	A platform with many customizable functional modules to carry out all the activities required to practice medicine online, collaborate between health professionals and interact with patients in a safe, secure, and GDPR-compliant environment.	Italy	2017	Account Manager Marketing
Case 8	B2C, C2C	A platform to host and book private chefs, bartenders, mixologists, DJs, live music, arts, crafts, and children's experiences	United Kingdom	2021	Cofounder and Managing director

Case 9	B2C, B2B, C2C	Leading Italian Proptech Agency that helps customers buy and sell houses faster and stress-free, with a game-breaking fee structure.	Italy	2015	Marketing and Communication Manager
Case 10	C2C, B2C	Marketplace for parents and babysitters to match their needs and availabilities.	Italy	2013	Former CEO and founder

4.4 Data processing and results

In the first step of the mvQCA iteration, I translated and coded the raw data to set-theoretic terms. This process combined information from the primary and secondary data, and accordingly, based on the calibration rules, I shaped the data matrix (Table 3). Since a mvQCA is to provide parsimonious solutions that explain an output, if two conditions report similar scores and are theoretically permitted, one can merge the two conditions (Rihoux & Ragin, 2009a). Among all ten cases, platforms with moderate or higher digital sophistication levels also provided at least two trust and safety mechanisms tools. Therefore, we combine the two dimensions as Ko et al. (2022) did. The relationship between the two conditions can be explained by the definition of Digital Trust (Sundararajan., 2019; Ko et al., 2022). Digital Trust “is the extent to which customers perceive the platform provider business to be reliable and the digital platform to hold credible standing among relevant validating organizations”(Ko et al., 2022, p. 2). The cases are then arranged in two truth tables, one for the platforms that offered Actor and Stakeholder Value Propositions and another for Generic Value Propositions.

Table 3. Data matrix

Case ID	Digital infrastructure	User Network Heterogeneity relevance	Trust and safety on the platform relevance	Dynamic nature	Performance
Generic Value Proposition					
Case 2	1	1	1	1	1
Case 4	0	1	0	0	0
Case 5	1	0	1	1	1
Case 8	1	1	1	1	1
Case 10	1	0	1	0	0
Actor and Stakeholder Value Propositions					
Case 1	2	1	1	1	1
Case 3	2	1	1	1	1
Case 6	2	1	1	1	1
Case 7	2	1	1	1	1
Case 9	2	1	1	1	1

The truth table can evaluate the distribution of cases across various logically possible combinations of causal conditions (a measure of coverage). "Raw coverage" refers to the number of cases with the outcome and a given configuration divided by the number of cases with the outcome. "Unique coverage" denotes the proportion of cases with the outcome uniquely covered by a given configuration (no other configuration covers those cases).

Table 4. MvQCA results

Conditions	Configurations for Output {1}		Configurations for Output {0}	
	Actor and Stakeholder VPP [1A]	Generic VPP [1B]	Generic VPP [2A, 2B]	
DIS {2}	●			
DIS {1}		●		●
DIS {0}			●	
UNH {1}	●		●	
UNH {0}		●		●
DVP {1}	●	●		
DVP {0}			●	●
Cases Covered	5	3	1	1
Consistency	1.000	0.600	0.500	0.500
Raw Coverage	1.000	1.000	0.500	0.500
Unique Coverage	1.000	1.000	0.500	0.500

Table 4 shows the theoretical minimization results, with one configuration linked to high-performing platforms with actor and stakeholder value propositions and another for high-performing platforms with generic value propositions. Furthermore, it depicts two solutions that are associated with platform underperformance. The related present variable of each condition is indicated by a black circle "●". In contrast, large circles represent core conditions (present in

parsimonious solutions, including the logical remainders), and small circles represent complementary conditions present in intermediate but not parsimonious solutions.

The associated solution with the actor and stakeholder value proposition perspectives [1A] covers most of this analysis's cases. Advanced digital infrastructure (which can inherit fairly strong trust and safety mechanisms), a heterogenous network of users, and dynamic value propositions are necessary conditions for the growth of the five cases in this research.

The solution [1B] is less sophisticated than [1A]. It presents three cases with a generic value proposition with considerable growth in the user network and the transactions that occurred on the platform last year. The necessary conditions for their performance, found in this analysis, are at the least moderate digital infrastructure (that can inherit adequate trust and safety mechanisms) and, finally, dynamic value propositions to understand the user requirements and continuously improve benefits for the users of the platform. It is noteworthy that the advanced digital infrastructure and user network heterogeneity are sufficient but not necessary conditions for this perspective.

The solution [2A] describes a platform that, despite a good start and solving the chicken or egg problem at the launch of the platform and also gaining attention from the manufacturing companies in Italy, as well as the Italian local government, remained with basic digital infrastructure, low trust and safety mechanisms in the platform and most of all with less attention to the dynamic value proposition for the platform users. The solution [2B], despite having a moderate digital infrastructure (web 2.0 and transaction tools on the website), using identity verification tools and other safety-ensuring arrangements, however, lacks dynamic value propositions.

A high level of dynamic value proposition is consistent in high-performing platforms regardless of the value proposition perspective. On the other hand, a lower level of dynamic value proposition explains the low performance of the two cases in the mvqCA analysis. This situation confirms the asymmetry of the method, as it should be, for verifying the robustness of the results. Even though the calibration procedure here is based on QCA literature, I performed additional robustness checks on our solution formula by varying the number of variables for each condition (Appendix C). The findings are similar when the dynamic nature of value propositions has three variables instead of two, and the user network heterogeneity has three variables. I have selected the most

parsimonious calibration for explaining configurations that explain platforms' high and low performance.

Additionally, the findings of this research reveal that these conditions are consciously combined to produce a high-performance outcome. Table 5 presents three examples from high-performing cases:

Table 5. Case example quotes by the respondents

Case #	DIS	UNH	DVP
Case 6	Web 3.0 (blockchains/ decentralized peer-to-peer networks/ Artificial intelligence (AI) and machine learning)	“Diversity of users allows Volvero spread risk in case another solution wants to challenge us and serve one of the segments we want to attract.”	“We started with a focus only on p2p (AirBNB for vehicles) but realised that this needs augmentation by providing more vehicle availability which is where the businesses come in.”
	“Identity verification, financial checks and driver performance monitoring via measurements of some parameters when they are using a vehicle on our platform”		
Case 7	Web 3.0 (blockchains/ decentralized peer-to-peer networks/ Artificial intelligence (AI) and machine learning)	“Yes, the Platform is white-label and customizable because we want to give an instrument able to adapt itself at the different needs of the different Professionals and situations”	To give better access to treatment for the Patients and connect HCPs together. We offer the same values but enrich by new features and purposes. One of our goals is to improve our product continuously.
	“We respect all the standards of cyber security.”		
Case 9	Web 3.0 (blockchains/ decentralized peer-to-peer networks/ Artificial intelligence (AI) and machine learning)	“Yes, we would like to attract and serve different clusters of customers in term of requirements / value offerings / characteristics. We are currently working in that direction. As for the sellers (house owners), we are providing a variety of price / offer solutions, from basic services to premium services, in order to enrich our database with an assortment of different houses, attract buyers and close a variety of deals.”	“In order to support our customers all along the house purchase process (which is a complex activity, implying specific knowledge), we became a digital real estate agency. We needed to change and enrich our value propositions, due to this relevant change in our business model.”
	“It is crucial to make customers feel safe all along the process. We are trying to achieve this goal providing: - Safe and transparent experience thanks to a brand new UX / UI - Correct and clear information about services and fees - A company overview... - Link to customers' reviews on Trustpilot - The most significant press releases”		

4.5 Discussions

Ruggieri et al. (2018) revealed the role of platform businesses in generating innovative models for value proposition and matchmaking between the supply and demand side. Value proposition includes all aspects of benefits that represent value to the users (Markfort et al., 2021) and is at the heart of the business model and a “de facto bridge between strategic management marketing literature” (Muzellec et al., 2015, p. 140). To understand the underlying conditions of value propositions for the platform performance, our analysis of necessary conditions indicates that no individual factor is necessary for the platforms to grow their user network base and increase the number of value transactions in the platform. Based on the findings, two driving modes of platform performance are identified. In addition, findings reveal that platform businesses can rely on either perspective to increase their user base and transactions. These two perspectives are the combined actor value proposition, stakeholder value proposition, and generic value proposition. Examples from the cases in this research present high-performing cases with both perspectives, but complemented by different conditions to offer the users an attractive value package (Ramos-Henríquez et al., 2021).

4.5.1 *Necessary conditions for the actor and the stakeholder perspectives*

Platforms businesses need to leverage advances in information and communication technologies using Web 3.0 (that they can inherit strong trust and safety mechanisms), a heterogenous user network, and operational and technical flexibility for dynamic value propositions to generate positive network effects. In such a configuration, digital sophistication complements the other two conditions vital for platform growth (i.e., managing a governance model for matchmaking heterogeneous user groups, flexibility for dynamic value propositions, and tackling negative network effects through trust and safety mechanisms). However, they act together to produce the performance outcome. This also corresponds to the emphasis on technological sophistication by existing literature on platform businesses (e.g., Holland & Gutierrez-Leefmans, 2018; Kazan et al., 2018; McIntyre et al., 2021). The role of technology is further related to communicating the value propositions within user groups and for the platform. Another way to explain the resulting formula is that an actor or stakeholders perspective needs heterogenous user networks, an active understanding of the needs of multiple user groups, and a technological backbone to facilitate this operation. This combination significantly maximizes the overall value for all affected parties and

creates new sources of value creation and the scope of the value proposition for the different user groups.

The existence of trust and safety mechanisms has been mentioned many times in literature and by the respondents in this research. However, since the truth table In our analysis shows equivalent values for the DIS and TSM, it is logical to say that the level of technological sophistication can inherit the abilities in which the platform offers appropriate trust and safety mechanisms. For the sake of parsimony, the goal of a QCA analysis, the final solution is adjusted to only the high level of digital infrastructure sophistication, heterogenous user network, and dynamic value propositions.

4.5.2 Necessary conditions for the generic value proposition perspectives

The value proposition in this perspective has two differences from that of the former. User network heterogeneity is no longer necessary for high-performing platforms, and a moderate digital sophistication in the cases studied was sufficient for them to grow their user base and increase the number of valuable exchanges occurring. Therefore, At least a moderate digital sophistication combined with dynamic value propositions generates positive network effects.

This context also speaks of the lower sophistication of such business models overall. Platforms business with such a perspective concentrate more on the generic value they propose to the different users and are not highly customized, adjustable, and user-led.

Last but not least, with the advances in technology and the introduction of new sophisticated features such as IoT platforms and the size of platform business networks (i.e., platform ecosystem, innovation ecosystem, and innovation platforms), the large majority of platform businesses are expected to adopt the actor and stakeholder value proposition perspectives.

4.6 Conclusion

Understanding the configuration and elements of the value proposition is critical for platforms businesses to articulate their competitive approach when developing their competitive strategy (Ramos-Henríquez et al., 2021). Several authors have emphasized the importance of applying the configuration of the value proposition in specific frameworks (Ramos-Henríquez et al., 2021; Lindič & Marques da Silva, 2011). Accordingly, this research has focused on studying the

underlying conditions of the value proposition for platform performance. The mvQCA results contribute to a better understanding of the value proposition relevance for platform business models and its correlation with platform performance.

I summarized the existing platform business model literature by combining the value proposition into four conditions and employing QCA methods to provide an in-depth understanding of the mutual interaction of these factors and platform performance. This framework can assist academics and practitioners in better understanding the underlying conditions of value proposition and their combined role in platform growth and performance.

The four conditions are digital infrastructure sophistication, user network heterogeneity, trust and safety mechanisms, and dynamic value propositions. This study adds to the research on platform business models by identifying two equivalent multidimensional paths for platforms to improve their value propositions and, as a result, their performance. Finally, it concentrated on the full spectrum of value propositions that technology can enable, specific for both value proposition perspectives, the combined actor and stakeholder value propositions, and the generic value propositions.

The findings of this study have the potential to benefit both managers and practitioners significantly. They can better understand how it can affect their value propositions and performance by identifying their value proposition perspective and applying the framework presented here in light of the necessary conditions approved by mvQCA analysis. It can also be used to determine their market position and novelties. Managers can more accurately design a strategic response to user needs, technological innovation, and competitive pressure by

This research covered 10 case studies that are representative of platform business models. Although this qualifies under the QCA methodology, it is advised with a more significant number of cases to cover more areas of logic reminders in the mvQCA and to increase the possibility of generalization. Furthermore, this research focused on platform businesses, also called digital transaction platforms (Gawer, 2021b), and gives less attention to the innovation dynamics of platform business models. Future research can test and extend the implications of this framework for innovation platforms and platform ecosystems.

Appendix A

Literature review summary

Research theme	Methods used	Key outputs	Sources
Characteristics of value propositions for platform success	Case study, Linear Regression, Mixed-method, Design Science	Trust and safety, Inclusive Stakeholder Value Proposition and ecosystem-centered governance, Actor Value Proposition (AVP); the role of customer evaluations, data-driven expansions of personalized services; and engagement mechanisms, the variety of partner networks	Carrasco-Farré et al., 2022; Trabucchi et al., 2021; Cosma et al., 2021; Hokkanen et al., 2021; Castro et al., 2020; Ricart et al., 2020; Walsh et al., 2020; Novak & Schwabe, 2009
Different value propositions of platform businesses	Mixed-method, Literature review	Different forms of platform business models, demand/supply aggregation, and/or inter-firm collaboration through platform business models	Ruggieri et al., 2018; Le, 2005
Digital infrastructure for improving value propositions	Explorative qualitative research, Structural Equation Modeling (SEM), Case study, Literature Review	Technology differentiation for platform value proposition; artificial intelligence in payment digital platforms; the use of blockchains for improving platform value propositions	(Manser Payne et al., 2021; Zutshi et al., 2021; Ning & Yuan, 2021; Mantena & Saha, 2012)

Operationalizing value propositions	Netnography, Explorative qualitative research strategy, Case study, Machine Learning methods (Boruta and Support vector machine classification)	Modularizing resources integration and service processes; resources, unified portal, and participation; shared resources, value packages, and communications; patterns of business model innovation through value proposition	Markfort et al., 2021; Ramos-Henríquez et al., 2021; Yu et al., 2019; Lofberg & Akesson, 2018
The use of the platform as a value proposition	Machine Learning and Boruta algorithm, Mixed-method	Relationship Marketing (RM) through platforms; platforms for crowdfunding	Oba et al., 2018; Shams, 2016
Value Proposition Dynamics	Multiple case study, Constructivist Grounded Theory (CGT)	The shift in the value proposition alignment, the value proposition in the entrepreneurial dynamics of platform business models	Trabucchi & Buganza, 2021; Muzellec et al., 2015

Appendix B

Steps in performing a QCA analysis:

The four basic analytical procedures are the same for all QCA variations (Haesebrouck, 2016; Fiss, 2011; Herrmann & Cronqvist, 2009). The first step is to choose which cases to include in the study before creating a data table that lists whether the causative factors and outcomes are present or absent for each case. While csQCA and fsQCA require dichotomous variables, mvQCA allows for multivalued conditions (Thiem, 2015; Rihoux & Ragin, 2009b). The second stage entails transforming the data, as mentioned earlier, into a so-called "truth table" containing all logically feasible conditions. Accordingly, a truth table with K causal conditions results in 2^K rows of potential causal combinations. Rows lacking empirical cases are logical reminders, while those that have cases where the outcome is both present and absent are regarded as contradictory configurations. Third, the researchers must use Boolean algebra to determine the most parsimonious answer (i.e., the condition with the lowest common denominator among the causal factors) that results in the same result (Liu et al., 2021): "If two Boolean expressions differ in only one causal condition yet produce the same outcome, then the causal condition that distinguishes the two expressions can be considered irrelevant and can be removed to create a simpler, combined expression" (Biernacki, 1987, p. 93)

In the following step, the results are interpreted to find the necessary and/or sufficient conditions for the outcome (Rihoux & Ragin, 2009b). Necessity and sufficiency are essential to understand all variants of QCA (Liu et al., 2021). Broadly, they represent two generic analytic strategies for searching for commonalities to reveal the underlying empirical connections among variables (Ragin, 2008). The first strategy (necessity) assesses whether cases with the same given outcome share the same causal conditions; the second strategy (sufficiency) is the reverse, where the researcher checks whether cases with the same causal conditions share the same outcome. Necessity denotes that an outcome can be obtained only if the causal conditions in question are present.

The gathered results are then analyzed to determine the conditions for the event to occur (Rihoux & Ragin, 2009b).

The results of a QCA analysis are explained by understanding necessity and sufficiency conditions (Liu et al., 2021). They broadly represent two generic analytical approaches, including looking for similarities to shed light on the underlying empirical links between variables (Ragin, 2008). In the first approach (necessity), the researcher determines whether cases with the same result share the same causal factors; in the second approach (sufficiency), the researcher determines whether cases with the same causal factors share the same result. Necessity means that a result can only be attained if the relevant causal conditions are present. On the other hand, sufficiency means that a result will always occur if the relevant causal conditions are met. “Simply put, if X is necessary for Y, then it is impossible to have Y without X. Similarly, if X is sufficient for Y, then it is impossible to have X without Y. Expressed in set-relation terms, necessity requires the conditions to be a superset of the outcome, while sufficiency demands the conditions to be a subset of the outcome.” (Liu et al., 2021, p. 577)

Appendix C

Robustness Check example with three values for the UNH in creating the truth table.

Settings:

Minimizing: 1

including:

Truth-Table:

Case ID	DIS	UNH	DVP	PER
C4	0	1	0	0
C10	1	0	0	0
C5	1	0	1	1
C8, C2	1	2	1	1
C1, C3, C7	2	1	1	1
C6, C9	2	2	1	1

Test findings

Result(s):

$$\begin{aligned}
 & \boxed{\text{DIS}\{2\} * \text{UNH}\{1\} * \text{DVP}\{1\}} + \boxed{\text{DIS}\{1\} * \text{UNH}\{0\} * \text{DVP}\{1\}} + \boxed{\text{DIS}\{2\} * \text{UNH}\{2\} * \text{DVP}\{1\}} + \boxed{\text{DIS}\{1\} * \text{UNH}\{2\} * \text{DVP}\{1\}} \\
 & \text{(C1,C3,C7)} \quad \text{(C5)} \quad \text{(C6,C9)} \quad \text{(C8,C2)}
 \end{aligned}$$

final findings

$$\boxed{\text{DIS}\{1\} * \text{DVP}\{1\}} + \boxed{\text{DIS}\{2\} * \text{UNH}\{1\} * \text{DVP}\{1\}} \\
 \text{(C5+C8)} \quad \text{(C1,C3,C6,C7,C9,C2)}$$

4.7 References

- Alstyne, M. W. V., Parker, G. G., & Choudary, S. P. (2016). Pipelines, Platforms, And The New Rules Of Strategy. *Harvard Business Review*. <https://hbr.org/2016/04/Pipelines-Platforms-And-The-New-Rules-Of-Strategy>
- Aversa, P., Furnari, S., & Haefliger, S. (2015). Business Model Configurations And Performance: A Qualitative Comparative Analysis In Formula One Racing, 2005–2013. *Industrial And Corporate Change*, 24(3), 655–676. <https://doi.org/10.1093/icc/dtv012>
- Ballantyne, D., Frow, P., Varey, R. J., & Payne, A. (2011). Value Propositions As Communication Practice: Taking A Wider View. In *Industrial Marketing Management* (No. 2, Si; Vol. 40, Issues 2, Si, Pp. 202–210). Elsevier Science Inc. <https://doi.org/10.1016/j.indmarman.2010.06.032>
- Befani, B. (2013). Between Complexity And Generalization: Addressing Evaluation Challenges With Qca. *Evaluation*, 19(3), 269–283. <https://doi.org/10.1177/1474022213493839>
- Berg-Schlosser, D. (2012). Comparative Research Designs And Case Selection. In D. Berg-Schlosser (Ed.), *Mixed Methods In Comparative Politics: Principles And Applications* (Pp. 32–40). Palgrave Macmillan Uk. https://doi.org/10.1057/9781137283375_3
- Biernacki, R. (1987). The Comparative Method: Moving Beyond Qualitative And Quantitative Strategies. Charles C. Ragin. *American Journal Of Sociology*, 95(3), 825–826. <https://doi.org/10.1086/229365>
- Carrasco-Farré, C., Snihur, Y., Berrone, P., & Ricart, J. E. (2022). The Stakeholder Value Proposition Of Digital Platforms In An Urban Ecosystem. *Research Policy*, 51(4), 104488. <https://doi.org/10.1016/j.respol.2022.104488>
- Castro, Á. L. De O., Silva, J. P. N. Da, Boas, L. H. De B. V., & Sugano, J. Y. (2020). A Arquitetura E Proposta De Valor Da Plataforma Evino / The Architecture And Value Proposition Of Evino Platform. *Revista Fsa (Centro Universitário Santo Agostinho)*, 17(3), Article 3. <https://doi.org/10.12819/2020.17.3.3>
- Cosma, S., Grasso, A. G., Pattarin, F., & Pedrazzoli, A. (2021). Platforms' Partner Networks: The Missing Link In Crowdfunding Performance. *European Journal Of Innovation Management*, 25(6), 122–151. <https://doi.org/10.1108/Ejim-06-2020-0230>
- Covin, J. G., Prescott, J. E., & Slevin, D. P. (1990). The Effects Of Technological Sophistication On Strategic Profiles, Structure And Firm Performance. *Journal Of Management Studies*, 27(5), 485–510. <https://doi.org/10.1111/j.1467-6486.1990.tb00258.x>

- Cronqvist, L., & Berg-Schlusser, D. (2009). Multi-Value Qca (Mvqca). In *Configurational Comparative Methods: Qualitative Comparative Analysis (Qca) And Related Techniques* (Pp. 69–86). <https://doi.org/10.4135/9781452226569.N4>
- Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). *The Business Of Platforms: Strategy In The Age Of Digital Competition, Innovation, And Power*. Harpercollins.
- Dellarocas, C. (2003). The Digitization Of Word Of Mouth: Promise And Challenges Of Online Feedback Mechanisms. *Management Science*, 49(10), 1407–1424. <https://doi.org/10.1287/Mnsc.49.10.1407.17308>
- Eisenhardt, K. M. (1989). Building Theories From Case Study Research. *The Academy Of Management Review*, 14(4), 532–550. <https://doi.org/10.2307/258557>
- Eisenmann, T., Parker, G., & Van Alstyne, M. W. (2006). Strategies For Two-Sided Markets. In *Harvard Business Review* (No. 10; Vol. 84, Issue 10, P. 92+). Harvard Business School Publishing Corporation.
- Ert, E., Fleischer, A., & Magen, N. (2016). Trust And Reputation In The Sharing Economy: The Role Of Personal Photos In Airbnb. In *Tourism Management* (Vol. 55, Pp. 62–73). Elsevier Sci Ltd. <https://doi.org/10.1016/J.Tourman.2016.01.013>
- Fehrer, J. A., Woratschek, H., & Brodie, R. J. (2018). A Systemic Logic For Platform Business Models. In *Journal Of Service Management* (No. 4, Si; Vol. 29, Issues 4, Si, Pp. 546–568). Emerald Group Publishing Ltd. <https://doi.org/10.1108/Josm-02-2017-0036>
- Fiss, P. C. (2011). Building Better Causal Theories: A Fuzzy Set Approach To Typologies In Organization Research. *The Academy Of Management Journal*, 54(2), 393–420.
- Freeman, R. E., Dmytriiev, S. D., & Phillips, R. A. (2021). Stakeholder Theory And The Resource-Based View Of The Firm. *Journal Of Management*, 47(7), 1757–1770. <https://doi.org/10.1177/0149206321993576>
- Furnari, S., Crilly, D., Misangyi, V. F., Greckhamer, T., Fiss, P. C., & Aguilera, R. V. (2021). Capturing Causal Complexity: Heuristics For Configurational Theorizing. *Academy Of Management Review*, 46(4), 778–799. <https://doi.org/10.5465/Amr.2019.0298>
- Galvao, A., Mascarenhas, C., Rodrigues, R. G., Marques, C. S., & Leal, C. T. (2017). A Quadruple Helix Model Of Entrepreneurship, Innovation And Stages Of Economic Development. In *Review Of International Business And Strategy* (No. 2; Vol. 27, Issue 2, Pp. 261–282). Emerald Group Publishing Ltd. <https://doi.org/10.1108/Ribs-01-2017-0003>

- Gawer, A. (2014). Bridging Differing Perspectives On Technological Platforms: Toward An Integrative Framework. *Research Policy*, 43(7), 1239–1249. <https://doi.org/10.1016/j.respol.2014.03.006>
- Gawer, A. (2021). Digital Platforms' Boundaries: The Interplay Of Firm Scope, Platform Sides, And Digital Interfaces. *Long Range Planning*, 54(5), 102045. <https://doi.org/10.1016/j.lrp.2020.102045>
- Haesebrouck, T. (2016). The Added Value Of Multi-Value Qualitative Comparative Analysis. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 17(1), Article 1. <https://doi.org/10.17169/fqs-17.1.2307>
- Helfat, C. E., & Raubitschek, R. S. (2018). Dynamic And Integrative Capabilities For Profiting From Innovation In Digital Platform-Based Ecosystems. In *Research Policy* (No. 8; Vol. 47, Issue 8, Pp. 1391–1399). Elsevier Science Bv. <https://doi.org/10.1016/j.respol.2018.01.019>
- Herrmann, A. M., & Cronqvist, L. (2009). When Dichotomisation Becomes A Problem For The Analysis Of Middle-Sized Datasets. *International Journal Of Social Research Methodology*, 12(1), 33–50. <https://doi.org/10.1080/13645570701708543>
- Hevner, A., & Malgonde, O. (2019). Effectual Application Development On Digital Platforms. In *Electronic Markets* (No. 3; Vol. 29, Issue 3, Pp. 407–421). Springer Heidelberg. <https://doi.org/10.1007/s12525-019-00334-1>
- Hokkanen, H., Hänninen, M., Yrjölä, M., & Saarijärvi, H. (2021). From Customer To Actor Value Propositions: An Analysis Of Digital Transaction Platforms. *The International Review Of Retail, Distribution And Consumer Research*, 31(3), 257–279. <https://doi.org/10.1080/09593969.2021.1880463>
- Holland, C. P., & Gutierrez-Leefmans, M. (2018). A Taxonomy Of Sme E-Commerce Platforms Derived From A Market-Level Analysis. In *International Journal Of Electronic Commerce* (No. 2; Vol. 22, Issue 2, Pp. 161–201). Routledge Journals, Taylor & Francis Ltd. <https://doi.org/10.1080/10864415.2017.1364114>
- Kang, M., Gao, Y., Wang, T., & Zheng, H. (2016). Understanding The Determinants Of Funders' Investment Intentions On Crowdfunding Platforms: A Trust-Based Perspective. *Industrial Management & Data Systems*, 116(8), 1800–1819. <https://doi.org/10.1108/imds-07-2015-0312>
- Kazan, E., Tan, C.-W., Lim, E. T. K., Sorensen, C., & Damsgaard, J. (2018). Disentangling Digital Platform Competition: The Case Of Uk Mobile Payment Platforms. In *Journal Of Management Information Systems* (No. 1; Vol. 35, Issue 1, Pp. 180–219). Routledge Journals, Taylor & Francis Ltd. <https://doi.org/10.1080/07421222.2018.1440772>

- Kim, D. J., Ferrin, D. L., & Rao, H. R. (2008). A Trust-Based Consumer Decision-Making Model In Electronic Commerce: The Role Of Trust, Perceived Risk, And Their Antecedents. *Decision Support Systems*, 44(2), 544–564. <https://doi.org/10.1016/j.dss.2007.07.001>
- Ko, G., Amankwah-Amoah, J., Appiah, G., & Larimo, J. (2022). Non-Market Strategies And Building Digital Trust In Sharing Economy Platforms. *Journal Of International Management*, 28(1), 100909. <https://doi.org/10.1016/j.intman.2021.100909>
- Lanning, M. J. (1998). *Delivering Profitable Value A Revolutionary Framework To Accelerate Growth, Generate Wealth, And Rediscover The Heart Of Business*. Perseus Books. <http://www.books24x7.com/marc.asp?bookid=4285>
- Le, T. (2005). Business-To-Business Electronic Marketplaces: Evolving Business Models And Competitive Landscape. *Ijstm*, 6, 40–54. <https://doi.org/10.1504/ijstm.2005.006543>
- Liang, C., Wang, S.-J., Foley, M., & Ma, G.-H. (2022). The Path Selection On Improving The Quality Of Environmental Information Disclosure – Configuration Analysis Based On Fsqa. *Applied Economics*, 0(0), 1–16. <https://doi.org/10.1080/00036846.2022.2102134>
- Lindič, J., & Marques Da Silva, C. (2011). Value Proposition As A Catalyst For A Customer Focused Innovation. *Management Decision*, 49(10), 1694–1708. <https://doi.org/10.1108/00251741111183834>
- Liu, H.-Y., Subramanian, A. M., & Hang, C.-C. (2021). In Search Of The Perfect Match: A Configurational Approach To Technology Transfer In Singapore. *Ieee Transactions On Engineering Management*, 68(2), 574–585. <https://doi.org/10.1109/tem.2019.2901029>
- Lofberg, N., & Akesson, M. (2018). Creating A Service Platform—How To Co-Create Value In A Remote Service Context. In *Journal Of Business & Industrial Marketing* (No. 6, Si; Vol. 33, Issues 6, Si, Pp. 768–780). Emerald Group Publishing Ltd. <https://doi.org/10.1108/jbim-10-2015-0202>
- Manser Payne, E. H., Peltier, J., & Barger, V. A. (2021). Enhancing The Value Co-Creation Process: Artificial Intelligence And Mobile Banking Service Platforms. *Journal Of Research In Interactive Marketing*, 15(1), 68–85. <https://doi.org/10.1108/jrim-10-2020-0214>
- Mantena, R., & Saha, R. L. (2012). Co-Opetition Between Differentiated Platforms In Two-Sided Markets. In *Journal Of Management Information Systems* (No. 2; Vol. 29, Issue 2, Pp. 109–139). Routledge Journals, Taylor & Francis Ltd. <https://doi.org/10.2753/mis0742-1222290205>

- Mao, Z. (Eddie), Jones, M. F., Li, M., Wei, W., & Lyu, J. (2020). Sleeping In A Stranger's Home: A Trust Formation Model For Airbnb. In *Journal Of Hospitality And Tourism Management* (Vol. 42, Pp. 67–76). Elsevier. <https://doi.org/10.1016/j.jhtm.2019.11.012>
- Markfort, L., Arzt, A., Kögler, P., Jung, S., Gebauer, H., Haugk, S., Leyh, C., & Wortmann, F. (2021). Patterns Of Business Model Innovation For Advancing Iot Platforms. *Journal Of Service Management*, 33(1), 70–96. <https://doi.org/10.1108/Josm-11-2020-0429>
- McGahan, A. M. (2021). Integrating Insights From The Resource-Based View Of The Firm Into The New Stakeholder Theory. *Journal Of Management*, 47(7), 1734–1756. <https://doi.org/10.1177/0149206320987282>
- Mcintyre, D., Srinivasan, A., Afuah, A., Gawer, A., & Kretschmer, T. (2021). Multisided Platforms As New Organizational Forms. *Academy Of Management Perspectives*, 35(4), 566–583. <https://doi.org/10.5465/amp.2018.0018>
- M.E. Porter. (1980). *Competitive Strategy: Techniques For Analyzing Industries And Competitors*. Boston, Ma: The Free Press. <https://www.hbs.edu/faculty/pages/item.aspx?num=195>
- Muzellec, L., Ronteau, S., & Lambkin, M. (2015). Two-Sided Internet Platforms: A Business Model Lifecycle Perspective. In *Industrial Marketing Management* (Vol. 45, Pp. 139–150). Elsevier Science Inc. <https://doi.org/10.1016/j.indmarman.2015.02.012>
- Ning, L., & Yuan, Y. (2021). How Blockchain Impacts The Supply Chain Finance Platform Business Model Reconfiguration. *International Journal Of Logistics Research And Applications*, 0(0), 1–21. <https://doi.org/10.1080/13675567.2021.2017419>
- Novak, J., & Schwabe, G. (2009). Designing For Reintermediation In The Brick-And-Mortar World: Towards The Travel Agency Of The Future. *Electronic Markets*, 19, 15–29. <https://doi.org/10.1007/s12525-009-0003-5>
- Oba, B., Atakan, S., & Kirezli, O. (2018). Value Creation In Crowdfunding Projects-Evidence From An Emerging Economy. In *Journal Of Innovation Economics & Management* (No. 26; Issue 26, Pp. 37–61). De Boeck Universite. <https://doi.org/10.3917/jie.pr1.0028>
- Payne, A., & Frow, P. (2014). Developing Superior Value Propositions: A Strategic Marketing Imperative. *Journal Of Service Management*, 25(2), 213–227. <https://doi.org/10.1108/Josm-01-2014-0036>

- Payne, A., Frow, P., & Eggert, A. (2017). The Customer Value Proposition: Evolution, Development, And Application In Marketing. *Journal Of The Academy Of Marketing Science*, 45(4), 467–489. <https://doi.org/10.1007/S11747-017-0523-Z>
- Powell, W. W., Koput, K. W., & Smith-Doerr, L. (1996). Interorganizational Collaboration And The Locus Of Innovation: Networks Of Learning In Biotechnology. *Administrative Science Quarterly*, 41(1), 116–145. <https://doi.org/10.2307/2393988>
- Ragin, C. C. (2008). *Redesigning Social Inquiry: Fuzzy Sets And Beyond*. University Of Chicago Press. <https://press.uchicago.edu/ucp/books/book/chicago/R/Bo5973952.html>
- Ramos-Henríquez, J. M., Gutiérrez-Taño, D., & Díaz-Armas, R. J. (2021). Value Proposition Operationalization In Peer-To-Peer Platforms Using Machine Learning. *Tourism Management*, 84, 104288. <https://doi.org/10.1016/J.Tourman.2021.104288>
- Ricart, J. E., Snihur, Y., Carrasco-Farre, C., & Berrone, P. (2020). Grassroots Resistance To Digital Platforms And Relational Business Model Design To Overcome It: A Conceptual Framework. In *Strategy Science* (No. 3; Vol. 5, Issue 3, Pp. 271–291). *Informa*. <https://doi.org/10.1287/Stsc.2020.0104>
- Rihoux, B., & Ragin, C. (2009a). *Configurational Comparative Methods: Qualitative Comparative Analysis (Qca) And Related Techniques*. Sage Publications, Inc. <https://doi.org/10.4135/9781452226569>
- Rihoux, B., & Ragin, C. (2009b). “Multivalue Qca (Mvqca),” In *Configurational Comparative Methods: Qualitative Comparative Analysis (Qca) And Related Techniques*. Sage Publications, Inc. <https://doi.org/10.4135/9781452226569>
- Rohn, D., Bican, P. M., Brem, A., Kraus, S., & Clauss, T. (2021). Digital Platform-Based Business Models – An Exploration Of Critical Success Factors. *Journal Of Engineering And Technology Management*, 60, 101625. <https://doi.org/10.1016/J.Jengtecman.2021.101625>
- Ruggieri, R., Savastano, M., Scalingi, A., Bala, D., & D’ascenzo, F. (2018). The Impact Of Digital Platforms On Business Models: An Empirical Investigation On Innovative Start-Ups. In *Management & Marketing-Challenges For The Knowledge Society* (No. 4; Vol. 13, Issue 4, Pp. 1210–1225). *Sciendo*. <https://doi.org/10.2478/Mmcks-2018-0032>
- Sanchez-Cartas, J. M., & León, G. (2021). Multisided Platforms And Markets: A Survey Of The Theoretical Literature. *Journal Of Economic Surveys*, 35(2), 452–487. <https://doi.org/10.1111/Joess.12409>

- Schneider, C. Q., & Wagemann, C. (2012). *Set-Theoretic Methods For The Social Sciences: A Guide To Qualitative Comparative Analysis*. Cambridge University Press. <https://doi.org/10.1017/Cbo9781139004244>
- Shams, S. M. R. (2016). Stakeholder Relationship Management In Online Business And Competitive Value Propositions: Evidence From The Sports Industry. In *International Journal Of Online Marketing* (No. 2; Vol. 6, Issue 2, Pp. 1–17). Igi Global. <https://doi.org/10.4018/Ijom.2016040101>
- Şimşek, T., Öner, M. A., Kunday, Ö., & Olcay, G. A. (2022). A Journey Towards A Digital Platform Business Model: A Case Study In A Global Tech-Company. *Technological Forecasting And Social Change*, 175, 121372. <https://doi.org/10.1016/J.Techfore.2021.121372>
- Sundararajan, A. (2019). Commentary: The Twilight Of Brand And Consumerism? Digital Trust, Cultural Meaning, And The Quest For Connection In The Sharing Economy. *Journal Of Marketing*, 83(5), 32–35. <https://doi.org/10.1177/0022242919868965>
- Taeuscher, K., & Laudien, S. (2017, January 5). *Uncovering The Nature Of Platform-Based Business Models: An Empirical Taxonomy*.
- Taeuscher, K., & Laudien, S. M. (2018). Understanding Platform Business Models: A Mixed Methods Study Of Marketplaces. In *European Management Journal* (No. 3; Vol. 36, Issue 3, Pp. 319–329). Elsevier Sci Ltd. <https://doi.org/10.1016/J.Emj.2017.06.005>
- Thiem, A. (2015). Parameters Of Fit And Intermediate Solutions In Multi-Value Qualitative Comparative Analysis. *Quality & Quantity*, 49(2), 657–674. <https://doi.org/10.1007/S11135-014-0015-X>
- Thomann, E., & Maggetti, M. (2020). Designing Research With Qualitative Comparative Analysis (Qca): Approaches, Challenges, And Tools. *Sociological Methods & Research*, 49(2), 356–386. <https://doi.org/10.1177/0049124117729700>
- Trabucchi, D., & Buganza, T. (2021). Entrepreneurial Dynamics In Two-Sided Platforms: The Influence Of Sides In The Case Of Friendz. *International Journal Of Entrepreneurial Behavior & Research*, Ahead-Of-Print(Ahead-Of-Print). <https://doi.org/10.1108/Ijebr-01-2021-0076>
- Trabucchi, D., Muzellec, L., Ronteau, S., & Buganza, T. (2021). The Platforms' Dna: Drivers Of Value Creation In Digital Two-Sided Platforms. *Technology Analysis & Strategic Management*, 0(0), 1–14. <https://doi.org/10.1080/09537325.2021.1932797>

- Vaska, S., Massaro, M., Bagarotto, E. M., & Dal Mas, F. (2021). The Digital Transformation Of Business Model Innovation: A Structured Literature Review. *Frontiers In Psychology*, *11*, 3557. <https://doi.org/10.3389/fpsyg.2020.539363>
- Walsh, C., Saxena, D., & Muzellec, L. (2020). *Airbnb: Managing Trust And Safety On A Platform Business*. <https://doi.org/10.2478/Ijm-2020-0004>
- Williams, J., & Aitken, R. (2011). The Service-Dominant Logic Of Marketing And Marketing Ethics. *Journal Of Business Ethics*, *102*(3), 439–454. <https://doi.org/10.1007/s10551-011-0823-z>
- Yin, R. K. (2003). *Case Study Research: Design And Methods*. Sage.
- Yu, J., Wen, Y., Jin, J., & Zhang, Y. (2019). Towards A Service-Dominant Platform For Public Value Co-Creation In A Smart City: Evidence From Two Metropolitan Cities In China. In *Technological Forecasting And Social Change* (Si; Vol. 142, Issue Si, Pp. 168–182). Elsevier Science Inc. <https://doi.org/10.1016/j.techfore.2018.11.017>
- Zutshi, A., Grilo, A., & Nodehi, T. (2021). The Value Proposition Of Blockchain Technologies And Its Impact On Digital Platforms. *Computers & Industrial Engineering*, *155*, 107187. <https://doi.org/10.1016/j.cie.2021.107187>