

**The Platform Business Model and Strategy:
A Dynamic Analysis of the Value Chain and Platform Business**

A thesis submitted to the University of Manchester for the degree of
Doctor of Philosophy
in the Faculty of Humanities

2015

Junic Kim

Manchester Business School
Manchester Institute of Innovation Research

TABLE OF CONTENTS

List of Tables	7
List of Figures	9
List of Abbreviations	11
Abstract	13
Declaration	14
Copyright Statement	14
Acknowledgements	15
The Author	16
Preface: New step of My Research Journey at Manchester	18
Chapter 1 Introduction: A Study of Platform Business Model.....	20
1.1. Introduction	20
<i>1.1.1. Motivation for the Study.....</i>	23
<i>1.1.2. What are a Platform and a Platform Business Model?</i>	26
1.2. Research Questions and Objectives	30
1.3. Summary of the Findings	32
1.4. Research Methodology and Data Collection.....	34
1.5. Structure of the Study.....	36
Chapter 2 Platform Business Model: Transformation of the Value Chain and the Market Environment	40
2.1. Introduction	42
2.2. Business Model Concept and Definitions	44
<i>2.2.1. Attending to Business Models</i>	45
<i>2.2.2. Defining a Business Model.....</i>	46
<i>2.2.3. Business Models for e-Business</i>	48

2.3. What is a Platform Business Model?	51
2.3.1. <i>The Concept of the Platform and the Platform Business Model</i>	52
2.3.2. <i>The Importance of the Platform Business Model</i>	55
2.3.3. <i>The Systematic Nature of the Platform Business Model</i>	56
2.3.3.1. <i>Two-sided Market Theory</i>	57
2.3.3.2. <i>Direct and Indirect Network Effects (or Externalities)</i>	61
2.3.3.3. <i>Business Ecosystem</i>	64
2.4. Analysis of Various Perspectives on the Platform Business.....	65
2.4.1. <i>Analysis of Platform Research Literature Review</i>	66
2.4.2. <i>Different Disciplinary Perspectives</i>	68
2.4.2.1. <i>Operations Management</i>	69
2.4.2.2. <i>Industrial Economics</i>	71
2.4.2.3. <i>Business Strategy</i>	73
2.4.3. <i>Interdisciplinary Research</i>	79
2.5. Conclusions: Literature Gaps and Research Objectives	80
2.5.1. <i>Literature Gaps</i>	81
2.5.2. <i>Research Objectives</i>	83
Chapter 3. Methodology.....	87
3.1. Research Approach	89
3.2. Three Elements Approaches	91
3.2.1. <i>Quantitative Method Strategy</i>	92
3.2.2. <i>Qualitative Method Strategy</i>	93
3.2.3. <i>Mixed Method Strategy</i>	96
3.2.4. <i>A Choice of Research Method: Qualitative Research Strategy</i>	98
3.3. Research Questions and Procedures	101
3.3.1. <i>Research Questions</i>	101

3.3.2. <i>Multiple-Case Study Method</i>	106
3.4. Conclusions	108
Chapter 4. Research Design and Data Collection.....	110
4.1. Case Selection	111
4.2. Data Collection Strategy	114
4.2.1. <i>Secondary Data</i>	115
4.2.2. <i>Primary Data: In-depth Interview and Focus Group Interview</i>	116
4.3. Data Recording Procedures and Ethics	124
4.3.1. <i>Data Recording Procedures</i>	124
4.3.2. <i>Ethics</i>	125
4.4. Acquisition of Validity and Reliability	127
4.4.1. <i>Verification of Research Validity</i>	127
4.4.2. <i>Acquisition of Research Reliability</i>	128
4.5. Conclusions	129
Chapter 5. Data Analysis	131
5.1. Multiple-Case Study Analysis	134
5.2. Data Compilation; The Database	139
5.3. Data Description.....	141
5.4. Classification.....	143
5.5. Connections.....	145
5.5.1. <i>Pattern Matching</i>	147
5.5.2. <i>Conceptual Framework</i>	150
5.6. Conclusion	152

Chapter 6. Findings	155
6.1. Types of Platform Business Model	159
6.1.1. <i>Value Chain Starts from Supply Side: ‘Supplier’ Type</i>	161
6.1.1.1. <i>Value Chain’s External Expansion</i>	163
6.1.1.2. <i>Value Creation and Network Effect</i>	165
6.1.2. <i>Value Chain Starts from Demand Side; Tailor Type</i>	166
6.1.2.1. <i>Value Chain’s Reverse Flow</i>	167
6.1.2.2. <i>Value Creation and Network Effect</i>	168
6.1.3. <i>Value Chain Starts from Both Side; Facilitator Type</i>	169
6.1.3.1. <i>Value Chain’s Integration</i>	171
6.1.3.2. <i>Value Creation and Network Effects</i>	172
6.2. Platform Establishment and Growth Strategy	173
6.2.1. <i>Entry Stage; How Should a Platform Business Service be Chosen?</i>	175
6.2.1.1. <i>External Analysis; Platform Potential</i>	178
6.2.1.2. <i>Internal Analysis; Platform Thinking</i>	180
6.2.1.3. <i>Conclusions</i>	183
6.2.2. <i>Growth Stage; How Should a Two-sided Market be Built?</i>	185
6.2.2.1. <i>Subsidisation</i>	187
6.2.2.2. <i>Cross-subsidisation</i>	189
6.2.2.3. <i>Conclusions</i>	191
6.2.3. <i>Expansion Stage; How should network effects be exploited?</i>	192
6.2.3.1. <i>Importance of Reaching a Critical Mass</i>	193
6.2.3.2. <i>Different approaches to a Critical Mass</i>	195
6.2.3.3. <i>Conclusions</i>	200
6.2.4. <i>Maturity Stage; How should the business ecosystem be competed?</i>	202
6.2.4.1. <i>Platform Quality Management</i>	205
6.2.4.2. <i>Revenue Structure</i>	209

<i>6.2.3.3. Conclusions.....</i>	212
6.3. Conclusions	215
Chapter 7. Conclusion	222
7.1. Revisiting the Research Aims	224
<i>7.1.1. Value Chains and Types of Platform Business Model</i>	226
<i>7.1.2. Platform Strategy with a Dynamic Approach: Establishment and Growth Strategy</i>	230
7.2. Implications for and Contributions to Theory and Practice	236
<i>7.2.1. Main Contributions to Knowledge</i>	238
<i>7.2.2. Implications for Theory.....</i>	240
<i>7.2.3. Implications for Practice</i>	236
7.3. Limitations and Future Research	241
References.....	245
Appendix 1. Interview Protocol and Questions	275
Appendix 2. Participant Information Sheet	280
Appendix 3. Example of codes and themes developed using Nvivo 10	284
Appendix 4. Word Frequency Query by Nvivo 10	285
Appendix 5. Summary of 21 Cases Analysis	286

(Word Counts: 66,326)

LIST OF TABLES

Table 2.1. Various business model definitions	48
Table 3.1. Features of two research paradigms	90
Table 3.2. Fundamental differences between quantitative and qualitative research	95
Table 3.3. The difference in emphasis in quantitative and qualitative methods	95
Table 3.4. The difference between quantitative, qualitative, and mixed approaches	97
Table 3.5. First central question and sub-questions	104
Table 3.6. Second central question and sub-questions	105
Table 4.1. 21 selected cases for multiple case analysis	113
Table 4.2. Secondary data collection: strengths and weaknesses	116
Table 4.3. Primary data collection: strengths and weaknesses	118
Table 4.4. Characteristics of in-depth field interviews	120
Table 4.5. Interviewees details	121
Table 4.6. Research methodology process	130
Table 6.1. Value chain, value creation, and network effect according to platform types	156
Table 6.2. Strategic questions and considerations for each stage of the second-stage case study	158
Table 6.3. The cases of platform companies	159
Table 6.4. Deduction and categorisation of concept through data coding	160
Table 6.5. First type of platform business model pattern matching	166
Table 6.6. Second type of platform business model pattern matching	169
Table 6.7. Third type of platform business model pattern matching	173
Table 6.8. Summary of strategies on entry stage coding	184
Table 6.9. Summary of strategies on growth Stage coding	192
Table 6.10. Summary of strategies on expansion stage coding	202

Table 6.11. Revenue structure strategies	212
Table 6.12. Different types of quality management and revenue structure strategies	214
Table 6.13. Summary of strategies on expansion stage coding	215
Table 6.14. Summary of platform companies' supply side/demand side, subsidiisation/cross-subsidiisation, and money-side/subsidy-side	221
Table 7.1. Three types of platform business model	230
Table 7.2. Core elements and strategies on entry stage	234
Table 7.3. Core elements and strategies on growth stage	237
Table 7.4. Core elements and strategies on expansion stage.....	239
Table 7.5. Core elements and strategies on maturity stage	242

LIST OF FIGURES

Figure 1.1. Argument structure by Toulmin model	25
Figure 1.2. Sales growths of the four dominant platform providers.....	27
Figure 1.3. The platform business model	29
Figure 2.1. Four pillars of e-Business model	50
Figure 2.2. A variety of two-sided market researches	60
Figure 2.3. Conceptual map of the literature and key subjects	68
Figure 2.4. Meta-theoretical scheme for business strategy perspectives	74
Figure 2.5. Research design process from research gaps to theoretical propositions	85
Figure 3.1. Knowledge claims, strategies of inquiry, and methods leading to approaches and the design process	92
Figure 3.2. Multiple-case study analysis process	108
Figure 4.1. Two steps data collection strategy	113
Figure 5.1. Qualitative analysis as a circular process with data compiling	133
Figure 5.2. Three types of platform business model according to the direction	136
Figure 5.3. Platform business model with four major stages	137
Figure 5.4. Data Analysis procedure of within and multiple-case studies	139
Figure 5.5. Three aspects of description in qualitative analysis	142
Figure 5.6. Developing a more refined category list for central question 1	144
Figure 5.7. Developing a more refined category list for central question 2	145
Figure 5.8. The basic pattern matching model	149
Figure 5.9. Platform business model conceptual framework: House of platform business	152
Figure 5.10. The compilation, description, classification, and connections phases of the content analysis process	154

Figure 6.1. Producer-oriented platform ('Supplier' type)	162
Figure 6.2. KT's 'olleh' market platform and the eBay open market platform <td>163</td>	163
Figure 6.3. Nintendo game console platform	164
Figure 6.4. Consumer-oriented platform ('Tailor' type)	166
Figure 6.5. Dell computer and Samsung AdHub platforms	168
Figure 6.6. Both producer-oriented and consumer-oriented platform ('Facilitator' type)	170
Figure 6.7. Naver's webtoon challenge platform	172
Figure 6.8. How should a platform business service be chosen?	177
Figure 6.9. Platform thinking and product strategy	182
Figure 6.10. The stage of product/service development.....	185
Figure 6.11. Catalytic ignition and critical mass	194
Figure 6.12. Supplier type's critical mass approach	196
Figure 6.13. Tailor type's critical mass approach	197
Figure 6.14. Facilitator type's critical mass approach	198
Figure 6.15. Kakao MIM Platform's critical mass approach (Supplier type)	199
Figure 6.16. Daum Map Platform's critical mass approach (Tailor type).....	200
Figure 6.17. Platform business model and business ecosystem conceptual framework	204
Figure 6.18. Platform quality management	208
Figure 6.19. Three types of platform business model in accordance with the value chain	215
Figure 6.20. Platform business model dynamic framework	216
Figure 7.1. Platform business model conceptual framework	231

List of Abbreviations

AC	Angel Capital
API	Application Programming Interface
B2B	Business 2 Business
BA	Bachelor of Arts
BS	Bachelor of Science
CAGR	Compound Annual Growth Rate
CAQDAS	Computer Assisted Qualitative Data Analysis
E-Business	Electronic Business
FGI	Focus Group Interview
HEI	Higher Education Institute
ICT	Information Communication Technology
IP	Intellectual Property
IT	Information Technology
KAIST	Korea Advanced Institute of Science and Technology
KOSPI	The Korea Composite Stock Price Index
KT	Korea Telecom
MA	Master of Arts
MAU	Monthly Active User
M&A	Merger and Acquisition
MBA	Master of Business Administration
MNE	Multi National Enterprise
MS	Microsoft
MSP	Multi-Sided Platform
O2O	Online to Offline
OS	Operation System
PaaS	Platform as a Service

PC	Personnel Computer
PDF	Portable Document Format
PhD	Doctor of Philosophy
R&D	Research and Development
ROI	Return on Investment
SaaS	Software as a Service
SDK	Software Development Kit
SKT	SK Telecom
SME	Small Medium Enterprise
SNS	Social Network Service
VC	Venture Capital
Webtoon	Web cartoon (web comics)
Wintel	Window-Intel
UI	User Interface
UX	User Experience
UN	United Nations

Abstract

The University of Manchester
Junic Kim
Degree of Doctor of Philosophy – PhD

The Platform Business Model and Strategy: A Dynamic Analysis of the Value Chain and Platform Business

2015

These days, it is hard to discuss innovation and the creative economy without mentioning platforms, which have become core strategy for dominating the market. An accurate understanding of platform business is a key factor in being a successful platform provider, so discussions of platform strategies need to be invigorated, value chains need to be analysed, and theoretical factors need to be seriously considered. Corporations are yearning for new innovations and worry about the absence of an efficient and sustainable growth model.

First, this thesis analyses how the value chain and value stream are changed in the platform business model in order to explore value chains and value streams in the two-sided market, which has a distinct group of users on both sides. It proposes three types of platform business strategy which will serve as a frame of reference for analysing the impact of the different value chains on platform businesses. Second, this thesis indicates how a step-by-step business strategy based on the perspective of dynamic approach could be constructed. This research identifies four major stages of platform business (entry stage, growth stage, expansion stage, and maturity stage), and different core elements and strategies exist for each stage. These serve as the conceptual frameworks with which to build a platform business model.

The key contributions of this research are as follows. Firstly, the main differences and features of the literature reviewed were suggested with collective action and strategic choice perspectives from different academic approaches. Secondly, this study extends the understanding of the value chain that was the critical strategic element of a corporation in the platform business. Thirdly, this research presents the core elements and strategies for each of the four major growth stages of platform business with the dynamic approach, depending on the distinctive features of the contents and platforms.

Declaration

I declare that no portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Copyright Statement

The author of this thesis (including any appendices and/or schedules to this thesis) owns certain copyright or related rights in it (the “Copyright”) and s/he has given The University of Manchester certain rights to use such Copyright, including for administrative purposes.

Copies of this thesis, either in full or in extracts and whether in hard or electronic copy, may be made only in accordance with the Copyright, Designs and Patents Act 1988 (as amended) and regulations issued under it or, where appropriate, in accordance with licensing agreements which the University has from time to time. This page must form part of any such copies made.

The ownership of certain Copyright, patents, designs, trademarks and other intellectual property (the “Intellectual Property”) and any reproductions of copyright works in the thesis, for example graphs and tables (“Reproductions”), which may be described in this thesis, may not be owned by the author and may be owned by third parties. Such Intellectual Property and Reproductions cannot and must not be made available for use without the prior written permission of the owner(s) of the relevant Intellectual Property and/or Reproductions.

Further information on the conditions under which disclosure, publication and commercialisation of this thesis, the Copyright and any Intellectual Property and/or Reproductions described in it may take place is available in the University IP Policy (see <http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=487>), in any relevant Thesis restriction declarations deposited in the University Library, The University Library’s regulations (see <http://www.manchester.ac.uk/library/aboutus/regulations>) and in The University’s policy on Presentation of Theses.

Acknowledgements

Firstly, I truly express my gratitude to my both supervisors, Professor Ian Miles and Dr Kieron Flanagan. Thanks to their support, guidance and encouragement throughout my whole PhD course, I have been able to complete this demanding task hard work with their strong support. Not only their comments and insights helped me to improve the quality of this work, but also their insightful suggestions and constructive comments inspired and energised me throughout this long academic journey.

Secondly, I would like to express my big gratitude to the RADMA (R&D Management Association) for funding my PhD research project. It supported me throughout the PhD process very well, and it is a great honour for me to be awarded this research fund award.

Thirdly, I would like to thank to all interviewees for their participation, cooperation and interest in this study. This research was possible only as a result of their generous, voluntary participation. Furthermore, to all PGR staff members and my PhD colleagues, thank you for your support.

Fourthly, I convey my sincere appreciation to Professor Minhwa Lee at KAIST, Korea Advanced Institute of Science and Technology. His support and encouragement, dating back to my graduate years, have always been motivational for me.

Lastly and most importantly, I'd like to say thanks to my lovely family. I appreciate their eternal support.

The Author

Junic Kim is an academic scholar and entrepreneur. He was a scholarship holder and honours graduate at KAIST (Korea Advanced Institute of Science and Technology), where he graduated with MA in Management, studying technology management. He was awarded his BBA in Business and Management at Hankuk University of Foreign Studies. Junic embarked on his PhD in September 2013 and was awarded a PhD Full Scholarship by RADMA (R&D Management). His first academic paper of PhD research has become the most downloaded paper at STI Policy Review and additional papers are under review from the named research journals. He also achieved the outstanding paper awards at IAMOT 2014 and SOItmC & KCWS 2015.

Before starting his PhD degree, he worked in the ICT industry for several years. From 2009 to 2013, he worked at Samsung Electronics as a business development manager in the Media Solution Centre, dealing with mobile contents planning, platform strategy and strategic partnerships. He also worked in ITU, the United Nations' specialised agency for information and communication technologies, as a consultant for a while. During his PhD, he founded his own startup company called RecordFarm Inc. by applying his platform business model dynamic framework to build an audio platform business. The website has become wildly popular, reaching 600,000 monthly active users within 5 months. With this successful achievement, it received \$300,000 in initial funding from Intellectual Discovery venture capital in June 2015. RecordFarm also holds regular concerts with sponsors Swatch and Bernini in the Hongdae area of Seoul, Korea and have been named one of the fastest growing startups in Korea. As of September 2015, RecordFarm is ranked #28 on StartupRanking.com, and #29 according to Asian startup ranking site DemoDay. For

his future research, RecordFarm serves as a great academic resource through action research.

As entrepreneurial researcher, his current and future research will focus on the boundary line between academia and industry. Junic also has a grand plan to conduct empirical studies and action research to develop the generalisation of his suggested dynamic model in this thesis.

Preface: A New Step of My Research Journey at Manchester

I majored in business administration for my undergraduate and Master's degrees. During that period, I had to be a logical positivist who focused more on surveys and experiments. My main researches explored venture companies, corporate leadership and business strategy with a focus on statistical analysis. When I started to work in the industry, I used numerical data to analyse the market and plan the strategy. Nonetheless, I have always considered that relying on quantitative surveys and numeric statistics is insufficient in trying to understand the reality of business affairs; instead, I think that examining subjective qualities deeply is important to be able to see the big picture of business clearly. I therefore want to explore 'how' business starts, grows, and expands as such, and how to choose the business, how the market should be created, and how the business ecosystem should be completed? With my PhD course at Manchester, I have decided to start research as an interpretivist to understand and read the big picture of business strategy and direction. Therefore, I was pleased to take the new step of my research journey as an interpretivist for my PhD research, although I was a little nervous about the unexpected obstacles which I could meet during the research.

In this research thesis, I have examined a research topic and propositions wherein I am not only an academic researcher, but could also be an industry manager. I considered that the best way to choose a PhD research topic would be to pick what I am really interested in. Therefore, I selected a topic relevant to my research interests and related to my former education and research, literature gaps, and my professional working experience. I grew up during a time and context when ICT-

based business was prevalent. I engaged with this through VT-based online BBS when I was a teenager, and I acquired knowledge via laptop when I entered the university. Throughout my working life after college graduation, I communicated and linked with companies through my smartphone. I have been actively participating in these for the better part of my life, and I have worked out how such online business are taking more and more important strategies in the business environment. In particular, recently, the meeting of ICT and platform business change the market and industry environment, thus relative researches are valued today. I have experienced happiness and unpleasantness in these rapidly changing business circumstances and I well realise that research in this area would require comprehensive understanding of an extensive knowledge, and my various field experiences from the private and public sectors would help draw the core values in research. I strongly believe that this research would be very crucial to academia as well as industry, and would fill gaps in the literature about a dynamic analysis of the value chain and platform business.

When I first started my research journey, I was worried about it turning into a purely exploratory piece of work, which is a challenge because there are too many variables. However, the more I read and researched the platform business, the more I was convinced with this topic and my approach as an interpretivist. Focusing on real business data and knowledge from in-depth interviews and focus group interviews, I could understand deeply the meaning behind how platform business started, expanded, and settled. With this research journey as an interpretivist, I have found a new perspective of business circumstances and, in the process, myself too. I also hope that this research work would help readers to gain a new insight and perspective of platform business. .

Chapter 1 Introduction: A Study of the Platform Business Model

1.1. Introduction

Platforms, exceedingly important technological and strategical innovations in the new millennium, have had an enormous impact on sustainable growth and have affected the ICT and other industries. Platform businesses in which various stakeholders participate and make innovations have become an essential strategy in industry because consistent innovation is necessary in this era of limitless competition and complication (Evans and Schmalensee, 2007). In its short history, the platform business has led to the tremendous growth of existing firms and the creation of many new companies, and platform providers' domination of the market are now widely accepted: as a result of the developments of networks, especially, platform businesses are massively disseminated in the lead. Since IBM introduced the personal computer in the 1980, platform utilisation has expanded from individual companies to entire industries, and corporate ecosystems such as IBM's Wintel platform as the show the importance of the platform business. With the launch of the iPhone by Apple in 2007 and of Android by Google in 2008, the usage of smart devices has spread worldwide, and the era of full-scale platforms has finally begun.

In the ICT industry, platform leaders are taking control of key areas, including open markets, operating systems, social networks, and transaction systems. Moreover, Evans and Schmalensee (2007) and Sviokla and Paoni (2005) pointed out that

platforms have not only a definitive role in the ICT industry, but also in other industries such as media, finance, and distribution. Gawer and Cusumano (2002), Cusumano and Gawer (2002), Evans et al. (2006), Eisenmann et al. (2006), and Eisenmann et al. (2008) have also proposed strategies for utilising platforms to take the lead in industries. Jacobides et al. (2006) emphasised that platforms are crucial because they create value and become important parts of the industry's structure. In order to explain the concept of platform business, a new research theory called Two-sided Markets was introduced in industrial economics (Rochet and Tirole, 2003b; Caillaud and Jullien, 2003; Roson, 2005; Armstrong, 2006).

Platform businesses change the dynamics of a market. When Google and Facebook were first introduced, no one predicted that they would become the platform giants they are today. Microsoft began as one of IBM's subcontracted companies, but in the end captured the PC OS platform (Fisher, 2000). Google is now larger than Microsoft (Vise and Malseed, 2005), but beginning to be threatened by Facebook (Kirkpatrick, 2012). Another prominent example is the mobile phone giant Nokia being overtaken by Apple. Platforms are consistently experiencing massive shifts in this competitive world. Furthermore, platforms have changed the laws of competition, and existing players are constantly overtaken by newcomers. Therefore, a more accurate understanding of the platform business is a core strategy for companies that wish to do business successfully and continuously.

In modern business, companies are confronted with various environmental changes (Kotler and Armstrong, 2010), such as competitive market structures, technological issues, competitive advantages, and public policies. These changes frequently require companies to adapt their business models significantly to overcome these

alterations in the environment. Therefore, in order to grow sustainably and innovate consistently, this platform business strategy, explained originally by the theory of *Two-sided Markets*¹ (Rochet and Tirole, 2003b; Parker and Van Alstyne, 2005; Evans and Schmalensee, 2008), has taken centre stage as the newest approach. A large number of research papers on the concept of a ‘platform’ have been published in the academic and industrial worlds since the 2000s (Cusumano and Gawer, 2002; Halman et al., 2003; Eisenmann et al., 2008; Baldwin and Woodard, 2009; Boudreau, 2010; Hagiwara, 2009; Brusoni and Prencipe, 2011; Eisenmann et al., 2011; Ceccagnoli et al., 2012; Cooke, 2012; Gawer, 2014). A ‘Platform Strategy’ is not merely a transient fad, but rather a design aimed at strengthening corporate competitiveness for many years to come (Evans et al., 2006).

Therefore, discussions of platform strategy have become more rigorous; platforms need to be utilised through companies’ internal and external analyses; and strategy establishments need to be seriously considered. Corporations are yearning for new innovations and concerned by the absence of an efficient and sustainable growth model (Tidd et al., 2001; Bessant and Tidd, 2007). A platform business model that allows efficiency and innovation through various participants is therefore the key strategy that companies are pursuing today. Thus, the purpose of this thesis is to identify the typology by value chain analysis and dynamics of platform businesses in order to further increase our understanding of platform business models and strategies based on a dynamic approach, reduce their chance of failure, and help them achieve success and sustainable growth in the market.

¹ Two-sided market is also known as two-sided network

1.1.1. Motivation for the Study

These days, many academic researchers have investigated platform business from academic perspectives (Nobeoka and Cusumano, 1997; Meyer, 1997; Meyer and Lehnerd, 1997; Robertson and Ulrich, 1998; Gawer and Cusumano, 2002; Caillaud and Jullien, 2003; Rochet and Tirole, 2003; Caillaud and Jullien, 2003; Armstrong, 2006; Gawer and Henderson, 2007; Eisenmann et al., 2008; Eisenmann et al., 2006; Evans et al., 2006; West, 2003; Baldwin and Clark, 2000; Boudreau and Hagi, 2009, Gawer and Cusumano, 2013, Gawer 2014). Furthermore, recently, there has been a movement towards seeking to complement these independent investigations and to undertake interdisciplinary research studies (Baldwin and Woodard, 2009; Gawer, 2011). The growing interest in platform business is that the platform builds market momentum (Gawer and Cusumano, 2008) and enables adaption to unanticipated changes in the external environment (Baldwin and Woodard, 2009).

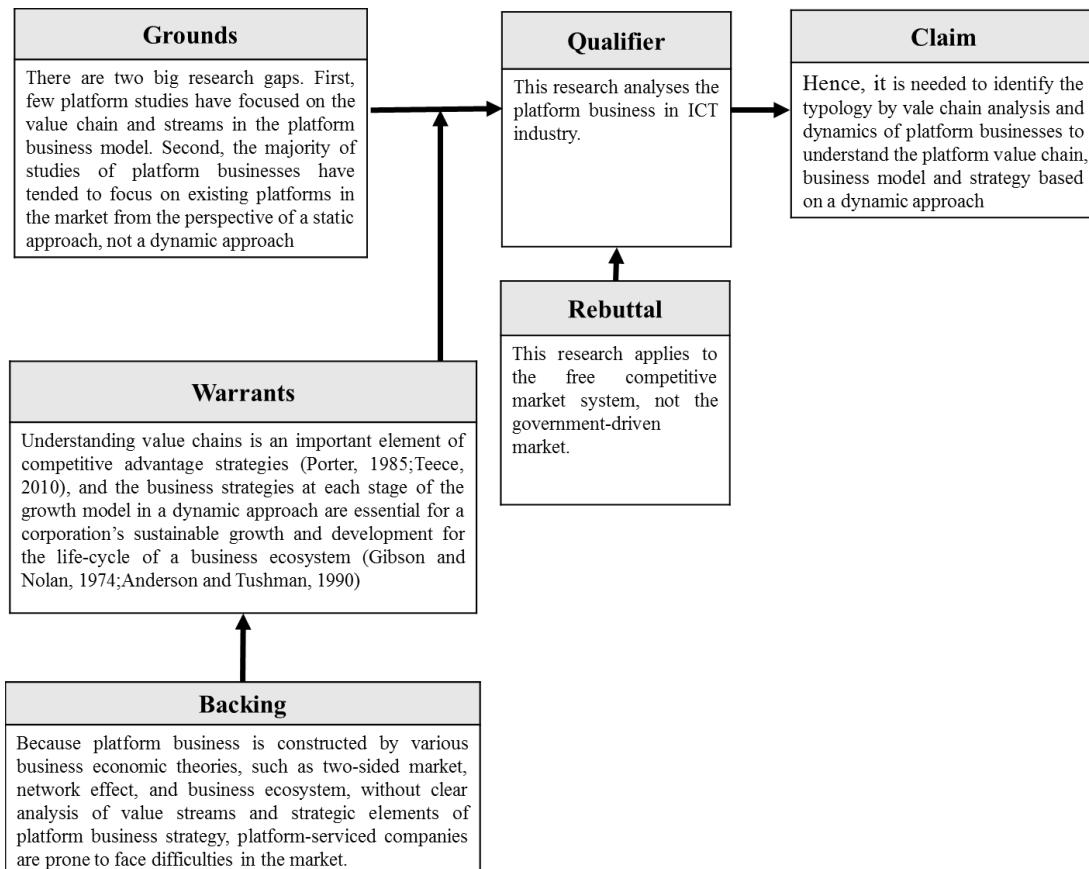
Nevertheless, there are two significant research gaps that exist in the literature (Kim, 2014). The first is that ‘even though there is a variety of value streams and value creations due to the nature of two-sided markets, few platform studies have been focused on the different types of platforms according to the value chains and value streams’ (Kim, 2014). The second is that ‘the majority of studies on platform business have tended to focus on existing platforms in the market from the perspective of static approach, not dynamic approach’ (Gawer and Cusumano, 2013). There has been no investigation of value chains and value streams in the platform business; this is the area in which this thesis intends to make a research contribution by illustrating how various value chain changes in platforms have distinct implications for different types of platform business models. Furthermore, in terms

of the second gap, this study intends to analyse the different core elements and strategies for each growth stages to match the business's environmental imperative. Without clear analysis of strategic elements of platform business strategy, platform-serviced companies are prone to face difficulties in the market (Kim, 2014). In the discipline of platform business studies, one major problem is that existing studies do not provide clear dynamic platform strategy guidance for platform companies because they are concentrated on each factor in static approach and assume that the platform is already located in the market. Presenting the platform business strategy with the dynamic approach is another core research contribution of this thesis.

Understanding value chains is an important element of competitive advantage strategies (Porter, 1985; Teece, 2010), and the business strategies at each stage of the growth model in a dynamic approach are essential for a corporation's sustainable growth and development for the life-cycle of a business ecosystem (Gibson and Nolan, 1974; Anderson and Tushman, 1990). YouTube enabled to grow rapidly as the third most visited website in the world² in ten years through accurate value chain analysis as well as platform business and revenue model construction according to the growth model. That is to say that an, accurate understanding of value chains and business strategies at each stage of the growth model is essential for those corporations that aspire to become platform providers as they undertake competitive advantage strategies to create a successful platform business. Therefore, the purpose of this study is to explore the value chain and stream in a two-sided market that has a distinct group of users on each side and to understand how a platform business model successfully enters the market and continues to grow its business.

² "YouTube.com Site Info". Alexa Internet. Retrieved July 26, 2015

Figure 1.1 Argument structure by Toulmin model



Author's elaboration

To achieve this purpose, this study first proposes three types of platform business models which will serve as a frame of reference for analysing the impact of the different value chains in platform businesses. Secondly, this study will use the 'Platform Business Model Dynamic Framework', a model for the life-cycle of a business ecosystem with four stages (entry stage, growth stage, expansion stage, and maturity stage), which serves as the conceptual framework. Given that there have not yet been systematic studies that characterise platform business models by value chains and analyse platform business strategies with a four-stage life-cycle using a dynamic approach, this study will develop a conceptual framework that integrates

very relevant features of value chains and dynamic approach in the platform business model. This study will also use practical insights gained from the viewpoints of academics and industrial managers to evaluate the practicality and validity of these factors through 21 strong case studies with 30 in-depth interviews and 2 strong focus group interviews.

1.1.2. What are a Platform and a Platform Business Model?

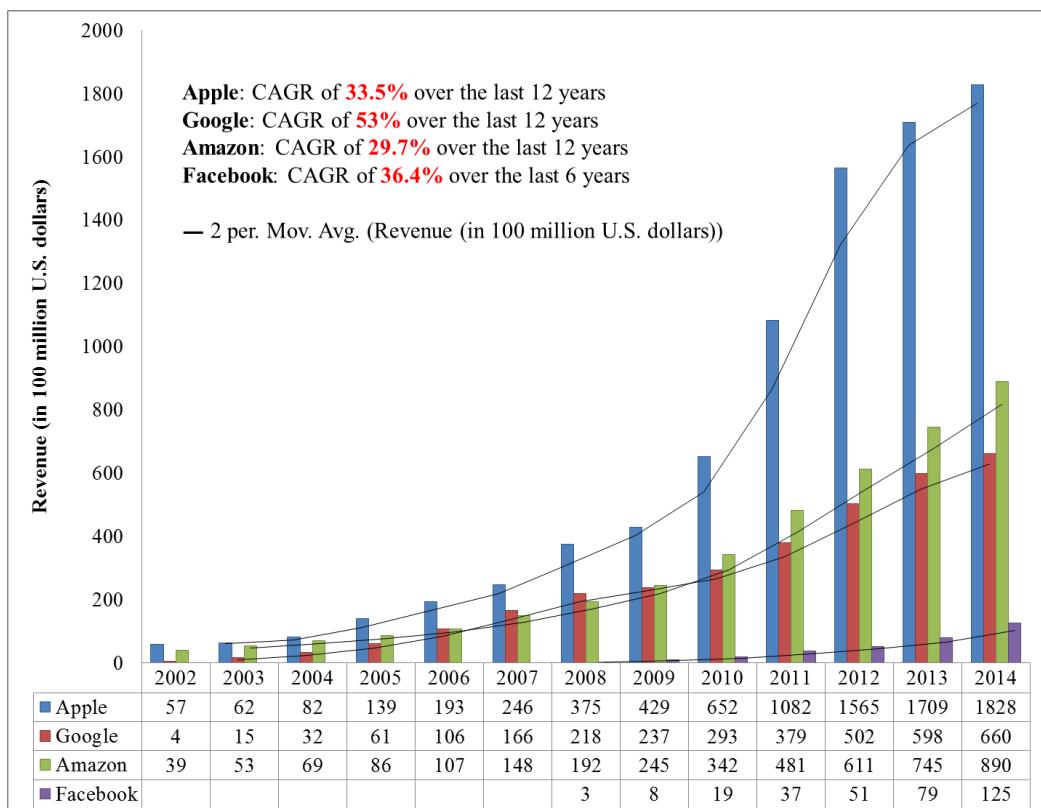
Amongst the top 25 companies of 2015, as judged by Interbrand, 18 have adopted in whole or in part a platform business model. And amongst the top 15 ‘billion-dollar’ (those startups that are valued at \$1 billion or more by venture-capital firms), 11 are platform providers³. According to this thesis’s survey, approximately 67 percent of entrepreneurs who were asked about their business models responded that they were preparing a platform-related business⁴. In today’s world of the Internet and networks, ‘platform’ is becoming an essential keyword for companies regardless of their size (Gawer and Cusumano, 2002; Cusumano, 2010a; Kim, 2014). Newly participating entities now include individuals and governments in addition to existing private companies. The prominent platform corporations, such as Apple, Google, Amazon, and Facebook have grown exponentially at a CAGR of 33.5%, 53%, 29.7%, and

³ “The WSJ and Dow Jones VentureSource are tracking companies that are valued at \$1 billion or more by venture-capital firms. The club is becoming less exclusive as venture capitalists funnel large sums of capital in the best startups. Select the names below for company profiles, or sort by categories such as region, amount raised and valuation” (<http://graphics.wsj.com/billion-dollar-club/>).

⁴ A survey of entrepreneurs who participated in Seoul startup competition and Korea University startup competition respond that 67% would prepare the platform business.

36.4%, respectively over the past 12 years⁵ (see Figure 1.1). All of these companies are ‘growing at incredible rates’⁶.

Figure 1.2 Sales growths of the four dominant platform providers



Source: Annual reports (investor relation materials) of each company

This platform strategy is not only limited to the ICT industry; it also has a profound impact on every other industry (Evans and Schmalensee, 2007), such as Nike+, UPS and Yakurt, to name just a few. A platform is becoming a ‘fact of life’ (Iyer and Davenport, 2008; Hagiu and Yoffie, 2009) and any product or service can be a

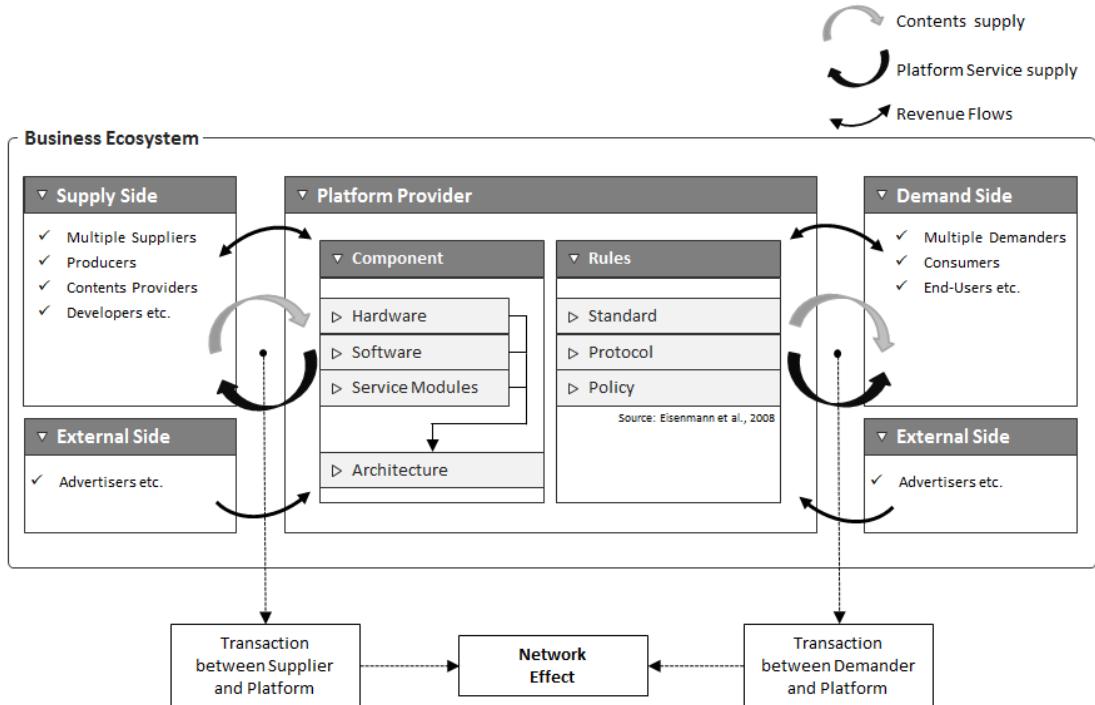
⁵ The figures are based on the investor relation materials of each company (they have grown at a CAGR of 61 percent over the last 10 years).

⁶ Eric Schmidt notes Google, Apple, Amazon, and Facebook as ‘gang of four’. All four are together worth about half a trillion dollars and they are all platforms in their own right. (<http://www.cnet.com/news/eric-schmidt-gang-of-four-rules-tech/>)

platform (Sviokla and Paoni, 2005). As demonstrated by the various companies analysed in this study, platforms dominate industries and the essence of future corporate competitiveness continues to depend on the use of platforms. If a business does not lead platform competition, then that business will have to depend on platform providers. For this reason, more and more studies are required to attend attention to the emergence of platforms and the capabilities they can bring.

Like this, in order to arrange the platform terminology which is widely used in various industry sectors and services, it is necessary to ask, '*what is a platform and what is a platform business model?*'. There are many definitions of platforms from the areas of management, economics, and industrial engineering, but this study analyses the following essential academic theories of platform strategy: the two-sided market, network effects, and the business ecosystem. To put it more concretely, a platform business model is likely to involve a transaction occurring in a 'two-sided market' (Rochet and Tirole, 2003b; Rochet and Tirole, 2006) that consists of a component, a rule, and two sides (Eisenmann et al., 2006). The 'network effect' emerges from this 'transaction' because transactions in two-sided markets create value by facilitating interactions between the different sides (Parker and Van Alstyne, 2005). What is more, this 'network effect' creates a 'business ecosystem', and 'innovation' ensues from the 'business ecosystem' (Evans et al., 2006). Hence, the definition of a platform business model used in this thesis is aligned with the occurrence of transaction, network effects, a business ecosystem, and innovation sequentially (see Figure 1.2).

Figure 1.3 The platform business model



Source : Author's elaboration, based on Kim (2014) and Eisenmann et al.,(2008)

Platforms and platform business models are currently in the spotlight because they are rapidly becoming a new tool of business strategy as a place to form an ecosystem, making it easier for demand and supply to meet. It is emerging as an essential element of the competitiveness of a corporate ecosystem. On this account, Iansiti and Levien (2004b) have explained that a platform is the collection of solutions by the access channels or interfaces related to the problems of the entities belonging to an ecosystem. A platform is understood as something that allows other participants within an ecosystem to build complementary goods, services, or technologies based on an integrated foundation of goods, services, and technologies (Gawer and Cusumano, 2008).

1.2. Research Questions and Objectives

Porter (1985) emphasised that an accurate understanding of the value chain would be necessary for a successful competitive advantage strategy. The ‘value chain’ refers to a series of processes that combine such resources as raw materials, labour, and capital when a corporation produces value in the form of goods and services to customers (Kaplinsky and Morris, 2001). In the cross-sectional structure of a linear business model, producers are located on the left side while consumers are located on the right side. This is the shape in which values are flowing unilaterally from the left to the right. In general, Porter’s value chain model is accurately applied. However, there may be a slightly different story in the case of the platform business model. In the platform structure, it is important for a platform provider to create an ecosystem using components and rules which leverages both producer groups and consumer groups to maximise the interaction between both aspects (or multi aspects) of mutually different properties of the value chain and thereby create an ecosystem (Eisenmann et al., 2006). This transforms the value chains, most prominently types thereof include an external expansion of the value chain, a reverse flow of the value chain, or an integration of the value chain. And, according to these value chains, it is necessary for companies to have appropriate strategies and perform a proper analysis for each stage, in order to grow in a market successfully (Gibson and Nolan, 1974) with the dynamic perspective.

Namely, understanding value chains is an important element of competitive advantage strategies (Porter, 1985; Teece, 2010), and the business strategies at each stage of the growth model in a dynamic approach are important for the sustainable

growth and development for the life-cycle of a business ecosystem (Gibson and Nolan, 1974; Anderson and Tushman, 1990). That is to say that analysis of value chains and business strategies at each stage of the growth model is crucial in order to let platform providers undertake competitive advantage strategies to create a successful platform business. However, after literature reviews in this research, it was found that few platform studies have focused on the value chain and streams in the platform business model and the majority of studies of platform businesses have tended to focus on existing platforms in the market from the perspective of a static approach, not a dynamic approach. A static approach which focuses on stationary behaviours does not include any specific processes for temporal change, whereas a dynamic approach aims to clearly design the fine-grain adjustments made by the subjects in response (Basov, 2005). Therefore, choosing the useful strategies at each stage of the process requires a dynamic approach, not a static one (McSherry, 1999). Therefore, the purpose of this study is to identify the typology and dynamics of platform businesses to understand the platform value chain, business model and strategy based on a dynamic approach with the provision of rich detailed data about the impacts platform businesses have had on the industry. To identify the typology and dynamics of platform businesses, the aims of this research are to explore the complicated factors surrounding the central phenomenon (platforms) and to examine a variety of perspectives or meanings held by research participants and companies. The detailed objective of this research is to answer the question “How are the value chain and stream changed in the platform business model?” and “How could a step-by-step business strategy based on the perspective of dynamic approach be constructed?” to support the findings. To accomplish the research objective, the research questions and theoretical propositions have been made based on the

research gaps and integrated with literature that analyses various cases and strategies (See chapter 2 and 3). The result of research will make it possible for us to obtain a rich and diverse set of strategic implications by alternately leveraging the structural design measures that are the main interest of production strategy: the industry-centric strategy of the field of technology management, the measures for securing participants that are the main subject of industrial economics, and the inter-platform competition strategy.

Although data in this study largely comes from various market-renowned platform providers that have gained the attention of both researchers and industry experts, it does not attempt to describe a firm's 'best practice'. The reason is that when business research depends on the method of describing and prescribing the practices of best firms, it will be already from the past (Rumelt, et al., 1994). That is, in business strategic research, understanding of business strategies generally is more important than finding the generalisation through the best practice. Thus, this study tried to conduct as meaningful research as possible with building the conceptual framework and understanding deeply the platform business model in dynamic approach.

1.3. Summary of the Findings

A platform business operates on a complicated two-side model, unlike most businesses, which are one-sided (Evans and Schmalensee, 2008; Kim, 2014). For this reason, it is essential to make adequate decisions by taking into consideration

those platform-related influencing factors for each stage of business model based on platform (Kim, 2014). The platform is essential for establishing and operating a virtuous cycle-based business ecosystem. Therefore, this study aimed to identify the typology by value chain analysis and dynamics of platform businesses to understand the platform value chain, business model and strategy based on a dynamic approach. It analysed the different types of platform business models with an understanding of the complicated value chains and streams, and it explored the step-by-step strategic propositions according to the key theories of platforms, two-sided markets, network effects, and business ecosystem, which have been relatively neglected in the existing literatures. Thus, this study provides theoretical suggestions about how business performance could be substantially improved through platform strategy based on two central theoretical propositions.

The first main proposition is as follows: ‘according to the unique nature of two-sided markets, there are three major types of value chain model in a platform. In other words, there exist three types of platform business model in accordance with the value chain.’ This study analysed the first proposition through pattern matching logic proposed by Yin (2009) and Trochim (1989). It verified whether the prediction pattern deducted based on the literature review was consistent with the pattern observed from the primary data. To recognise how various changes related to the value chain have distinct implications for different types of platform business models, this study examined the value chain, value creation, and network effects. The value chain has become very important distinction criterion. It also aimed to verify how value creation (Amit and Zott, 2001) and network effects (Katz and Shapiro, 1985; Shapiro and Varian, 1999) would take place within each value chain.

With the analysis of value chains and streams of the platform business, this classified and examined the three different types of platform business model.

The second main proposition is as follows: ‘Platform businesses have four major growth stages, and different core elements and strategies exist for each stage’. This study examined the second proposition by utilising a conceptual framework based on a logic model with a theoretical basis. In particular, this study conducted dynamic analysis by analysing the repeating causality within the conceptual framework of each stage outlined by the literature review and logical prepositions (Peterson and Bickman, 1992b; Rog and Huebner, 1992; Yin, 2010). Dynamic approach is crucial for companies to have appropriate strategies and perform a proper analysis for each stage, in order to achieve sustained growth (Gibson and Nolan, 1974). Thereupon, this study presents the essential elements and strategies for each of the four major growth stages (entry stage, growth stage, expansion stage, and maturity stage) in order for the platform to construct a successful business ecosystem.

1.4. Research Methodology and Data Collection

This study is designed to conduct an analysis by using a multiple-case design among various types of case study. The logic of replication that occurs in multiple-case design enables to lead to more solid research (Herson and Barlow, 1976) and it is more persuasive and highly structured (Herriott and Firestone, 1983). Thus, this research chose the multiple-case study method in order to uncover meaningful research findings through 21 strong case studies. In order to conduct the multiple

case study analysis, this study developed the theories first. After developing theories, cases are classified and selected. And it draws a comprehensive conclusion with comparing all the cases. During the process, consistently the theories are changed and developed. Finally, the conceptual frameworks were derived through the comprehensive analysis of multiple cases.

All the data in this research are novel. I used archival records and various documents to gather the secondary data as well as conducted interviews and focus groups with industrial managers and specialists between August 2014 and January 2015 to achieve the primary data. The data collection was performed using a snowball sampling method that selected new data collection units derived from already-chosen data collection units. 1.5 hour recorded interviews were conducted with each of the 30 interviewees. Two focus group interviews were also conducted (see interview questionnaire, Appendix 1). This study conducted semi-structured interviews in order to draw out the various thoughts and opinions of interviewees about the research theme as much as possible. The interviewees were divided in Phase 1 and Phase 2, with the 15 interviewees in each phase. A focus group interview was then conducted when each phase was completed. The data was analysed in the intervals between the interviews. The participants in the two focus group interviews were asked to evaluate the interview and share their opinions about it in the hope of mitigating the weaknesses of interview data (see Table 4.3) identified by Yin (2009) by minimising bias and preventing data loss and also by analysing the data more thoroughly through triangulation.

1.5. Structure of the Study

Given this background, I can recognise that corporations should establish a better strategy of securing a platform in order to capture new growth opportunities and improve competitiveness. For better strategic management, Mintzberg et al. (2005) and Minzberg and Lampel (1999) highlighted that it is necessary to ask better questions and to examine the real-life concerns instead of reified concepts. They called for better practice, not neater theory. Thus, in order to search of better strategic model, through the real multiple case studies and practices, this study concerns the platform business with “process and content, statics and dynamics, constraint and inspiration, the cognitive and the collective, the planned and the learned, the economic and the political” (Minzberg and Lampel, 1999, p.29) to check the entire platform business model.

This study in particular aims to gain an accurate understanding of the complicated value chain of platforms and the strategic methods that allow corporations to launch their platform service to the market successfully in order to achieve sustainable growth. Already, there are a large number of studies describing the concept and importance of platforms, the materials necessary for introducing platforms in each industry, and the strategies for success. There is, however, an insufficient study of the essential strategies to be commonly applied in various fields, based on a macroscopic dynamic approach for overall analysis of the platform business model. Therefore, this study aims to conduct a business model analysis of essential strategies to be commonly applied to platforms in various fields, such as software platforms, exchanges, advertiser-supported media, and transaction systems, from the perspective of a macroscopic dynamic flow.

Chapter 2 systematically analyses the existing platform research. In particular, it conducts a literature study on business models, e-business models, and platform business models, which are further sub-divided into an operations management perspective, an industrial economics perspective, and a business strategy perspective. Business strategy approaches are classified into four major divisions under a meta-theoretical scheme: research into platform strategy from a strategic-choice view; types of platform from a collective-action view; structures of platform from system-structural and economic views; and the external effect from a natural-selection view. Based on market analysis in each division, it is possible to confirm the characteristics and critical elements of the platform business model and this result is an important factor for designing the conceptual framework. This study systematically presents the structure and reasoning that have been utilised to select the papers, articles, and books, and organises them accordingly before conducting the literature review. Moreover, this study also analyses the following essential theories of platform strategy: the two-sided market, network effects, and the business ecosystem. It locates the gaps in the existing literature and then describes the research objectives based on these gaps.

Chapter 3 suggests an appropriate research paradigm and methodology for investigating the research questions of this thesis. After an in-depth analysis of the research methodology, it argues that a qualitative research approach is appropriate and a case study is a suitable method for this research approach. Through two central research questions and seven sub-questions, before the next chapter, which includes research design and data collection, this chapter introduces the direction this research is heading in.

Chapter 4 explains why the specific research topic and research case were chosen. In this chapter, particularly, representative platform services in the market have been classified by the types of platform: market platform, service platform, advertising platform, and SNS platform. Twenty-one research cases have been selected for these four categories. The chapter then details the data collection procedures, including the types of data collected and how, when, and from whom they were collected. It also describes the triangulation method, which uses the data from the 30 in-depth interviews and 2 focus group interviews with relevant professionals from industry and academia to enhance the validity and generalisability of the results, minimises bias, prevents data loss, and allows the data to be analysed in detail.

Chapter 5 describes the analysis procedures and analyses the in-depth interviews and the two crucial focus group interviews. The data analysis in this research comprises four steps: 1) compilation, 2) description, 3) classification, and 4) connection. Chapter 5 also describes in detail how the data has been analysed using pattern matching and the conceptual framework analysis method.

Chapter 6 shows the findings of this study. It presents the three essential platform business models — producer-oriented platform (supplier type), consumer-oriented platform (tailor type), and both-oriented platform (facilitator type) — and analyses them in accordance with the value chain, which is an essential strategic element of a corporation. Moreover, Chapter 6 presents the core elements and strategies for each of the four major growth stages (entry stage, growth stage, expansion stage, and maturity stage) in order for a platform to construct a successful business ecosystem. In this chapter, the suggested conceptual framework is verified by case analysis and pattern matching from multiple case studies, and this empirical inquiry investigates

the platform business phenomenon within a real-business context. Especially, this research is designed to capture facts and intentions through a triangulation.

Chapter 7 first revisits the research aims and discusses the extent to which they have been achieved. It is especially based on the two central research objectives: first, to explore the value chain and value stream in a two-sided market which has a distinct group of users on each side; and second to understand how a platform business model successfully enters the market and continues to grow. Thus, this chapter recalls the reasons for and importance of this research. It then explains the implications of the findings for the theory and practice of platform businesses. In particular, it re-summarises the findings on the basis of central and theoretical propositions. Lastly, it describes the limitations of the study and possible future research opportunities.

Chapter 2 The Platform Business Model: Transformation of the Value Chain and the Market Environment

There are several purposes of the literature review in the research process. First, a literature review makes it possible to share the results of other relevant studies with readers. Moreover, it allows us to locate ongoing studies in the same area and to identify gaps in the research that the researcher can fill or expand on (Cooper, 1984; Marshall and Rossman, 2010). Second, a literature review highlights the importance of the study and provides a basis for comparison with the findings of other relevant studies. In particular, it is of great help in configuring the ‘structure’ of a problem at the beginning of a study (Cooper, 1984). On that account, this study aims to conduct a literature review as an integrative process that extensively summarises not only the theoretical concept of a platform business model but also the literature pertaining to e-business models and business models in general. This study aims to review the platform research scattered across academia thoroughly and systematically by methodically leveraging the review using a literature map and a meta-theoretical scheme related to the concept of a platform. The design of the literature review was broadly based on the seven steps in accordance with the foundation proposed by Creswell (2013).

Step 1: I defined the key words useful for finding materials in the university and library.

Step 2: I searched the library database, ScienceDirect, ERIC,⁷ PsycINFO, Social Science Citation Index, and Google Scholar using the key defined in Step 1.

Step 3: I derived the essential theses and books mainly from studies cited and published in world-renowned journals pertaining to business models and platforms.

Step 4: I first verified the abstract and each chapter before reading the whole study and then confirmed whether it was appropriate for this study.

Step 5: I created the literature map and scheme, which were visual representations of the studies that had been deemed useful. The literature map and scheme provided an organisational tool that would help to determine the research position of the literature related to the research subject.

Step 6: I summarised the relevant literature using the literature map and created a research plan using an appropriate style following the Harvard-Manchester style manual.

Step 7: I summarised and reviewed the literature and then structured and organised and summarised it for each theme in accordance with this study's key concepts. Then, I identified what additional researches would be necessary by locating research gaps.

⁷ Educational Resources Information Centre

2.1. Introduction

Moore (1993) first proposed the strategic concept of a ‘business ecosystem’, a notion that has recently been widely adopted, especially in the ICT industry. He defined a business ecosystem as “an economic community supported by a foundation of interacting organizations and individuals—the organisms of the business world” (Moore, 1996, p. 26). This definition signifies that companies need to develop mutual relationship with stakeholders such as suppliers, demanders, and even competitors. In addition, the platform plays a crucial role in building a business ecosystem. A study by Iansiti and Levien (2004b) showed that a platform is a ‘package’ through which keystones share value with their ecosystems, and this is one reason why several scholars have recently focused on platform businesses and strategies for innovation. Corporations dominate the market and create new business models by building such platforms. Furthermore, information technology has made platform businesses and innovation even more vital. ICT-based innovations have brought about many changes in the creation and processing of services. The development of new technologies, such as the Internet, mobile communications networks, and embedded and ubiquitous computing, has had dramatic impacts in many areas of life (Miles, 2005, 2007). Over recent decades, several studies into the platform business and platform innovation have sought to understand the way innovation manifests in numerous industries. Today, we are better able to distinguish it in the computing, mobile, and high-tech sectors.

This chapter is structured into four sections. Section 2.2 explores general business models and e-business models. Section 2.3 investigates the concept of a platform

business model, revealing the core constructs and theoretical concepts of a platform business. The insights from the first two sections will then be used as the basis for a further discussion of the various academic perspectives of the platform business in section 2.4. Finally, in Section 2.5, this chapter summarises the business concepts and strategies of a platform business. This review includes:

- the overall literature on business model concepts, definitions, and e-business models;
- the theories of the two-sided market and network effects, as well as those of the business ecosystem;
- the analysis of various perspectives on the platform business;
- the operations management literature on production optimisation, design, and development;
- the industrial economics literature on network externalities and system markets; and
- the business strategy literature on the theory of contractual relationships and vertical integration, firms' innovation strategy, and the open/closed business model.

From the literature review, it is clear that platform businesses and strategies have become crucial research subjects in academia and industry. Firms wish to adopt a platform business model in order to encourage continuous innovative development. They are determined to position their platform service on the market and sustain a leading position to generate continuous revenue. However, contrary to firms'

expectations, I also identified huge research gaps. Few platform studies have focused on the different types of platforms according to value streams and business models, and the majority of studies of platform businesses have tended to focus on existing platforms in the market based on a static rather than a dynamic approach. Therefore, there is very limited research concerning how platform service providers enter the market in their initial stages and how they keep their position after settling in the market. In other words, firms need business strategies for each stage of the growth model if they desire successful outcomes. Thus, in this chapter, I outline what the platform business model is and what this study's main research objectives are by analysing the existing research.

2.2 Business Model Concept and Definitions

Today, innovative business models are emerging ceaselessly. New industries are continuously forming as old ones collapse. The business model has evolved into a prevalent term and a focal concept for business strategy and planning, and the emerging literatures on the business models indicate that a focus on activities can be useful and unifying indeed (McGrath, 2010). Although those business models existed in the past (Teece, 2010), the concept of the business model has become extremely popular with the advent of the Internet in the mid-1990s and of mobile since 2000 and the continuing momentum of those services. Amit and Zott, who are representative business model scholars, defined the business model as a depiction of “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities” (Amit and Zott, 2001, p. 219).

The business model may be conceptualised either as a set of transactions or as an activity system. Afuah and Tucci (2000, p. 168) agitated that it is a “system that is made up of components, linkages between the components, and dynamics,” the business model encompasses which activities a company performs, and when it performs them. Eisenmann et al. (2001) proposed that the business model refers to the services that firms provide to clients and customers and the activities that they execute to deliver those services. Chesbrough and Rosenbloom (2002) considered the business model as mediation between economic outputs and technological inputs. In a summary, the literature on business models either explicitly or implicitly supports activity system perspectives (Afuah and Tucci, 2000).

2.2.1. Attending to Business Models

Business models articulate business logic and evidence how business creates values to users (Teece, 2010). Research on business models has been the focus of significant attention from both academia and industry and is popular business topics because it is seen as a way of providing value to customers (Johnson et al., 1997; Dawson, 2002). According to Zott et al. (2011), there have been thousands of peer-reviewed research articles published in academic journals since 1995 in which the platform business model is mentioned. The business model concept has become especially widespread from the mid-1990s. Ghaziani and Ventresca (2005) investigated the usage of the term ‘business model’ in general management journals from 1975 to 2000. By using the ABI/INFORM database, they found 1,729 papers that used ‘business model’ as a key term. From the results, only 166 papers were published during the first 20 years, from 1975 to 1994, but 1,563 papers were

published in a six-year period from 1995 to 2000. This increase represents significant change in the incidence of ‘business model’ as a key term in the literature. Scholars conjecture that the attention devoted to the concept of the business model since the mid-1990s has been driven by the growth of emerging markets and an interest in ‘bottom-of-the-pyramid’ issues (Prahalad, 2006; Seelos and Mair, 2007; Thompson and MacMillan, 2010), the advent of postindustrial technologies (Perkmann and Spicer, 2010), and the Internet (Amit and Zott, 2001).

2.2.2. Defining a Business Model

The term ‘business model’ became popular and is widely used in both business practice and academic research. In academic theory and practice, especially, ‘business model’ is regarded as a crucial part of business strategy and construction. A business model consists of various components such as price, product, distribution, organisational characteristics, and market strategy (Horowitz, 1996; Dubosson-Torbay et al., 2002; Hamel, 2002; Morris et al., 2005), so understanding and defining it is very important. According to Zott et al. (2011, p. 1), “business model scholars do not agree on what a business model is, and the literature is developing largely in silos, according to the phenomena of interest of the respective researchers”. It has been referred to as a variety of terms, such as a *description* (Weill and Vitale, 2013; Applegate and Collura, 2000), an *architecture* (Timmers, 1998), a *method* (Afuah and Tucci, 2000), a *structural template* (Amit and Zott, 2001) and a *conceptual tool or model* (Osterwalder et al., 2005). Even though there is no constructed definition of business model,⁸ one of the best-known definitions is given by Timmers (1998), who defined “A business model in respect to its architecture for

⁸ ‘We feel that a common-sense understanding, a definition, or a taxonomy regarding business models are all lacking today’ (Alt, R. & Zimmermann, H.-D., (2001). Preface: introduction to special section—business models. *Electronic Markets*, 11(1), 3-9.

the product, service and information flows, the benefits for the various business actors, and the sources of revenues” (Timmers, 1998, p.2). However, a business model is often inexpertly understood in organisational and strategic studies (Teece, 2010; Alt and Zimmermann, 2001). Since the 2000s, especially, an ever-growing number of researchers have focused on business models. Amit and Zott (2001, p.511) regarded a business model as “the structure, content, and governance of transaction” between the focal firm and its exchange partners. Petrovic et al. (2001) argued that a business model is an essential tool for developing a business and thereby represents a specific aspect of the real world. Magretta (2002) suggested that a business model is a narrative that explains how enterprises work.

Chesbrough and Rosenbloom (2002) explained that a successful business model creates a heuristic logic between technical potential and economic value. Teece (2010) argued that a business model is ‘how the enterprise creates and delivers value to customers, and how an enterprise can organise to best meet customer needs, and get paid well for doing so’. Although there is no consensus about the definition, structure, and evolution of a business model, it can be summarised as the whole process by which companies or organisations create value and deliver it to users (Kaplinsky and Morris, 2001; Chesbrough and Rosenbloom, 2002; Amit and Zott, 2010; Chesbrough, 2010; Amit et al., 2012).

Table 2.1 Various business model definitions

Author(s), Year	Business Model Definition
Timmers, 1998	The business model depicts “architecture of the product, service and information flows, including a description of the various business actors and their roles; a description of the potential benefits for the various business actors; a description of the sources of revenues” (p. 2).

Amit and Zott, 2001	The business model is “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities” (p. 511).
Alt and Zimmermann, 2001	It is “grounded on the content, the structure, and the governance of the transactions” (p. 511)
Magretta, 2002	The business model is “stories that explain how enterprises work. A good business model answers Peter Drucker’s age old questions: Who is the customer? And what does the customer value? It also answers the fundamental questions every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?” (p. 4).
Chesbrough and Rosenbloom, 2002	It is “the heuristic logic that connects technical potential with the realization of economic value”. (p. 529).
Teece, 2010	“A business model articulates the logic, the data and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value” (p. 179).

2.2.3. Business Models for e-Business

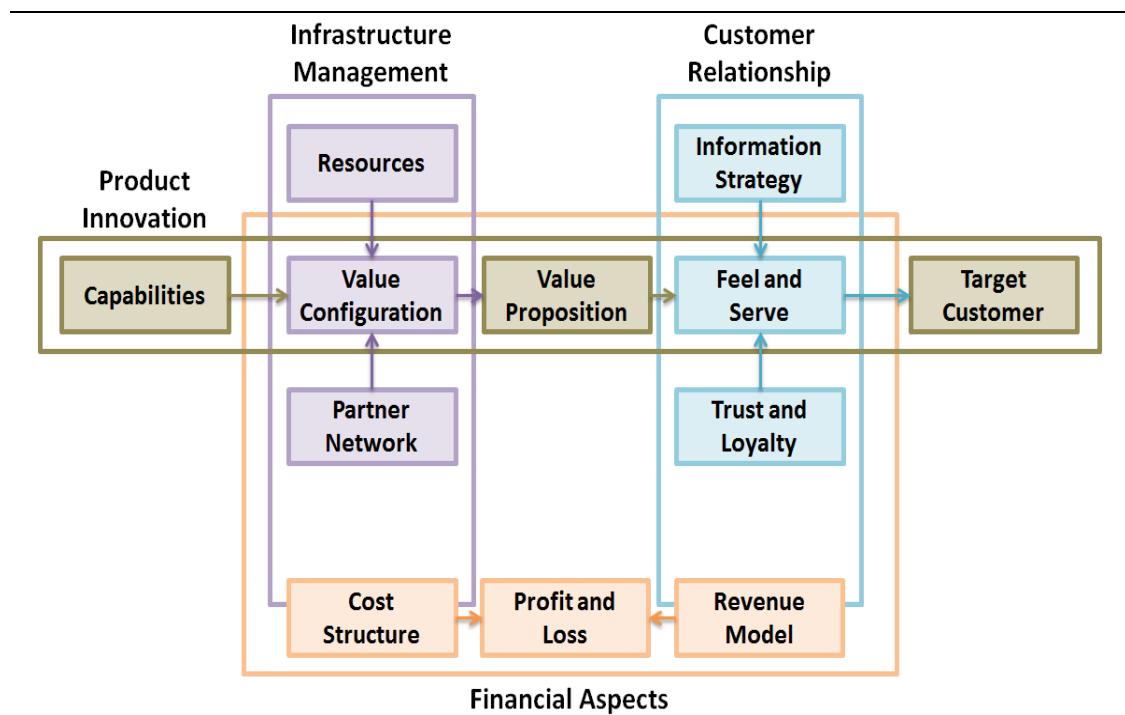
E-business, or e-business, refers to business processes conducted in the ICT industry. It deals with the application of information and communication technologies (ICT) in support of all the activities of business (Beynon-Davies, 2012). Especially, ‘business model’ is highly discussed aspects of e-Business (Alt and Zimmermann, 2001). The advent of the ICT has caused organisational transformations in

corporations and industries (Timmers, 1998; Tapscott et al., 2000; Dubosson-Torbay et al., 2002; Martinez, 2000), the concept of the business model has become almost synonymous with e-Business and the emergence of the new economy. Business scholars have started to focus on e-Business models which concern how such business organisations create value. They classify e-Business models by describing types. Timmers (1998, pp. 7-8) classified eleven different business models on the basis of background: ‘E-shop’, ‘E-auction’, ‘E-mall’, ‘E-procurement’, ‘Value-chain service provider’, ‘Third-party marketplace’, ‘Collaboration platform’, ‘Value-chain integrator’, ‘Information brokerage, trust and other services’, and ‘Virtual communities’. Tapscott et al. (2000) proposed a business web (b-web) that consists of five categories of value contributors: partner networks of producers, suppliers, service providers, customers, and infrastructure companies linked through digital channels. They illuminate the five distinct different types of b-web now in play: ‘Agoras’, ‘Aggregations’, ‘Value Chains’, ‘Alliances’, and ‘Distributive Networks’. Weill and Vitale (2013) described the e-Business model as the way in which a firm conducts business electronically. They introduced eight business models for e-Business initiatives: ‘Direct to Consumer’, ‘Content provider’, ‘Full service provider’, ‘Shared infrastructure’, ‘Intermediary’, ‘Virtual community’, ‘Value net integrator’, and ‘Whole of enterprise/government.’ Even though e-Business models are classified variously based on each criterion, their one core purpose is “value creation” (Weill and Vitale, 2013, p. 21).

In this respect, Sterman (2000) argued that e-Business models are able to help industry managers to develop and learn from e-Business by allowing them to conduct risk-free experiments that do not endanger the business. Osterwalder and Pigneur (2002) asserted that the e-Business model should comprise four main pillars:

customer relationship, product innovation, infrastructure management, and financial aspects. These elements are then further classified into the components of e-business models.

Figure 2.1 Four pillars of e-Business model



Source: Author's elaboration based on Osterwalder and Pigneur (2002)

Researchers have also noted the collection of various channels onto one online platform, which has occurred especially following structural changes in the ICT industry (e.g., see Fidler (1997)). Cusumano and Nobeoka (1998) asserted that this collection could be explained with reference to platforms. Structural alternation in the ICT industry also has been revealed by the emergence of new communication channels, such as online and mobile services. Huizingh (2002) researched how to help an ICT company design e-business models, and Eriksson et al. (2008) described

electronic media that is published for mobile smart devices, which suggests the possibility of mobile service innovation and the development of new business models (Kalakota and Robinson, 2001).

2.3. What is a Platform Business Model?

When it comes to business models and innovation, among the most critical points are creating value and capturing that value. Chesbrough and Rosenbloom (2002) described a business model as the firm's position in a value network that links producers and consumers. Innovation researchers therefore examine how to encourage this value network between suppliers and end-users and how to create value (Chesbrough and Rosenbloom, 2002). Platform business strategy has recently become a key research topic innovation in the hope of solving this research problem (Boudreau and Lakhani, 2012).

The term ‘platform’ is used to by industrial managers and researchers in various sectors, but especially in ICT. A platform strategy creates value in various ways through interactions between two or more different affiliated users in a two-sided market,⁹ and it is likely to continue to grow consistently (Evans et al., 2006). Platform strategy is a new and potent organisational strategy for delivering innovation and business transactions in a number of industries. For these reasons, platform innovation has become the best strategy for achieving sustainable revenues, particularly in the IT and mobile sectors. There are many significant cases. Having adopted a platform supply strategy, Apple, Amazon, Nintendo, Microsoft, and Google have become one of the wealthiest technology companies in the world.

⁹ This is explained in detail below: see 2.3.3.1. Two-sided Market Theory.

These companies knew how and where their platforms were supplied to the market. Regardless of the size of the companies, platform providers build a place for transactions and provide a variety of content and services, for personal computers, mobiles, tablet PCs, and other electronic devices (Gawer and Cusumano, 2013).

2.3.1. The Concept of the Platform and the Platform Business Model

Platform businesses and strategies constitute an important business innovation model for various industries, so there has been much research into the phenomenon, resulting in a variety of definitions of platforms. Among the pioneers of the study of platform business were Cusumano and Nobeoka (1998, pp. 71-72), who asserted that platforms comprise a ‘set’ of subsystems and interfaces. From the point of view of product platforms, Robertson and Ulrich (1998, p.6) defined a platform as a “collection of assets”. Bresnahan and Greenstein (1999, p. 4) argued that a platform is a “bundle of standard components that makes a connection between buyers and sellers”. At the beginning of the 2000s, more and more platform research was carried out, emphasising the subject’s importance. West (2003, p. 1260) defined a platform as an architecture of related standards that provided the “modular substitution of complementary assets” such as hardware and software. Similarly, Iansiti and Levien (2004a, p. 149) stated that a platform is a “package” through which keystones share value with their ecosystems. Some scholars have focused more on the economic theory of a two-sided market in order to explain platforms and the business environment. Eisenmann et al. (2006) explained that products and services that bring together groups of users in two-sided market are platforms. Gawer and Henderson (2007, p. 4) described a platform as “one component or subsystem” of an evolving technological system. However, there is no consensual academic definition of a

‘platform’ or a ‘platform business model’. The diversity of definitions brings with it challenges in delimiting the academic and industrial range of the model: “the term ‘platform’ is used in many different contexts of meaning and can be difficult to understand” (Cusumano, 2010a, p. 32). It is therefore necessary to define ‘platform’; I define it based on existing definitions and particularly for the ICT industry.

Eisenmann and his colleagues asserted that a platform consists of a set of rules and components and is comprised of users whose transactions are subject to network effects (Eisenmann et al., 2006). They concentrated on actors and on the network that arises on the platform and accentuates transactions in line with network effects. With transactions and network effects, a business ecosystem¹⁰ is created. And in a business ecosystem, firms coevolve their abilities to develop new innovations (Schumpeter, 1942). Most disruptive innovations do not succeed as a result of the efforts of only one company. Instead, companies need complementary innovations to attract customers, and these complementary innovations create breakthrough innovations (Freeman and Soete, 1997). Evans, Schmalensee, and Hagju (2006) focused on the business ecosystems of platform. They explain that platforms in the ICT industry are at the heart of a business ecosystem that consists of mutually-dependent business communities and consumers who have a complementary and symbiotic relationship with the platform. After the construction of the business ecosystem, innovation occurs on the platform. A key distinction between a supply chain and a platform is that, in the case of industry platforms, it is the firms that develop the complementary innovations (Gawer and Cusumano, 2013). Gawer and

¹⁰ James Moore originated the strategic planning concept of a “business ecosystem”; it is now widely adopted, especially in the high tech industry. He defined a business ecosystem as “An economic community supported by a foundation of interacting organizations and individuals—the organisms of the business world.” Moore, J. F., (1993). Predators and prey: a new ecology of competition. *Harvard business review*, 71(3), 75-86.

Cusumano (2013) emphasised the fact that platform providers do not necessarily buy from or sell to each other, which they do in a supply chain manufacturing process.

That is to say, a platform business model is likely to involve a transaction occurring in a two-sided market (Rochet and Tirole, 2003b, 2006) in which various stakeholders can join the platform as part of the supply or demand side (Rochet and Tirole, 2003b; Rochet and Tirole, 2006; Armstrong and Wright, 2007; Evans and Schmalensee, 2008; Rysman, 2009). A two-sided market is an environment established to allow multiple groups such as suppliers and consumers to participate in order to exchange the values that each group desires to obtain through fair ‘transactions’. The ‘network effect’ emerges from these ‘transactions’ because transactions in two-sided markets create value by facilitating interactions between the different sides (Parker and Van Alstyne, 2005, Eisenmann et al., 2006). The best feature of the network effects in the platform business is that either direct or indirect network effects (which are also called same-sided and cross-sided network effects) are emerged. These network effects have caused transaction costs to decrease significantly (Zaheer et al., 2000) as result of platforms integrating efficiency and innovation and allowing the exchange of desired values easily. What is more, these ‘network effects’ create a ‘business ecosystem’, and ‘innovation’ ensues from the ‘business ecosystem’ (Evans et al., 2006). Platforms evolve through the connection and interaction of platform participants as an ecosystem of coexistence that can provide new values and benefits to all participants (Ceccagnoli et al., 2011). And it is at the heart of a business ecosystem that consists of mutually-dependent business communities, producers and consumers, all of which have a complementary and symbiotic relationship with the platform (Evans et al., 2006). Thus, the platform, whose nature can be characterised by the three keywords ‘two-sided market’,

‘network effect’, and ‘business ecosystem’, has become the core keywords of this thesis (see Figure 1.2 in the previous chapter).

2.3.2. The Importance of the Platform Business Model

The term ‘platform’ is used by industrial managers and researchers in various industries. The reasons for this are that platform innovation and strategy create value mainly through direct interactions between two or more distinct types of affiliated participants, what is known as a multi-sided platform. The platform provides an essential, or ‘core’ function to an encompassing system of use. It is the set of components and rules used in most user transactions (Eisenmann et al., 2008; Boudreau and Hagiwara, 2009). Components consist of hardware, software, and service modules, along with the structure of how they fit together (Henderson and Clark, 1990). Rules are employed to manage platform participants’ activities (Baldwin and Woodard, 2009) and it consists of standards, protocols, and policies. Standards ensure compatibility among components, protocols (information exchange), policies (user behaviours), and contracts for the responsibilities of stakeholders (Eisenmann et al., 2008). Furthermore, a platform needs a ‘network effect’, which tends to radically strengthen the advantages of the platform itself as well as those for participants (Evans et al., 2006). Also, a platform typically emerges in the context of modular industries (Baldwin and Woodard, 2009) or industry ecosystems (Iansiti and Levien, 2004b) in order to generate revenue and continued growth. Therefore, the platform has emerged as a new, potent organisational strategy for innovation and business transactions in a number of industries.

For these reasons, platform business models and innovation have become the important strategy by which to achieve a sustainable revenue source, particularly in the ICT and mobile industries (Bresnahan and Greenstein, 1999; Aerts et al., 2004; Ballon and Walravens, 2008; Smedlund, 2012). Platforms create value and are a crucial structure of the industry architecture in the ICT industry (Jacobides et al., 2006; Ceccagnoli et al., 2012; Smedlund, 2012).

2.3.3. The Systematic Nature of the Platform Business Model

From an economic standpoint, a platform is composed of three theoretical concepts: two-sided market, network effects, and a business ecosystem – which are keys to its systematic nature. A two-sided market is an economic mediator that comprises two distinct sides that provide each other with network benefits. A two-sided market enables many industries, especially in ICT, to share product and service offerings a specific place or space. In a two-sided market, either direct or indirect network effects emerge through transactions.¹¹ These are the effects that one product or service user has on the value of products or services to other users. When network effect occurs, the value of a product or service is basically dependent on the number of its users (Shapiro and Varian, 1998), and this value creates a business ecosystem (Evans et al., 2006). Thus, ‘two-sided market’, ‘network effect’, and ‘business ecosystem’ are core theoretical concepts and key systematic nature of the platform business model.

¹¹ Indirect network effects are also called cross-sided network effects.

2.3.3.1. Two-sided Market Theory

A two-sided market, also known as a two-sided network, is an economic platform with multiple distinct actors or stakeholders that provide each other with network benefits (Armstrong and Wright, 2007; Nocke et al., 2007). It is a meeting place for two/or more sets of agents who interact through an intermediary or a platform (Jullien, 2005; Evans and Schmalensee, 2008). Two-sided markets can be found in numerous industries alongside traditional product and service offerings. In general, a market refers to a physical and conceptual space in which consumers and suppliers trade goods (or services) (Schiff, 2003). In contrast, the term ‘market’ in a two-sided market refers to goods (or services) that provide a physical or virtual platform in which mutually different user groups interact with each other (Evans et al., 2006). The prominent example of a two-sided market is an Internet portal that provides a platform to many different user groups. Thus, a more accurate term would be ‘two-sided platform market’. A two-sided market can be referred to as a ‘monopolising two-sided platform market’ if there exists only one two-sided platform provider in a market. On the other hand, it can be referred to as a ‘competing two-sided platform market’ if there exist more than one two-sided platform provider in a market (Rysman, 2009).

The theoretical study of two-sided markets began getting attention in the early 2000s (Rochet and Tirole, 2003a; Schiff, 2003; Rochet and Tirole, 2004; Wright, 2004; Evans and Schmalensee, 2005; Parker and Van Alstyne, 2005; Economides and Katsamakas, 2006; Eisenmann et al., 2006). In particular, a large number of the theses on such general theories as the optimum cost (price level and price structure) and externalities of a two-sided market have been published since the studies of Caillaud and Jullien (2003), Armstrong (2006), Rochet and Tirole (2006) were

published. There has also been work on the economic effects of two-sided markets, such as that of Evans (2003a), Armstrong and Wright (2007), have been published as well. In a two-sided market, conventional industrial theory is not applicable, or it needs to be modified to compensate for indirect network effects. For instance, the Lerner condition is not satisfied at the optimum cost in a two-sided market. Furthermore, the optimum cost may be even lower than the marginal cost. The criteria for market definition, market power assessment, unfair practice judgment, etc. differ in a two-sided market.

Wright (2003, 2004) has listed the following cases as examples of two-sided markets.

All of the following platforms fall into the category of two-sided markets:

1. Platforms acting as an intermediary such as a journal (author and reader), airport (airline and passenger), auction (supplier and bidder), B2B market (corporate provider and corporate consumer), automotive market/flea market/shopping mall (buyer and seller), chat line (chatting partner), matrimonial bureau (man and woman), conference (presenter and listener), commercial directory/fair (potential buyer and seller), employment agency (job seeker and employer), publisher (reader and writer), quality assurance provider (student and university, investor and business, etc.), real estate brokerage (buyer and seller), and stock market (investor and company).
2. Platforms providing a function to facilitate transaction such as a credit card payment system (cardholder and merchant).
3. Advertising related platforms such as a magazine/newspaper/TV/web portal (information/entertainment user and advertiser) or search engine (browser and website).
4. An entertainment platform (user and content provider).

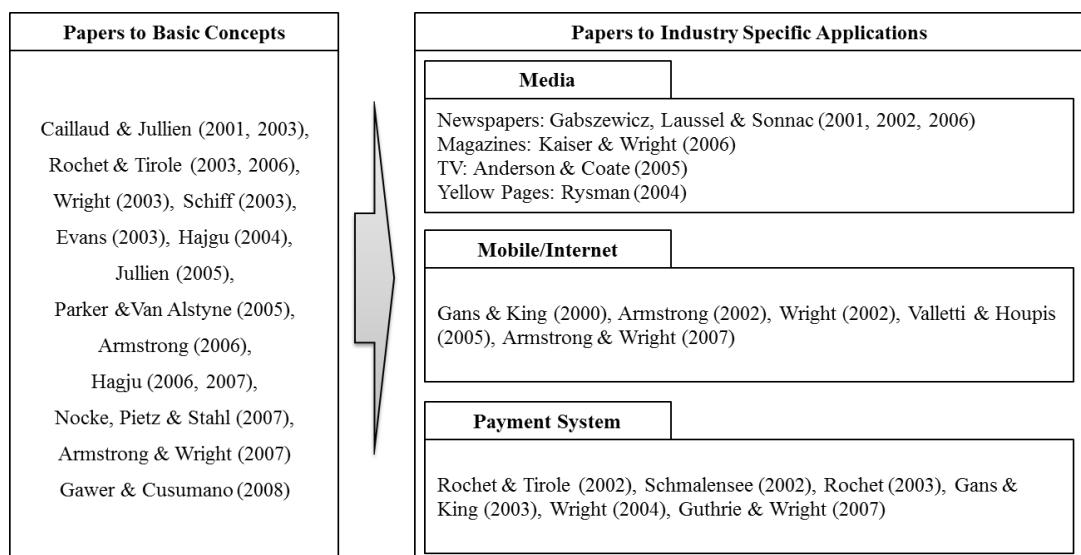
Evans (2003a) classified a two-sided market into three types. The first is a market maker, which is responsible for linking parties on both sides (buyer and seller) who want to make a deal. The second is an audience maker, which links an advertiser to an audience. The third is a demand-coordinator, which is responsible for creating goods or services that generate cross-network externalities. Evans and Schmalensee (2008) classified two-sided markets into four types by sub-dividing the demand-coordinator: ‘Exchanges’, which link a purchaser to a seller; ‘Advertiser-supported media’; ‘Transaction systems’ such as credit card payment system; and ‘Software platforms’.¹²

Furthermore, two-sided markets have different value chains from other simple markets. In the traditional linear model, value moves from left to right: to the left of the company is cost, and to the right is revenue (Eisenmann et al., 2006). In contrast, cost and revenue are both to the left and to the right in a two-sided market because the platform has a distinct group of users on each side. Large Internet companies, such Google, Amazon, and eBay, are good examples. These platform companies incur costs by serving multiple groups and collect revenue from a variety of sides. In terms of two-sided markets’ revenue strategies (Rysman, 2009), various economic studies have described the revenue structure of these networks as charging relative prices to every side. Revenue, products, and services bring platform participants together in a two-sided market. Under the infrastructure and rules of a two-sided market, the platform provider facilitates two or more groups’ transactions, such as consumers’ credit cards or merchants’ authorisation terminals, and provides services in areas such as e-commerce.

¹² In this thesis I adopt the four types of platform business model which Evans and Schmalensee (2008) suggested in order to select the suitable cases. More details of the case selection are described in 4.1 The Case Selection.

The two-sided effects are further discussed by Parker and Van Alstyne (2000), Parker and Van Alstyne (2005), and Eisenmann et al. (2006) to explain the behaviour of IT-based markets. In addition, Rochet and Tirole (2003b) and Armstrong (2006) offered clear overviews. Hardware and software platforms, programmes, PC and mobile operating systems, e-commerce, credit cards, and matching services display this kind of network effect. In several cases, one may consider an indirect network effect as a one-directional version of the two-sided network effect. In other words, in terms of two-sided market researches, there are various researches to industry specific applications such as in media (Gabszewicz et al., 2001; Gabszewicz et al., 2002; Rysman, 2004; Anderson and Coate, 2005; Gabszewicz et al., 2006; Kaiser and Wright, 2006), mobile/internet (Gans and King, 2000; Armstrong, 2002; Wright, 2002; Valletti and Houpis, 2005; Armstrong and Wright, 2007), and payment system (Rochet and Tirole, 2002; Schmalensee, 2002; Gans and King, 2003; Rochet and Tirole, 2003a; Wright, 2004; Guthrie and Wright, 2007)

Figure 2.2 A variety of two-sided market studies



Source: Author's elaboration

2.3.3.2. Direct and Indirect Network Effects (or Externalities)

Network effects can also refer to network externalities, demand-side economies of scale, and the effect one stakeholder has on the value of a particular product to other people. In simpler terms, it is a demand economy of scale, and implies at least some level of interaction. When network effects are present, the value of a product or service is dependent on the number of other users (Shapiro and Varian, 1998). Network effects were studied in the context of the use of long-distance telephoning in the 1970s. It is widely recognised as a critical aspect of industrial organisation in IT industries and is widespread in various fields, including mobiles, microchips, telecommunication, PCs, semiconductors, e-commerce, and electronic marketplaces. Empirical evidence about network effects has been found in product categories as diverse as spreadsheets (Brynjolfsson and Kemerer, 1996), databases (Gandal, 1995), and DVD players (Dranove and Gandal, 2003).

Network effects entail that the more people who uses a specific product or service, the more valuable this product or service is to each user. Sectors that are based on information and communication systems are greatly influenced by network configuration and network effect. Game consoles such as the Sony PlayStation and the Xbox create primary utility or original/direct utility by meeting customers' need for amusement and entertainment. The number of these network products is on the rise due to the development of technologies in the past few decades. The network market consisting of such network products has very different attributes to conventional markets because of network externalities. Studies by several scholars have found that network externalities have presented serious problems for conventional economic theory (Katz and Shapiro, 1985, 1994).

A ‘direct externality’ is deemed to exist when the utility of a consumer is directly influenced rather than being influenced by the consumption behaviour of other consumers using the same goods or services through a market (or through price changes) (Katz and Shapiro 1985; Liebowitz and Margolis 1994). A two-sided market is a market in which a special type of network externality is present (Parker and Van Alstyne, 2005). The externalities of a two-sided market do not exist between users belonging to the same group because in a two-sided market, both direct and indirect network effects are generated by the consumption behaviour of users belonging to many different groups. That is to say, users affect not only other users of the same group (i.e. direct network effects), but also the number of users or the amount of consumption of other groups directly influences the utility of one user on one side (Parker and Van Alstyne, 2005; Eisenmann et al., 2011). This is referred to as ‘indirect network externality’ or ‘cross network externality’ (Liebowitz and Margolis 1994). Direct network externalities exist when an increase in the size of a side increases its utility. However, direct network externalities do not need to be present for the users of a particular side in a two-sided market (David, 1985; Farrell and Saloner, 1985; Katz and Shapiro, 1985; Economides, 1996).

Direct network effect (Katz and Shapiro, 1985; Liebowitz and Margolis, 1994)

Direct network effects are caused directly by an increase in the number of people consuming the same product, such as a telecommunication network, online service, or mobile service. These product services are typical examples of direct network externalities, which cause feedback loops and exponential growth. For instance, the more people who own smartphones, the more valuable the smartphone is to each owner. This situation creates the externalities because users

would buy smartphones even when they do not create value for others, but they create value in any case. Social networking services like Facebook and Twitter work along the same lines: they become more attractive as more people join and use them.

Indirect network effect (Liebowitz and Margolis, 1994)

There are two types of indirect network effect: negative indirect network effects and positive indirect network effects. Liebowitz and Margolis (1994, p. 138) gave an example of a negative indirect network effect: ‘if a group of breakfast-eaters joins the network of orange juice drinkers, their increased demand raises the price of orange juice concentrate, and thus most commonly effects a transfer of wealth from their fellow network members to the network of orange growers’. In this example the orange juice drinkers have been affected by the breakfast-eaters, but they have not received any compensation for the damages caused by the breakfast-eaters. In addition, economists probably do not want the breakfast-eaters to compensate for this loss. In other words, a negative network effect creates negative feedback and exponential decay.

Positive indirect network effects are similar, but a bit more complicated (Liebowitz and Margolis, 1994). Increases in the usage of a product or service create value for complementary goods or services, which enables an increase in the value of the original one in turn. This is why Android and iOS compete not only for smartphone users but also for smartphone developers. This positive indirect network effect is also called a cross-side network effect because it

describes network benefits that cross two-sided markets. It is more common on platforms which have two- or multi-sided markets (Le Masson et al., 2011), because “the platform’s value to any given user largely depends on the number of users on the network’s other side” (Eisenmann et al., 2006, p. 2). Rochet and Tirole (2003b) systemised direct and indirect network effects theoretically as phenomena that occur in two- and multi-sided- markets.

2.3.3.3. Business Ecosystems

Beer (1959) compared business systems to biological systems, emphasising that an industrial organisation appears to be an organism which responds to its business environment. This ecological perspective does not view the economy as a machine; on the contrary, it argues that the market economy is best understood as a living, evolving ecosystem (Rothschild, 2004). The notion of the ecosystem, emerging from biology, began to be adopted by the fields of business and social science in the 1980s (Kilduff and Tsai, 2003; Schwab et al., 2007), and it emerged as a key business concept for start-ups and venture companies in particular. The business ecosystem concept was initially identified by James F. Moore (1993), according to whom a business ecosystem is ‘an economic community supported by a foundation of interacting organizations and individuals—the organisms of the business world.’ In other words, Moore provided a definition of a ‘competition ecosystem’; the key logic of the business ecosystem is the study of the reciprocal relationships among companies and the surrounding business environment, as in a biological environment (Han et al., 2007). According to Townsend (2009, p. 10), “business

ecology is the relationship between a business and its environment". The crucial goal of business ecology is consistency among the ecological synchronisations and business combinations under the sites that it uses and affects (Townsend, 2006). In a business ecosystem, companies occupy the correct position, just as ecological species do within a natural ecosystem, and a variety of stakeholders in the ecosystem evolve and align themselves with the other stakeholders of the platform (Gobble, 2014).

2.4 Analysis of Various Perspectives on Platform Businesses

Platforms are generally subject to positive feedback loops through network effects in use (Katz and Shapiro, 1985) and increasing returns in supply (Arthur, 1996) which tend to maximise the advantages to companies (O'reilly, 2007). Cusumano and Gawer (2002, p. 3) stated that "the more people who use platform products, the more incentives there are for complement producers to introduce more complementary products, causing a virtuous cycle".

Because the term platform has been used as part of various approaches from different disciplinary perspectives, there are different research approaches and definitions (Rochet and Tirole, 2003b; Eisenmann et al., 2006; Evans et al., 2008). Research arrangement is therefore needed to ascertain how each disciplinary perspective examines the platform or two-sided market. The conceptual map shown in Figure 2.4 displays the key topics that are built upon two main research themes, different disciplinary perspectives, and interdisciplinary researches. To achieve a better understanding of the presented conceptual map, furthermore, I also explain the research structures and features of each academic perspective.

2.4.1. Analysis of the Platform Research Literature Review

In order to facilitate a coherent review, I have restricted my selection of papers to those published in leading academic journals specialising in management and strategic business. Various periodicals were ultimately selected: *Harvard Business Review*, *Sloan Management Review*, *Academy of Management Review*, *Journal of Product Innovation Management*, *Strategic Management Journal*, *RAND Journal of Economics*, *Journal of Industrial Economics*, *Research Policy*, *Management Science*, and highly cited books. Research began with a search for scholarly works and books¹³ about platform business and innovation. In order to identify as much related literature as possible, I methodically devised a broad range of keywords for this search. I derived keywords by related research articles and papers by interviewing industry experts in the chosen topic area. The keywords list used in the search included: ‘Platform’, ‘Two-sided Networks/or Market’, ‘Modularity’, ‘Network effect/or Externalities’, ‘Business Ecosystem’ and ‘Technological Ecosystems’¹⁴. Major journals about strategic business and management were searched and analysed using the ISI database to ensure that no frequently cited or important works were missed in this area.

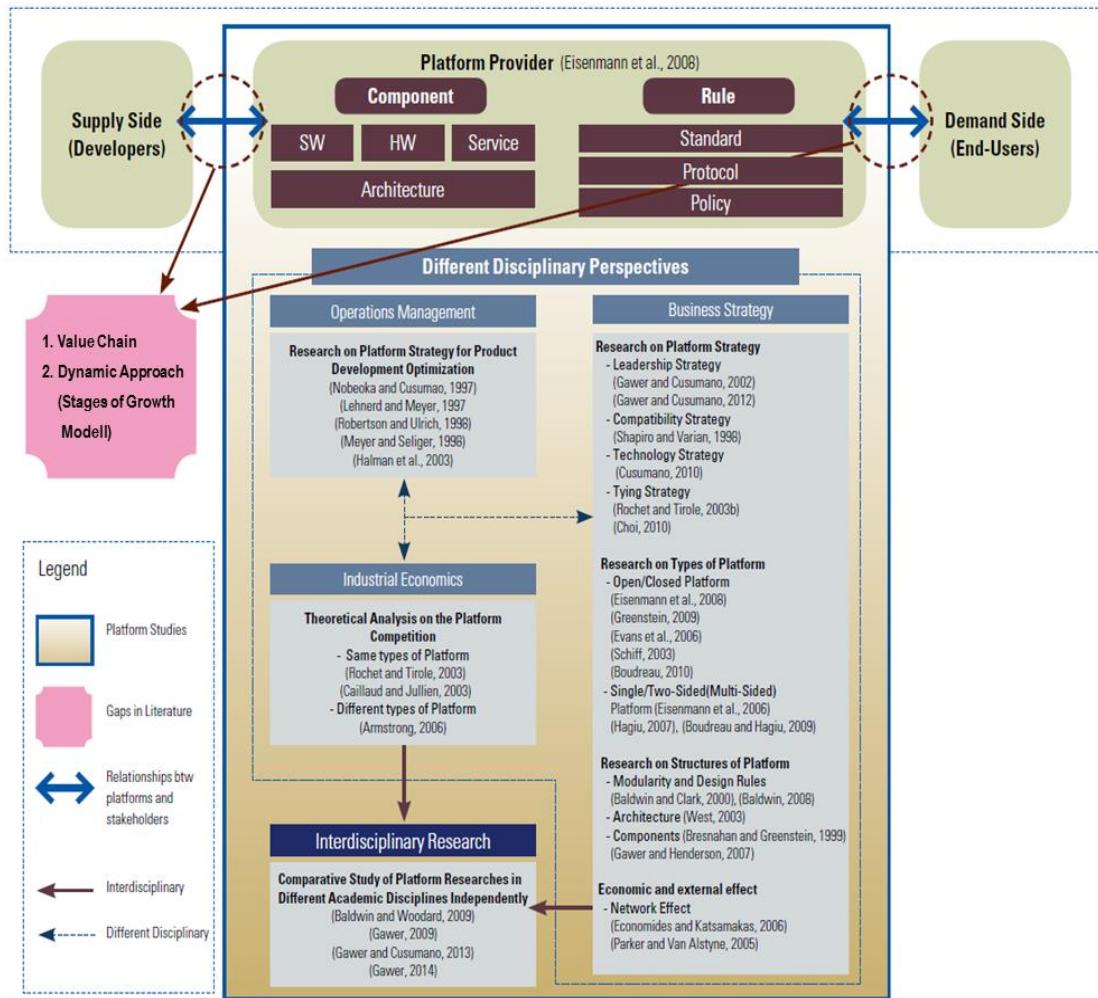
¹³ For comparable research work, this research focused on academic journal papers and highly cited books together.

¹⁴ Due to the variety of its usage, the keyword “Platform” is too ambiguous and also includes some unrelated literatures such as “oil platform”, so, in the searching process, I also used “two-sided networks/or markets” with the “AND” option to exclude irrelevant articles. I contrasted the findings by including and excluding “two-sided networks/or markets” as a required keyword for several years, and results were the same in either case.

To analyse and categorise the selected articles, (a) a conceptual map of the literature and (b) a meta-theoretical scheme originally proposed by Astley and Van de Ven (1983) for organising management theories were utilised. The conceptual map develops an overview from different disciplinary and interdisciplinary perspectives of the research on platforms as well as market and revenue strategies. Through the conceptual map of the literature, I show the overall research and the trends in platform business. Due to the character of the platform business, each academic tends to work separately, and therefore the research is categorised into three different academic disciplines¹⁵ : 1) Operations Management, 2) Industrial Economics, and 3) Business Strategy, thereby enabling an explanation of each study's distinct features and the subject of each academic discipline. I also describe the interdisciplinary research that has recently been conducted to show the overall platform business research structure and stream. In addition, the meta-theoretical scheme is used to systematically analyse the 3) Business Strategy category because platform research is actively carried out in this academic area. The reason why I have chosen a meta-theoretical scheme is that it is uniquely suited for the analysis of the platform business in management studies. It includes (1) macro and micro levels of analysis, (2) strategic selection, and (3) the collective actions of the platform provider on both the supply and demand side. All of these are related to the platform business and are important factors in the research articles that currently lead platform business research.

¹⁵ In the perspective of Operation Management, research mainly focuses on product development optimisation in the manufacturing industry. In the Industrial Economics approach, it examines the competition in either same or different types of platforms. In the perspective of Business Strategy, it particularly involves strategy, typology, business model, and structures.

Figure 2.3 Conceptual map of the literature and key subjects



Source: Elaboration from Kim (2014)¹⁶

2.4.2. Different Disciplinary Perspectives

There are various definitions of platform, thus this thesis redefines the platform business using the theories of two-sided markets, network effects, and the business ecosystem (See Figure 2.2). This will avoid digressing too far from the main issue, which is the comparison and analysis of the platform researches in business theory. Most of the literature on platforms or two-sided markets focuses on platform

¹⁶ I published the review paper, "Kim, J. (2014). 'Platform Business and Network Strategy', *STI Policy Review*, 5(1): pp. 57-74."

capability itself. These studies can largely be categorised under different disciplinary perspectives and interdisciplinary research. In different disciplinary perspectives, Operations Management, and Industrial Economics, and Business Strategy all have different views and approaches regarding platform studies.

2.4.2.1. Operations Management

Platform research originally started from within operations management as a means of optimising product development, particularly in manufacturing industries. An investigation into the topic by Robertson and Ulrich (1998) asserted that companies which have successful platform planning are able to realise benefits in numerous areas. They argued that a “platform has a greater ability to tailor products to the needs of different market segments or customers” (Robertson and Ulrich, 1998, p. 3). To illustrate their argument, they conducted an empirical study of two film firms, Kodak and Fuji. In 1987, after launching the Quick Snap 35mm camera in the American market, Fuji grew by more than 50 percent per year until the end of 1994. However, Kodak, which got caught unprepared, recovered their market share in the US market from Fuji by using a platform business strategy. After 1994, having adopted a platform business model, Kodak dominated more than 70 percent of the U.S. market. Research indicates that Kodak’s successful strategy is based on utilising a distinctive platform business model. In order to minimise risk, Kodak converted its business model into a platform-based one with regular components and rules (i.e. a production process). Due to the development of a business model that shared components and rules (process steps), Kodak was able to develop its products cheaper and faster. The platform business model appealed to different customer

segments and enabled Kodak to have twice as many products as Fuji, thereby allowing it to capture precious retail space and garner substantial market share (Robertson and Ulrich, 1998). The platform business model is a critical success factor in operations management. By sharing components and production processes across platform products, corporations are able to increase the productivity and flexibility of their manufacturing. Nobeoka and Cusumano (1997) indicated that automobile firms that adopt a platform business strategy gain market shares of 5.1 percent per year, while firms that use a single-business model lose 2.2 percent of their market share per year. In manufacturing industries, assembly processes are developed for specific product models. Robertson and Ulrich (1998) and Nobeoka and Cusumano (1997) defined the platform as a set of assets for product sharing. A further study on the topic by Meyer and Seliger (1998, p. 1) defined a platform as being “a product platform as a set of subsystems and interfaces that form a common structure from which a stream of derivative products can be efficiently developed and produced”. An additional important investigation Halman et al. (2003) indicated that, because of the effect of a product family, a collection of products that share the same assets, production, and process engineering can be made more efficient and competitive. Hence, these benefits apply to new products developed using a platform as well as to updated products, and manufacturing costs can be reduced. With a platform system, companies can reduce the incremental cost of addressing the specific needs of a market segment and reduce development cost and time.

Thus, in the field of operations management, the term platform is defined as an element that becomes the basis of various products. Roberson and Ulrich (1998, p. 2) defined it as “a collection of assets shared by a group of products”. Studies with a focus on the product perspective have identified a platform as a system consisting of

essential modules and other modules. They have thus focused mainly on the structural aspect of products, such as the optimisation of product development, and concentrated on the use of a platform inside a company.

2.4.2.2. Industrial Economics

In industrial economics, the key issue is the theoretical analysis of the platform competition. A significant body of theoretical and empirical literature rapidly emerged, and the platform (or two-sided market) has become a very active area of research in industrial economics. The two-sided platforms that we know today as the economic and business focus were first clearly identified in pioneering research by Rochet and Tirole, whose work began circulating in 2002. They analysed platforms in a two-sided market with network externalities using the specific economics of a payment card association through the cooperative determination of an interchange fee. In order to explain a platform using a network externality occurrence from both sides of the market on board, Rochet and Tirole constructed a framework in which banks and merchants grab the market and consumers and merchants decide rationally whether to use a credit card. Using this framework, the researchers explained the factors affecting merchant resistance, compared with cooperative and for-profit business models, and took the first step in the analysis of system competition (Rochet and Tirole, 2002). An additional study on the topic by Rochet and Tirole (2006) constructed a theoretical model through integrating usage and membership externalities, integrating different factors of the literature highlighting either form of externality; it gained new outcomes in terms of the mixture of membership and employment charges when setting price or determining fees

between users. The study achieved this by using the pure-usage-externality model of Rochet and Tirole (2003b) as well as the pure-membership-externality model of Armstrong (2006). They dealt with competition issues among the same typology of platforms and made competing platform models (Rochet and Tirole, 2003b, 2006).

However, in contrast with Rochet and Tirole who focused on theoretical analysis, Armstrong researched platform competition modelling among different types of platforms. By using the Hotelling location model¹⁷, Armstrong asserted that there are qualitative differences between the two platforms (Armstrong, 2006). He explained how the multi-home¹⁸ (Akella et al., 2004) affects the actions of platform providers by comparing the case of two groups: one group choosing single-home¹⁹ with the case of another group choosing multi-home. Armstrong presented three models: a monopoly platform, a model of competing platforms (two-sided single-homing), and a model of competitive bottlenecks. A monopoly platform can be applied to only a limited number of examples of a two-sided market, although there do exist a few applications. Two-sided single-homing involves competing platforms, but it assumes for exogenous reasons that each actor chooses to join or use a single platform. Armstrong theorised that, while one group continues to deal with a single platform (to single-home), another group wishes to deal with each platform (to multi-home) through the model of competitive bottlenecks, the realistic model. Most of these investigations from an industrial economics perspective have analysed how platforms can solve the ‘chicken and egg’ problem related to the two-sided market,

¹⁷ The Hotelling location model demonstrates the relationship between location and the price behaviour of firms. It was originally developed by Harold Hotelling in his article “Stability in Competition”, in 1990.

¹⁸ Multi-home, multihoming, refers to a computer or device connected to more than one computer network in Akella, A., Pang, J., Maggs, B., Seshan, S. and Shaikh, A. (2004). 'A comparison of overlay routing and multi-homing route control', *Communications of ACM*, 34.

¹⁹ Unlike multi-home, single-home refers to a computer or device connected to only one computer network.

and they have focused on the conditions determining which side is subsidised and the extent of this subsidy.

Thus, the field of industrial economics mainly approaches platforms from the perspective of transactions. The platform is seen as a mediator for brokering a deal between two or more participating groups. Rochet and Tirole (2003a, p. 993) called it “a medium in which two different groups interact with each other”. The studies from a transaction perspective attend to the network effects that allows participants from many groups on a platform to obtain greater value when there are more participants from opposite groups and also to the dynamics that accommodate even more participants. The main aim of this analysis is to determine which incentive should be provided to the participants of many groups and which strategy should be adopted to reach a critical mass.

2.4.2.3. Business Strategy

Investigations from various perspectives drawing on business strategy approaches are very much works in progress. Under a meta-theoretical scheme originally proposed by Astley and Van de Ven (1983), they can be classified into four major divisions: research into platform strategy from a strategic-choice view; types of platform from a collective-action view; structures of platform from system-structural and economic views; and the external effect from a natural-selection view. The typology and structure of the platform are key research fields in platform analysis, and Parker and various researchers have also focused on economic effects, especially network effects (Parker and Van Alstyne, 2005; Economides and Katsamakas, 2006).

Figure 2.4 Meta-theoretical scheme for business strategy perspectives

Micro Level	Strategic-Choice View	System-Structural View
	<p><u>Platform Strategy</u></p> <p><i>Focus of Analysis</i></p> <p>Leadership, Capability, Technology, Tying Arrangement</p> <p><i>Theoretical Lenses</i></p> <p>Grounded theory, network economics, institutional theory, resource based view, real option</p> <p><i>Major managerial implications</i></p> <p>Platform providers' strategy and resources are the key to success in the light of platform business.</p>	<p><u>Structures of Platform</u></p> <p><i>Focus of Analysis</i></p> <p>Modularity and Design Rules, Architecture, Components</p> <p><i>Theoretical Lenses</i></p> <p>Network economics, contingency theory</p> <p><i>Major managerial implications</i></p> <p>A competitive environment determines firms' response to platform business; platform providers should design internal structure according to their organisational strengths.</p>
	<p><u>Collective-Action View</u></p> <p><u>Types of Platform</u></p> <p><i>Focus of Analysis</i></p> <p>Open/Closed, Single/Two-Sided(Multi- Sided)</p> <p><i>Theoretical Lenses</i></p> <p>Grounded theory, network economics, institutional theory, social movements, network analysis</p> <p><i>Major managerial implications</i></p> <p>Due to two-sided market and complicated business models, considering proper selection of platform types is vital for platform providers.</p>	<p><u>Natural-Selection View</u></p> <p><u>Economic and external effect</u></p> <p><i>Focus of Analysis</i></p> <p>Network Effect,</p> <p><i>Theoretical Lenses</i></p> <p>Grounded theory, network economics, institutional theory, diffusion of innovation, game theory</p> <p><i>Major managerial implications</i></p> <p>Platform business is characterised depending on its effects on the markets and stakeholders.</p>
Macro Level		

Voluntaristic Orientation <.....> Deterministic Orientation

2.4.2.3.1 Strategic Choice View (Micro Level, Voluntaristic Orientation); Research on Platform Strategy

In the research on platform strategy, theorists who take a strategic choice view argued that the strategy and resources of platform providers are the keys to success in the context of platform businesses. Cusumano and Gawer (2002) focused on leadership strategy, while Shapiro and Varian (1998) speculated about the importance of compatibility for platform strategy. Cusumano (2010a) asserted that companies in the IT business are often most successful when their products become industry-wide platforms, implying that a technology strategy for platforms is crucial. A tying in arrangement strategy makes “more consumers move to multi-home and produces exclusive contents available, which is beneficial to both consumers and platform providers” (Cusumano, 2010a, p. 55). Choi (2010) analysed the effects of tying arrangements on market competition in two-sided networks with multi-homing and found that stakeholders can participate in multiple platforms to garner maximum network effects.

According to strategic choice view, platform providers who handle platform development and distribute subsidies properly through a well-organised structure can establish a successful platform business. Bresnahan and Greenstein (1999) argue that platforms have interchangeable components so that many platform users can share the benefits of the same technical advances and the different hardware and software components available in the marketplace. Evans (2003b) asserts that providing benefits to one side of the two-sided market is crucial strategy to solve the ‘chicken and egg’ issue, a chronic problem of the two-sided market (Caillaud and Jullien, 2003). Eisenmann et al. (2006) highlight the significance of invigorating one side of the platform first through subsidisation, and then making the invigorated side

affect the other side. Rochet and Tirole (2003b) describe price structures of a two-sided market as the ‘instruments of cross-subsidisation’; they stress that a two-sided market would be established when cross-subsidisation is conducted well on the platform and it is a key factor for platform strategy (Rochet and Tirole, 2003b). Eisenmann et al. (2006) refer to covering loss in one area with profits generated in another area.

2.4.2.3.2 Collective Action View (Macro Level, Voluntaristic Orientation); Research into Types of Platforms

The literature that takes a collective action view focuses on types of platform. Many scholars at business schools have examined the features of platforms based on typology: whether the platform is open or closed and single-, two-, or multi-sided. Open platforms are especially common in the ICT industry. These are platforms that are based on open standards that are published and fully reveal their sources, such as external application programming interfaces (API) which allow the use of platform functions. Using these sources, a third party can integrate with the platform to add functionality, thereby permitting rapid strategies (Schiff, 2003; Evans et al., 2006; Eisenmann et al., 2008; Greenstein, 2009; Boudreau, 2010). The opposite of this is a closed platform.

Two-sided or multi-sided platforms, which offer different solutions to different categories of users, bring together two or more interdependent groups of customers. This form has recently risen to economic and business prominence in many industries. Like the open platform, the two-sided platform has significantly more opportunities for building larger, more valuable, and more powerful platforms because of information technology (Eisenmann et al., 2006; Hagiu, 2007; Boudreau

and Hagiу, 2009). The opposite is a single platform. Gawer and Cusumano (2008) emphasise a ‘platform potential’ strategy which provides the necessary functions through trend analysis of market and industry, and Sawhney (1998) suggests ‘platform thinking’, a strategy of finding adaptable platform service internally by selecting and combining the common blocks.

2.4.2.3.3 System Structural View (Micro-level, Deterministic Orientation); Research into the Structures of Platforms

Research from a system structural perspective has focused on how platform provider firms adapt to technological structures and rules, in particular in terms of the internal organisation. The competitive environment determines firms’ responses to platform businesses, so platform providers should design internal structures that meet their organisational strengths. Studies in this view have shed light on three types of structure: modularity and design rules, architecture, and components. Modularity is a concept that has proved useful in a number of fields that deal with complex systems and units that are structurally independent.

Baldwin and Clark (2000) developed a powerful theory of modularity and design. They asserted that the industry has experienced previously unimaginable levels of innovation and growth because it embraced the concept of modularity, building complex products from smaller subsystems that can be designed independently yet function together as a whole (Baldwin and Clark, 2000). Computing platforms provide an “integrated architecture of hardware and software technology standards as a basis for developing complementary assets” (West, 2003, p. 1).

Quality management (Riedl et al., 2009; Boudreau and Hagiu, 2009; Hagiu, 2009) and revenue structure (Nachira et al., 2007; Teece, 2010; Amit et al., 2012) are crucial structural factors for maintaining the platform continuously. Because platform has a high chance of encountering “a market for lemons” in a two-sided market (Akerlof, 1970, p. 489)²⁰, it is very important to supply ‘trust’ to solve the lemon problem via quality management. Boudreau and Hagiu (2009) suggest ‘platform regulation’ to review the platform, at either the ‘ex ante’ or ‘ex post’ stage, and Hagiu (2009) proposes ‘platform quality certification’, either to limit participation by platform providers or to rely on end-users to regulate the platform quality. Gawer and Cusumano (2008) state platform providers should make economic benefits for platform stakeholders. In terms of revenue structure, Eisenmann et al. (2008) suggest that identifying the money side and subsidy side via the price elasticity is crucial.

2.4.2.3.4 Natural Selection View (Macro-level, Deterministic Orientation); Economic and External Effects

Researchers studying platform businesses from a business school perspective assert that the strategic effects of platform providers are determined by environmental characteristics. Therefore, a platform business is characterised according to its effects on the markets and on stakeholders. Network effects are a particularly critical theory in two-sided markets; various authors have used network effects to explain platform businesses both in terms of a two-sided network effect (Caillaud and Jullien,

²⁰ “The market of lemons relates quality and uncertainty which are institutions of the business market” Akerlof, G. A., (1970). The market for " lemons": Quality uncertainty and the market mechanism. *The quarterly journal of economics*, 488-500.

2003; Rochet and Tirole, 2003b; Armstrong, 2006) and an indirect network effect (Katz and Shapiro, 1985; Liebowitz and Margolis, 1994). Network effects occur when a two-sided market is constructed and two groups are attracted to each other (Eisenmann et al., 2006), and this facilitates the rapid growth of a platform company (Cusumano, 2010a). Thus it is crucial to reach the critical mass (Evans, 2009) to utilise the ‘penguin effect’ (Farrell and Saloner, 1986) for network effects.

Economides and Katsamakas (2006, p. 7) demonstrated how cross-side network effects emerge and argued for “equivalence between a specification that assumes complementarities and a specification that assumes explicit network effect across the two sides of the market”. Eisenmann et al. (2006) argued that designing matched product pairs and discounting one relative to independent goods changes the shape of demand in markets joined by the network effect. In other word, both direct (same-side) and indirect (cross-side) network effects are prerequisites of two-sided markets (Eisenmann et al., 2006; Cusumano, 2010b), and a similar phenomenon occurs within the platform network effect (Lyytinen and King, 2006).

2.4.3. Interdisciplinary Research

In recent years, in order to complement these individual studies, various platform strategy researchers have shifted to conducting interdisciplinary research studies (Baldwin and Woodard, 2009; Gawer, 2011). The recent study (Gawer, 2011, 2014) have provided a multidisciplinary account of the different phenomena of platforms. It is the outcome of crucial research regarding the perceptions of problems with existing platform studies. Each academic researcher has different perspectives and definitions of platforms, which makes for significantly varied understandings.

2.5. Conclusions: Literature Gaps and Research Objectives

This chapter has reviewed the existing literature relating to the concept and definitions of a business models. It has assessed various academic perspectives of the platform business model and focused on three themes: the definition and classification of a business model; the definition and characteristics of the platform business model; and the analysis of various perspectives on the platform business. Considering the strategic implications of the platform business model as a type of innovation, these broad theories of platform business model adoption and strategy have been studied to provide some basic understanding of the adoption of platform business models and strategy.

The primary purpose of this chapter is to focus on an integrated review of the management literatures on platform business models and innovation strategy. I first defined the term ‘business model’ and ‘platform business model’ and discussed why these concepts are critical. Secondly, I provided an overview of the literature and the relevant journals on platform business, thereby clarifying the differences that exist between the various academic perspectives on platform business models and strategy. Thirdly, I introduced a methodology for selecting literature for review and gave the rationale for my choice of a suitable framework. Thus, I reviewed the literature in each area and the associated economic and strategic concepts.

The first and second sections discussed theories relating to business models and the platform business (e.g. Schumpeter, 1934; Teece, 1986; Drucker, 1995; OECD, 2005; Eisenmann et al., 2006; Evans et al., 2006; Rogers 2010) and their specific characteristics (e.g. Miles, 1993; Cusumano and Gawer, 2002; Rochet and Tirole,

2004; Tidd and Bessant, 2011). This review of studies of platform businesses outlines the fragmentation of this literature, which is in part due to differences in researchers' perspectives. These differences in perspective and specific industry approaches are reflected in the logic flow, the specific concepts, and even the research methods adopted by different streams. The platform is not a simple linear business model, or pipe business model, but rather consists of two- or multi-sided networks with stakeholders, so the findings were summarised as three major streams: operations management, industrial economics, and business strategy. Many academic researchers in recent years have focused on a range of platform business areas, with particular attention paid to decision-making and designing and diagnosing processes using platform technology and developmental capability. Therefore, within the research category of business strategy, I briefly evaluated the literature along four themes: (1) platform strategy; (2) types of platform; (3) structures of platform; and (4) economic and external effects.

2.5.1. Literature Gaps

The literature review showed that platform business models and strategy have become a crucial research subject in academia and industry. Firms seek to adopt a platform business model in order to encourage the continuous innovative development of complementary products. They are strongly inclined to adopt a platform business model as their key strategy for accessing new markets and assuming a leading position in those markets. However, after reviewing previous platform businesses and innovation studies, two questions are raised. First, why have previous studies and research articles not investigated the value chain and streams of

the platform business model, even though platforms have different types of value chains and streams (Eisenmann et al., 2006), which, for ICT and e-Business, are the platform's most unique and crucial elements (Timmers, 1998; Amit and Zott, 2001; Amit and Zott, 2010; Ceccagnoli et al., 2012)? Eisenmann et al. (2006) asserted that because platforms have a distinct group of users on each side, value moves from both left to right and right to left, and this change in the value chain is an important feature of a two-sided market. However, how the value chain and steam are affected by the platform business model has not yet been studied. The second question is: why have previous studies and research articles not established a strategy based on a dynamic approach, even though strategy is increasingly dynamic (Gunther et al., 2004)? Moreover, according to 'A Cyclical Model of Technological Change' by Anderson and Tushman (1990) and 'Stages of Growth Model' by Gibson and Nolan (1974), the growth model can be classified into four stages: the entry stage, growth stage, expansion stage, and maturity stage. In academia, however, related studies have accomplished little thus far. The majority of studies of platform businesses have tended to assume that the platform model has already been integrated in the market, and therefore how platforms emerge, grow, expand, and mature in the market is not well understood (Gawer and Cusumano, 2013). Existing strategies focus on the static approach as opposed to the dynamic approach that enables firms to create superior, more long-term business performance (Teece et al., 1997). In other words, existing studies do not offer a distinct dynamic platform strategy guidance for platform companies, because they focus on each factor separately. However, each stage of the growth model has a different set of tasks that must be addressed for the successful formation and growth of the corporate ecosystem at each stage. Thus, a platform business strategy with the dynamic approach is needed.

Literature Gaps:

1. Few platform studies have focused on the value chain and streams in the platform business model.
2. The majority of studies of platform businesses have tended to focus on existing platforms in the market from the perspective of a static approach, not a dynamic approach.

2.5.2. Research Objectives

The core objective of this research is to answer the question “How do companies become successful platform providers?” and use existing research to support our findings. To fulfil this research objective and based on the two gaps in literature, this study aims to first analyse the different types of platform business models with an accurate understanding of the complicated value chains and streams, which is the critical strategic element of a corporation that undertakes competitive advantage strategies to create a successful platform business. The second step is to analyse the platform business and growth model through a dynamic approach and explore the step-by-step strategic propositions according to the key theories of platforms, two-sided markets, network effects, and business ecosystem, which are commonly applied to platforms in various fields, such as market, service, advertising, and social networking platforms from the perspective of a macroscopic dynamic flow. Especially, the second research aim would be analysed using the ‘Stages of Growth Model’ by Gibson and Nolan (1974). With the perspective that IT development is a primary cause of changes in the business environment, Gibson and

Nolan (1974) utilise this perspective as a corporate business strategy. Because the ‘Stages of Growth Model’ explains growth stages as well as elements at each stage and theorises the development flow, I decided that it would be suitable for this research. Again, the core purpose of this thesis is to identify the typology and dynamics of platform businesses in order to further increase our understanding of platform business models and strategies based on a dynamic approach, reduce their chance of failure, and help them achieve success and sustainable growth in the market.

With platform business models becoming increasingly popular in both academia and industry, various studies and strategies now exist. Therefore, it is necessary to conduct a study to integrate these independently developed strategies taken from a variety of fields ranging from platform building to platform operation and expansion. In order to fill the literature gaps, it is important to find the common properties of platform business models so that it is possible to find new implications by applying the strategies developed for each field to another field. For instance, the two-sided market theory does not cover platform building and expansion, but focuses mainly on securing the participants of a given platform and responding to inter-platform competition. Therefore, it does not provide any significant implications for the construction of platforms (Gawer, 2009). According to a cyclical model of technological change (Anderson and Tushman, 1990), a research study of understanding core elements and strategies of the dominant design for service and technology developments is crucial in order to understand how to build, operate and expand a platform business. Platform is in the process of becoming the dominant design (Utterback and Abernathy, 1975) which attracts stakeholders by identifying key features from technological discontinuity. In particular, Utterback and Suarez

(1993) state that the competitive effects of economies of scale only become important after the emergence of a dominant design, and the dominant design is completed by the elements and strategies. Therefore, understanding core elements and strategies is important in platform business research.

In contrast, the existing studies in the field of operations management have concentrated on designing platforms from an engineering perspective without taking into consideration such factors as incentives for participants that will enhance network effects and the business ecosystem. On that account, it is possible to obtain a rich and diverse set of strategic implications by alternately leveraging the structural design measures that are the main interest of production strategy: the industry-centric strategy of the field of technology management, the measures for securing participants that are the main subject of industrial economics, and the inter-platform competition strategy. Therefore, to accomplish the research objective, the research questions and theoretical propositions have been made based on the research gaps and integrated with literature that analyses various cases and strategies.

Figure 2.5 Research design process from research gaps to theoretical propositions

Research Gaps	Research Questions	Theoretical Propositions
<ul style="list-style-type: none"> Few platform studies have focused on the value chain and streams in the platform business model. 	<ul style="list-style-type: none"> How are the value chain and stream changed in the platform business model? 	<ul style="list-style-type: none"> Typology: According to the unique nature of the two-sided market, there are three major types of value chain model in the platform. In other words, there exist three types of platform business model, in accordance to the value chain.

<ul style="list-style-type: none"> The majority of studies of platform businesses have tended to focus on existing platforms in the market from the perspective of a static approach, not a dynamic approach. 	<ul style="list-style-type: none"> How could a step-by-step business strategy based on the perspective of dynamic approach be constructed? 	<ul style="list-style-type: none"> Dynamics: According to Anderson and Tushman (1990) and Gibson and Nolan (1974), platform businesses have four major growth stages, and different core elements and strategies exist for each stage.
--	---	--

Chapter 3 Methodology

Theories and methodologies strongly support a research project by allowing a study's validity to be evaluated. Systematically designed research challenges old beliefs and produces new theories. For this reason, research must be based on logical and systematic procedures (Ghauri and Grønhaug, 2005). Collis and Hussey (2013, p. 3) stated that 'looking at the nature of research, this tells us that researchers need to use appropriate methods for collecting and analysing research data, and to apply them rigorously. It tells us that the purpose of research is to investigate a research question with a view to generating knowledge'. That is, a systematic and logical research design allows researchers to construct an impregnable theory by collecting and analysing relevant data in order to produce new knowledge or expand on old beliefs and concepts (Bryman and Bell, 2007). The research design needs to include details of the research materials and procedures, including the methods for collecting and analysing data. All research processes and results were conducted and completed in accordance with the British Psychological Society Code of Ethics and Conduct (2009).

Business researchers especially need to perform in-depth analysis and be able to forecast future growth, declines in the sales of a company's product, or challenges from competitors (Creswell, 2013). They also need to investigate government policy that affects the market and interview consultants or experienced workers in the field in order to address the research hypothesis and questions. Therefore, it is necessary to comprehend the relevant theory and methodology to understand the findings of business researchers (Creswell, 1999; Yin, 2009). Identifying relevant theory or

areas of knowledge can be done by choosing accurate and related research questions and methodologies. These are particularly important for innovation and management studies.

The overall objectives of this research are to answer the specific research enquiries that underlie its conceptualisation, including the epistemological and philosophical presumptions that constitute the origin of the research questions and the methodological research rationale. Thus, the aims of this research are 1) to explore the value chain and stream in a two-sided market that has a distinct group of users on each side and 2) to understand how a platform business model successfully enters the market and continues to grow its business. To investigate the research aims, qualitative research that is able to deliver detailed perspectives of the firms and participants being studied is regarded as an appropriate research method.

The purpose of the research to identify the typology and dynamics of platform businesses to understand the platform value chain, business model and strategy based on a dynamic approach with the provision of rich detailed data about the impacts platform businesses have had on the industry. To fulfil the aims of the research, a case study of platform-based ICT firms and the relevant institutions and organisations, especially those located in South Korea, has been chosen. The important reason for this choice is that the ICT market and industry in South Korea²¹ are not only very strong but also most ICT multinational enterprises (MNEs) and small and medium enterprises (SMEs) have overseas offices in South Korea²². In

²¹ Forbes asserted that ‘South Korea will be the next global hub for tech startups and new start-up powerhouse’. McGlade, A., (2014). Why South Korea Will Be The Next Global Hub For Tech Startups. *Forbes*. New York: Forbes.

²² Google set to open Google Campus Seoul as its first Asia Google Campus to drive innovation in South Korea and Asia because they believe that ‘Korean innovators and entrepreneurs are some of the best in Asia and Korean startups are making headlines around the world, especially in the mobile space’ Osborne, C. (2014) ‘Google to Launch campus for Asian startups in Seoul’, ZDNet, 27 August [Online]. Available at: <http://www.zdnet.com/article/google-to-launch-campus-for-asian-startups-in-seoul> (Accessed on 12 February

addition, the author of this thesis is Korean and has professional working experience in South Korea²³. These factors mean that the inquirer can extract more in-depth information and insights from interview participants and has a strong professional network, which is very important for in-depth interviews and focus group interviews.

Bearing in mind this understanding of finding the suitable research mythology and research plan, this chapter will investigate the development of a systematic approach used to explore the research questions and propositions and suggest an appropriate justification for the chosen qualitative research methodology including a case study research. First, the overall research approach and research paradigms are described. Second, three core research paradigms, qualitative research, quantitative research, and mixed methods research, are discussed. Third, rationales are offered for choosing qualitative research and case studies for this research. Afterwards, the chapter describes and justifies the overall design of the research, and finally the data collection strategy, including the primary and secondary data, the data collection procedures, and data recording procedures, is outlined.

3.1. Research Approach

Before the research design is outlined, it is necessary to explain the appropriate and precise methodologies and philosophical reasons to support the research perspective and the rationale for why these research questions, topics research, and procedures

2015).

²³ Before starting his PhD, the author worked for Samsung Electronics HQ as a strategic planning associate in the global media team, dealing with strategic partnerships and investment activities. He developed actionable consumer and partner insights and business options (from research data analysis) that aligned with appropriate business and marketing strategies in e-commerce and digital advertising. He also communicated business insights based on consumer and partner research results, internal data, and accumulated research experiences.

were selected. Research methodology is the rationale behind a collection of concepts, ideas, theories, and assumptions, and it is required to show how the research theory and methodology is selected (Creswell, 2003; Maxwell, 2005; Marshall and Rossman, 2006; Yin, 2009). In order to select the research methodology, it is necessary to consider which theories will be adopted, which materials will be used, how the data was prepared for the study, the research protocol, and how the data was analysed (Creswell, 2013). In social science research, a positivistic approach employs quantitative methods, whereas a more interpretive approach employs qualitative methods (Bryman, 2003; Collis and Hussey, 2003; Creswell, 2003). Firestone (1987) asserted that the two different approaches come from different rhetorical situations, and that the circumstances may also correlate with the ‘means of expression’.

Knowledge has traditionally been created using quantitative or qualitative approaches under positivistic research (Sandberg, 2005). Positivism is an epistemological research approach to producing new knowledge by testing theories empirically against experienced facts (Noor, 2008). It believes that knowledge is created by scientific and mathematical treatments (Finch, 1986) and is related to the approach of research in the natural sciences. In contrast, interpretive research is based on qualitative approaches and is becoming more common, especially in management and social sciences (Gergen and Gergen, 1991; Alvesson and Deetz, 2000; Prasad and Prasad, 2002). Interpretivism justifies its findings with subjective thoughts, ideas, and social elements and phenomena. It is based upon the idea that the understanding of people and objects of the natural sciences is different. It is thus concerned with generating theories and findings with a high validity (see Table 3.1).

Table 3.1 Features of the two research paradigms

Positivism	Interpretivism
<ul style="list-style-type: none">- Artificial locations- Large samples- Concerned with hypothesis testing- Produces precise, objective, quantitative data- Produces results with a high reliability but a low validity- Allows results to be generalised from the sample to the population	<ul style="list-style-type: none">- Natural locations- Small samples- Concerned with generating theories- Produces rich, subjective, qualitative data- Produces findings with a low reliability but a high validity- Allows findings to be generalised from one setting to another similar setting

Source: Collis and Hussey, 2003, p 62

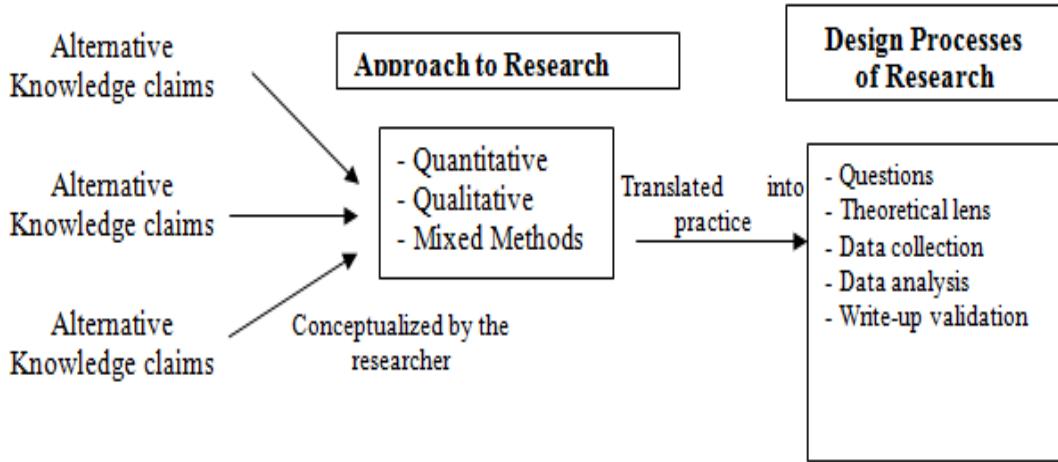
3.2 Three Elements Approaches

In order to develop a study, it is necessary to select an appropriate research approach before starting data collection (Neuman, 2005). Creswell (2003) described three research approaches: quantitative, qualitative, and mixed methods. The first two, quantitative and qualitative, have been used predominantly for decades, but mixed methods are newer and still developing. There are three different types of framework elements of these approaches that should be considered: philosophical worldview, selected strategies of inquiry including general research procedures, and research methods with the details of the procedures for collecting and analysing data.

Creswell (2003) suggested three questions to ask during the design of research:

1. What knowledge claims are being made by the researcher?
2. What strategies of inquiry will inform the procedures?
3. What methods of data collection and analysis will be used?

Figure 3.1 Knowledge claims, strategies of inquiry, and methods leading to approaches and the design process



Source: Creswell (2003)

3.2.1. Quantitative Method Strategy

Quantitative research is a research method that reveals relationships by presenting and analysing evidence using quantified data. The purposes are to express the properties of humans in measurable terms on the basis of logical positivism and mechanism and to obtain results that are representative, objective, and generalizable (Neuman, 2005; O'reilly, 2007). In regard to data collection, each variable should be measured objectively and quantitatively and then stated in statistical language after to verify the hypotheses using statistical probabilities. The perspective of a researcher should be restricted to avoid bias.

Research strategies related to the quantitative approach throughout the late 19th and 20th centuries led to the development of post-positivism, which includes all true experiments, quasi-experiments, and correlational research (Campbell et al., 1963),

as well as single-subject experiments (Neuman and McCormick, 1995; Cooper et al., 2013). Quantitative approaches can be used for complex experiments containing factorial design and repeated measurements as well as many variables (Creswell, 2003). The precise structural equation model, which combines the advantages of causal paths and verified multiple variables, is also included in the quantitative strategy. That is to say, a researcher taking a quantitative research approach will verify a theory by clarifying a hypothesis within a narrow range and by collecting data in order to support or refute this established hypothesis. Attitude measurement utilises experimental design that is assessed before and after an experiment. Data is collected using attitude measurement and the collected data is analysed using statistical procedures and hypothesis verification.

3.2.2. Qualitative Method Strategy

The concept of qualitative research began to get clarified in the 1990s and in the early 21st century (Bogdan and Biklen, 1998; Berg et al., 2004; Merriam, 2009; Flick, 2014). Many researchers have produced summaries of the various types of qualitative research that compare them with quantitative research and with specific approaches to qualitative research (Maxwell, 2005; Marshall and Rossman, 2010; Goertz and Mahoney, 2012; Punch, 2013). For instance, Clandinin and Connnelly (2000) composed ‘the methods of narrative researchers’, while Corbin and Strauss (1994) explained the procedure of ‘grounded theory’. Moustakas (1994) described ‘the philosophical tenets and procedure of phenomenological method’. Stake (1995) enumerated the process of ‘case study method’, which was the prominent

methodology of qualitative research. Wolcott (1999) summarised the ‘ethnographic procedure’. As such, there exist a variety of strategies in quantitative research.

- A researcher adopting narrative research selects one or more individuals whose personal life can be studied and who can be a research subject and tell the story of their life (Clandinin and Connelly, 2000)
- A researcher adopting grounded theory deducts general and abstract theories of process, behaviour, and interaction based on the views of research participants. This process includes the refinement of data collection and information across various fields (Strauss and Corbin, 1990, 1998).
- A researcher adopting a phenomenological approach verifies ‘the essence’ of human experience related to a phenomenon by describing the research participants. Understanding ‘vivid experiences’ allows us to pay attention to phenomenology not only as a method but also as philosophy (Moustakas, 1994, p. 60).
- A researcher adopting a case study approach explores in depth incidents, behaviours, and processes in one or more individuals and organisations. Cases are restricted by time and activities; a researcher collects detailed information through various data collection procedures for the duration of the case (Stake, 1995).
- A researcher adopting an ethnographic approach collects mainly observational data and studies existing cultural groups after living for a long time in an environment that resembles nature (Creswell, 1998).

In qualitative research, a researcher aims to reveal the meaning of a phenomenon from the perspectives of the research participants (Marshall and Rossman, 2010).

This is about confirming that they share a culture and studying their long-term shared behavioural patterns (Ford and Wiedemann, 2010). One of the important elements for data collection using this method is to observe the behaviour of research participants by getting involved in their activities.

There are some clear differences between quantitative and qualitative research (Creswell, 2003; Gagnon, 2010). In this regard, Bryman and Bell (2007) categorise the differences into three areas: principal orientation to the role of theory, epistemological orientation, and ontological orientation. Table 3.2 describes the fundamental difference between qualitative and quantitative research strategies, and Table 3.3 shows the difference in emphasis between qualitative and quantitative methods.

Table 3.2 Fundamental differences between quantitative and qualitative research

	Quantitative Research	Qualitative Research
Principal orientation to the role of theory in relation to research	Deductive; testing of theory	Inductive; generation of theory
Epistemological orientation	Natural science model, in particular positivism	Interpretivism
Ontological orientation	Objectivism	Constructionism

Source: Bryman et al. (2011), p 28

Table 3.3 The difference in emphasis in quantitative and qualitative methods

Quantitative method	Qualitative method
- Emphasis on testing and verification	- Emphasis on understanding
- Focus on facts and/or reasons for social events	- Focus on understanding from respondent's /informant's point of view
- Logical and critical approach	- Interpretation and rational approach
- Controlled measurement	- Observation and measurements in natural settings
- Objective 'outsider view' distant from data	- Subjective 'insider view' and closeness to data
- Hypothetical-deductive; focus on hypothesis testing	- Explorative orientation
- Result oriented	- Process oriented
- Particularistic and analytical	- Holistic perspective
- Generation by population membership	- Generalisation by comparison of properties and contexts of individual organism

Source: Ghauri and Grønhaug (2005), p 105

3.2.3. Mixed Method Strategy

A mixed method strategy is less common than both quantitative and qualitative approaches (Creswell, 1999; Cameron, 2011). It includes collecting and analysing a single research subject using both quantitative and qualitative methods (Gagnon, 2010). The concept of mixing the two different methods stemmed from Campbell and Fiske (1959) who utilised multiple methods to research the validity of psychological characteristics. They proposed the use of a 'multi-method matrix' in order to review multi-access for data collection. This induced a mix of the research methods. Specifically, qualitative materials such as observation and interviews were combined with quantitative materials such as surveys (Sieber, 1973). The

researchers were aware that every research method has its own limitations; therefore, they believed that the favoritism inherent in a certain method could neutralise or offset the favoritism of other methods (Jick, 1979). Thus, the researchers have developed the procedures for a mixed research method. They have also specified the research procedure (Tashakkori and Teddlie, 2003) by selecting a variety of terms discovered in the literatures, such as multi-method, convergence, integrated and combined (Creswell, 2013). Mixed research is conducted on the basis of the assumption that a researcher can have a better understanding of a research problem by collecting data in a variety of forms. This study begins with a large-scale survey to generalise the results of the population and then conducts qualitative open interviews to gather detailed opinions from the research participants.

Table 3.4 The difference between quantitative, qualitative, and mixed approaches

Tend to or Typically...	Qualitative Approaches	Quantitative Approaches	Mixed Methods Approaches
• Use these philosophical assumptions	• Constructivist/ advocacy/ participatory knowledge claims	• Post-positivist knowledge claims	• Post-positivist knowledge claims
• Employ these strategies of inquiry	• Phenomenology, grounded theory, ethnography, case study, and narrative	• Surveys and experiments	• Sequential concurrent, and transformative
• Employ these methods	• Open-ended questions, emerging approaches, txt or image data	• Closed-ended questions, predetermined approaches, numeri data	• Both open- and closed-ended questions, both emerging and predetermined approaches, and both quantitative and qualitative data and analysis

<ul style="list-style-type: none"> • Use these practices of research as the researcher 	<ul style="list-style-type: none"> • Positions him- or herself • Collects participant meanings • Focuses on a single concept or phenomenon • Brings personal values into the study • Studies the context or setting of participants • Validates the accuracy of findings • Makes interpretations of the data • Creates an agenda for change or reform • Collaborates with the participants 	<ul style="list-style-type: none"> • Tests or verifies theories or explanations • Identifies variables to study • Relates variables in questions or hypotheses • Uses standards of validity and reliability • Observes and measures information numerically • Uses unbiased approaches • Employs statistical procedures 	<ul style="list-style-type: none"> • Collects both quantitative and qualitative data • Develops a rationale for mixing • Integrates the data at different stages of inquiry • Presents visual pictures of the procedures in the study • Employs the practices of both qualitative and quantitative research
---	---	--	--

Source: Creswell (2003)

3.2.4. A Choice of Research Method: Qualitative Research Strategy

It is imperative to select one of the three methods (qualitative, quantitative, and mixed) in accordance with the purpose of the research in order to design a research approach (Ghauri and Grønhaug, 2005). The choice of a correct, relevant research methodology is crucial because it constitutes the fundamental framework of the research. Each research method has its own characteristics with different pros and cons. According to the previous analysis, a quantitative approach method is leveraged primarily when a researcher takes a post-positivist stance that emphasises causal thinking, concrete variables, hypotheses, and questions for developing a

theory. This is a research method well suited to verifying a theory or description. In contrast, a researcher adopting qualitative research argues that knowledge is primarily based on a constructivist perspective, an advocacy/participatory perspective, or both. That is to say, the qualitative research method collects open and emerging data for the purpose of developing a theory from the materials of a researcher. It is therefore suitable for understanding a concept or phenomenon and developing a theory. Mixed research can be used when it is difficult to understand a research problem with only a quantitative or qualitative approach. The important point is that it is not possible to conclude a particular research method is better than others because all research methods have different advantages and disadvantages.

The purpose of this research is to achieve an in-depth understanding of platforms' value chains and streams from a dynamic perspective, rather than producing generalisations. Creswell (2003) and Rossman and Rallis (2003) argued that qualitative research can understand theories, concepts, and phenomena in greater depth and take a more holistic view of a social phenomenon with a broader panoramic perspective than can a microscopic analysis. Also, qualitative research is likely to disclose the investigated view and make the interpretive understanding (Bryman, 2003; Collis and Hussey, 2003; Marshall and Rossman, 2010; Bryman et al., 2011) and can provide important descriptive, detailed research (Bryman, 2003; Bryman et al., 2011). Furthermore, qualitative research is flexible in terms of its data collection, and thus it can lead more effectively to a research about the social world (Bryman and Bell, 2007). This study chose to adopt a qualitative research method for the reasons presented above.

In addition, this study selected case studies as its detailed research strategy. Case studies include documentation, archival records, observations, and in-depth interviews with subjects who are familiar with the strategy of the case study companies, such as industry experts, corporate managers, and consultants. There are two main reasons for choosing case studies as the main research methodology: the research aim and the volume of research data. According to Yin (2009), a case study is a research method used to investigate real-life and contemporary events using multiple data sources. Hartley (2004) stated that the aim of a case study is to provide an analysis of the context and processes that illuminate the theoretical issues being studied. In addition, the appropriateness of the use of a case study approach depends on the nature of the research, which is derived from the research problem and the objective (Ghauri and Grønhaug, 2005). As the aim of this thesis is to obtain a deeper understanding of the value chain and the strategic propositions of platform businesses from a dynamic perspective, it was felt that the case study research methodology would be valuable because it would provide complex explanations. Furthermore, because this research covers a large number of variables and many different aspects of a business phenomenon, case study research can help to develop and refine the research concept (Cavaye, 1996). Hartley (2004) indicated that the case study methodology is particularly appropriate for research questions that require a detailed understanding of organisational processes in business because of the rich data that it can collect.

Naturally, there are weaknesses in the case study approach. Case study research can usually establish relationships between variables, but cannot always indicate the direction of causation. Cavaye (1996) asserted that, during case study research, one has no control over independent variables, and this may well limit the internal

validity of any conclusions. As a result, this study triangulated its findings in the hope of mitigating these weaknesses. This study conducted the in-depth interview and the focus group interview sequentially in two phases (Phase 1 and Phase 2).²⁴ The data was analysed and compared after the end of each phase. Moreover, this study ensured validity by comparing and analysing the findings from the primary data with those of the secondary data.

3.3. Research Questions and Procedures

3.3.1. Research Questions

The research question is one of the most crucial parts of any research design, because a research question defines what a researcher will seek to explore and understand (Gagnon, 2010; Bryman et al., 2011). Maxwell (2005) asserted that a research question has three important research purposes: firstly it helps to concentrate on the research; secondly it provides guidance on how to accomplish the research; and finally it delivers the research objective to others. Especially in a case study, part of a qualitative methodology, a researcher is required to submit research questions that are not just specific research objectives or hypotheses including statistical tests and variables. According to Creswell (2013), research questions in a qualitative methodology are comprised of central questions and associated sub-questions. The central question is a comprehensive question that the researcher asks that will lead to the exploration of the main research concept or phenomenon.

²⁴ In this study, the focus group interview (4 groups with a total of the 12 participants; each group had 3 participants) was conducted before the in-depth interview in Phase 1. Moreover, the in-depth interview, with a total of the 15 participants and also the focus group (2 groups with a total of the 4 participants; each group had 2 participants) were conducted in Phase 2.

To identify the typology and dynamics of platform businesses, the aims of this research are to explore the complicated factors surrounding the central phenomenon (platforms) and to examine a variety of perspectives or meanings held by research participants and companies. This is in line with qualitative research, which seeks to explore the complex set of factors surrounding the central phenomenon and to present the varied perspectives or meanings held by research participants (Berg et al., 2004; Marshall and Rossman, 2006). This thesis presents two central research questions that correspond with the emerging qualitative methodology and remain general so as to avoid limiting the research inquiry (Creswell, 2013). Each central question involves associated sub-questions, which become the specific questions used during case study research. However, there are no more than ten sub-questions, because Huberman and Miles (2002) recommended that researchers write no more than a dozen qualitative research questions, including both central and sub-questions.

1) Central Question 1

How are the value chain and stream changed in the platform business model?

- ⇒ This question aims to analyse the different types of platform business models with an accurate understanding of the complicated value chains and streams, which is the critical strategic element of a corporation that undertakes competitive advantage strategies to create a successful platform business. Few platform studies have focused on the value chain and streams in the platform business model (first research gap).

2) Central Question 2

How could a step-by-step business strategy based on the perspective of dynamic approach be constructed?

⇒ The question aims to analyse the platform business through a dynamic approach and explore the step-by-step strategic propositions according to the key theories of platforms, two-sided markets, network effects, and business ecosystem, which are commonly applied to platforms in various fields. The reason for this is because the majority of studies on platform business have tended to focus on existing platforms in the market from the perspective of a static approach, not a dynamic approach (second research gap).

3.3.1.1. How are the value chain and streams changed in the platform business model?

The purpose of firms is to create value, and this entails more than just improving operations or cutting costs (Schilling, 2005). The understanding of value is therefore of core importance for firms. As a profit engine, the value chain is crucial for companies that seek to turn their services or products into profits and to ensure the sustainability of their business. Porter defined value as “the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue ... A firm is profitable if the value it commands exceeds the costs involved in creating the product” (Porter, 2008, p. 38). Thus, the value chain is a source that a company,

organisation, or individual uses to create value, and constitutes a form of revenue in a business from particular activities. Amit and Zott (2001) examined how new types of value chains can be created by the way in which transactions are enabled by the development of networks and the Internet. For companies, an understanding of the value chain and streams is essential for making efficient use of the available resources, as firms are faced with resource constraints (Gallaugher et al., 2001).

Platform businesses play an important role in the global economy and represent the elemental configurations through which firms create value (Stabell and Fjeldstad, 1998; Eisenmann et al., 2011). The platform business strategies employed by firms in those industries are fundamental and important (Evans et al., 2006). The best feature of the platform business model is its basis in a two-sided market (Rochet and Tirole, 2003; Parker and Van Alstyne, 2005; Armstrong, 2006; Economides and Katsamakas, 2006; Eisenmann et al., 2006; Rochet and Tirole, 2006; Armstrong and Hagiu, 2007; Wright, 2007; Evans and Schmalensee, 2008; Choi, 2010; Kim, 2014), which has a variety of value chains. In the traditional value chain, value moves from left to right; to the left of the company is ‘production’ and to the right is ‘sales’ (Stabell and Fjeldstad, 1998). However, because the platform has a distinct group of users on each side, value streams flow both to the left and to the right in a two-sided market (Eisenmann et al., 2006). Therefore, this research formulates the first central research question: *How are the value chain and streams changed by the platform business model?*

Table 3.5 First central question and sub-questions

<p>Central Question 1 <i>How are the value chain and stream changed in the platform business model?</i></p>
<p>Sub-Question 1 <i>How are the value chain and stream different in each type of platform business model?</i></p>
<p>Sub-Question 2 <i>How are the value creation and value co-creation different in each type of platform business model?</i></p>
<p>Sub-Question 3 <i>How are direct and indirect network effects different in each type of platform business model?</i></p>

3.3.1.2. What are the main factors involved in supplying platform services successfully to the market?

After discussing how the value chains are changed by the platform business model, this thesis subsequently attempts to build a step-by-step business strategy based on a dynamic approach and capabilities. Such a strategy is mostly absent from the current business model research. Existing platform strategies focus on the factors, not dynamic capabilities, which enable firms to create superior long-run business performance (Teece et al., 1997). In addition, because most platform studies assume that the platform is already located in the market, understanding a dynamic platform business model is difficult (Gawer and Cusumano, 2013).

A dynamic approach is crucial not only for understanding how a platform business model successfully enters the market and continues to grow its business, but also for building a successful business ecosystem. Presenting the platform's strategy and dynamic capabilities for each of the four stages (prior to market entry, initial market

entry stage, growth stage, and expansion stage) in order is a core strategy for the construction of a successful business ecosystem. Therefore, this research formulates the second research question: *How could a step-by-step business strategy based on the perspective of dynamic approach be constructed?*

Table 3.6 Second central question and sub-questions

<p>Central Question 2 <i>How could a step-by-step business strategy based on the perspective of dynamic approach be constructed?</i></p>
<p>Sub-Question 1 <i>How should a platform business service be chosen?</i></p>
<p>Sub-Question 2 <i>How should a two-sided market be built?</i></p>
<p>Sub-Question 3 <i>How should network effects be exploited?</i></p>
<p>Sub-Question 4 <i>How should the business ecosystem be competed?</i></p>
<p>Sub-Question 4.1 <i>How should the platform business continue to grow beyond the market for lemons?</i></p>
<p>Sub-Question 4.2 <i>How should the revenue structure be designed?</i></p>

3.3.2. Multiple- Case Study Method

Qualitative research takes a different approach to quantitative research. Qualitative research employs different philosophical assumptions, research methods, data collection, and analytic and interpretative methods to quantitative research. The process thereof might be similar. However, a qualitative approach utilises a different

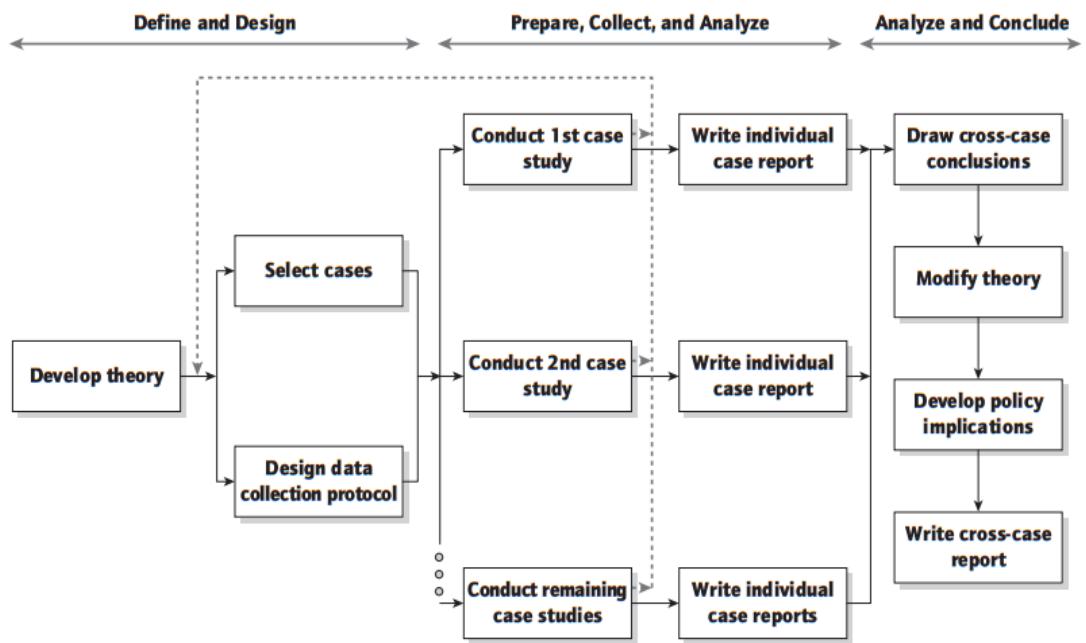
research strategy based on undertaking a unique data analysis phase based on texts and interviews (George and Bennett, 2005).

The case study approach used in this study is one of many research methods common in social science, although it is considered difficult (Yin, 2009). That is to say that a case study is an effective research method for describing an actual phenomenon or depicting a social phenomenon broadly and thoroughly. Researchers are able to obtain in-depth data through various data collection procedures using case studies (Stake, 1995; Gagnon, 2010).

This study designs to conduct an analysis by using a multiple-case design among various types of case study. A multiple-case design includes two or more cases in the same research. Multiple-case designs have become more common in recent years (Yin, 2009). The reason for selecting multiple- rather than single-case design is that multiple-case designs is generally regarded as more persuasive and elaborate (Herriott and Firestone, 1983). In particular, the logic of replication that occurs in multiple-case design is similar that of multiple experiments, and thus can lead to more solid research (Herson and Barlow, 1976).

This study was conducted as shown in Figure 3.2 using the multiple-case design proposed by Yin (2009). First, a theory was developed. The cases were then selected and the data was collected before reports for each case study were created as the case studies were being undertaken. This study explores to draw a comprehensive conclusion after comparing all the cases. During this process, the theory was constantly being modified. The conceptual frameworks were derived before the comprehensive case study was reported. Lastly, the comprehensive report of case study was created.

Figure 3.2 Multiple-case study analysis process



Source: Yin (2009)

3.4. Conclusions

This chapter was designed to contain the broad structure and framework of this research, including the research methodology and research structure. First, the nature of three prominent approaches (quantitative approach, qualitative approach and mixed method) was explained. The characteristics used in each research method were analysed in depth. Moreover, the pros and cons of each method were described in detail. And then, it explained why this research chose the qualitative research instead of quantitative research. Because this thesis aimed to present rationality based on the research objectives, and for that reason, this thesis selected the qualitative research method and multiple-case study in accordance with the research objectives.

Multiple-case study research has become extremely important in sociology and in various areas of social inquiry (Gomm et al., 2000), covers a broad variety of subjects (Yin, 2011), and is recognised as a more stable research method than single-case studies (Herriott and Firestone, 1983). Because of this, this research chose the multiple-case study method in order to uncover meaningful research findings through 21 strong case studies, which will be introduced in the next chapter. Especially in choosing the multiple cases, this study classified the representative platform services in the market into four different kinds based on the type of platform as outlined by Evans et al. (2006) and Evans and Schmalensee (2008): exchanges, advertiser-supported media, transaction system, and software platforms.

The central questions and sub-questions for this research were then created based on the research gaps and objectives. First, the central research questions, which are crucial elements for creating the framework of this research, were created in accordance with the research objectives. The central research questions play the role of setting the overall research direction. Secondly, a total of nine sub-questions were also subsequently created, with three for the first central question and six for the second central question. These sub-questions assist in a deeper exploration of understanding platform business.

Because the research questions are crucial elements for creating the framework of this research, they were created in accordance with the research objectives. A total of nine sub-questions were also subsequently created, with three for the first central question and six for the second central question, so as to gain a deeper understanding of platform business. The overall research design (chapter 4) for this research was created based on these questions.

Chapter 4 Research Design and Data Collection

Social science research should have a clear purpose and performing the research method accurately should help to produce specific findings (Neuman, 2005). Thus, researchers have to remember that data collection should be valid, fair, and directly related to their needs for information (Gagnon, 2010). Furthermore, the data should be collected not for researcher's sake but only for the sake of the findings. Compared with other research areas, business research is not a purely academic discipline because it focuses on many issues and covers every area of society (Bryman and Bell, 2007; Gagnon, 2010). Business researchers need to understand a variety of stakeholders, including company managers, customers, clients, sellers, and buyers, and a variety of business entities, such as companies, co-operatives, and governments, to know how they do their business, how they produce their profits, and how their policies affect business operations.

Case study research is a good means of generating novel theories and of adapting ideas (Eisenhardt, 1989). Hartley (2004) indicated that a case study methodology is particularly appropriate for research questions that require a detailed understanding of organisational processes in business because of the rich data that can be collected in a case study context. A case study methodology also allows a great deal of detail to be collected that would not be easily obtained using other research designs (Yin, 2009), and it collects richer and more in-depth data than other methodological designs. Moreover, it is able to lead to an intimate sense of things – “how they feel, smell, seem” (Mintzberg, 1979, pp. 587-588). Therefore, a case study approach is

appropriate for this research because it involves analysis with a view towards identifying issues and generating insights (Bryman et al., 2011).

To increase the validity of this thesis, I also used a triangulation research strategy, which is “the combination of methodologies in the study of the same phenomenon” (Denzin, 1970, p. 291). Triangulation is a powerful research technique that facilitates the validation by verifying data from two or more sources (Bogdan and Biklen, 1998). It is crucial to minimise the subjectivity of the data (Yin, 2009; Flick, 2014), thus it is used as a key data collection strategy in this study which was gathered from interviews and observations as well as from internal documentation and email communications. Moreover the case study followed the research procedures designed by Eisenhardt (1989) and Yin (2009), and questionnaires were drawn up for the interviews. Lastly, the research findings were validated using the results of the case study research (Flick, 2014).

4.1. Case Selection

In qualitative research, a sample is selected using an intentional and premeditated method known as purposive sampling (Ritchie et al., 2013). The purpose of selecting a particular research unit is to collect data that is highly relevant to the research theme and can provide a rich dataset (Patton, 1990). Case selection is the fundamental task of any case study researcher (Stake, 1995; Cavaye, 1996; Yin, 2009). How, then, should a sample for a case study be chosen? Seawright and Gerring (2008, p. 296) indicated that “case selection in case study research has a

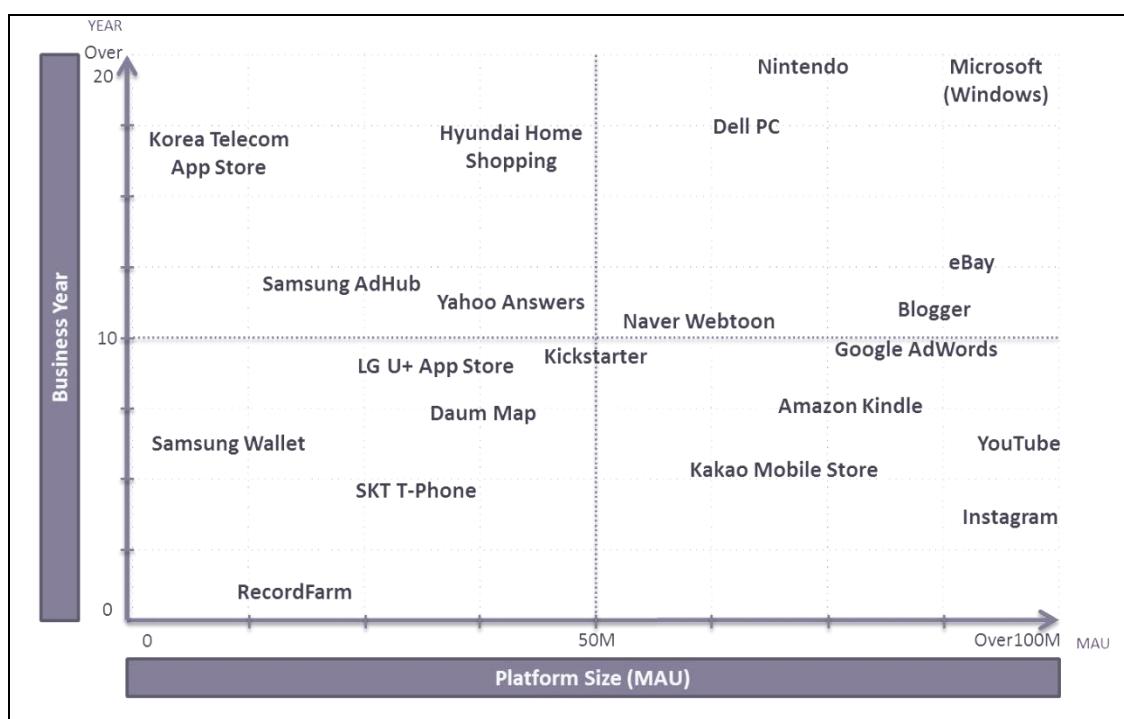
couple of objectives; that is, one desires (1) a representative sample and (2) useful variation on the dimensions of theoretical interest”.

Yin (2009) recommended that the selection of case rely on the style of the research questions, the degree of control that can be exercised over the case, and the focus on current or prior phenomena. Thus, this study chooses cases based on the ‘platform level’, instead of the ‘business level’ or ‘corporation level’, because the research questions in this study focus on platform level phenomena. It also chooses multiple cases and multiple units of analysis in a multiple embedded case study to elaborate on the research (Yin, 2009). Remenyi (1998) insisted that multiple cases provide a powerful framework for data collection, and these cases offer robust explanatory data that help to make generalisations about research questions. Multiple-case studies have been used to increase the persuasive power and generalisability of the data collection process (Miles and Huberman, 1994).

Therefore, in order to increase the effectiveness of this research, it is important to focus on *the quality of the case selection process*. As such, the case selection was conducted as outlined below. First, this research classified representative platform services in the market into four different kinds based on the type of platform as outlined by Evans et al. (2006) and Evans and Schmalensee (2008): exchanges, advertiser-supported media, transaction system, and software platforms. This classification describes the two-sided market in detail by departmentalising the demand-coordinator who plays a role in establishing the cross-side network effects (or externalities). In the second step, in order to analyse and understand general and common platform issues, platforms from numerous fields were selected for study. Lastly, to establish public confidence, I chose not only those cases that put up good results in the market, but from a diverse range platform companies, from rapidly

growing startups to big enterprises, depending on their platform type (see Table 4.1). These included exchanges such as Dell PC, Samsung Wallet, Instagram, RecordFarm, YouTube, and Blogger; advertiser-supported media such as Samsung Adhub and Google Adwords; transaction systems such as eBay, Kakao mobile store, Korea Telecom (KT) app store, Hyundai homeshopping, LG U+ app store, and Amazon Kindle; and software platforms such as Daum map, Nintendo games consoles, SK Telecom T-phone, Microsoft (Windows and MS Office), Naver Webtoon, Yahoo Answers, and Kickstarter. There are fewer cases of advertiser-supported media because most advertising platforms have similar revenue models and value chains, so this thesis adopted two of the leading market players, Samsung Adhub and Google Adwords. In particular, for the case selection, this study endeavours to select a variety of platform business from business year to platform size (see Table 4.1).

Table 4.1 21 selected cases for multiple-case analysis



Exchanges: 6 cases	Advertiser-supported media: 2 cases
<ul style="list-style-type: none"> • Dell PC • Samsung Wallet • Instagram • RecordFarm • YouTube • Blogger 	<ul style="list-style-type: none"> • Samsung Adhub • Google Adwords
Transaction systems: 6 cases	Software platform: 7 cases
<ul style="list-style-type: none"> • eBay • Kakao Mobile Store • Korea Telecom App Store • Hyundai Home Shopping • LG U+ App Store • Amazon Kindle 	<ul style="list-style-type: none"> • Daum Map • Nintendo game console • SK Telecom T-phone • Microsoft (Windows and MS Office) • Naver Webtoon • Yahoo Answers • Kickstarter

4.2. Data Collection Strategy

All the data in this research is new. I used documentary and archival records to gather the secondary data and I conducted interviews and focus groups with industrial managers and business experts between August 2014 and January 2015 (see Table 4.5) in order to gather the primary data. Since the focuses of this thesis are the value chain and platform business strategy with a dynamic approach, I employ a multiple-case approach. In this study, furthermore, the data collection was performed using a snowball sampling method that selected new data collection units derived from already-chosen data collection units.

In 15 out of 21 cases (eBay, Kakao Mobile store, Korea Telecom app store, Hyundai Home Shopping, LG U+ app store, Samsung Wallet, Daum map, SK Telecom T-Phone, Yahoo Answers, Microsoft (Windows and MS Office), Naver, Webtoon, Samsung Adhub, Google AdWords, RecrodFarm, and YouTube), I interviewed industrial managers in charge of relevant services. In the remaining 6 cases, (Nintendo games consoles, Amazon Kindle, Dell PC, Kickstarter, Instagram, and Blogger), secondary data was mainly used and additional complementary data was acquired through interviews with people who worked in or on projects for the case companies.

4.2.1. Secondary Data

Secondary data directly related to the research was collected from sources including public documentation, company newsletters, reports, news articles, journal articles, archive records, reports, seminar notes, and books. This information permits an understanding of the platform companies' overall business environment. The data was collected with a specific focus on the issues examined by this research. The collection process involved repeated Internet searches and gathering materials from conferences and seminars. Secondary data has strengths and weaknesses (see Table 4.2), so while collecting the data, I avoided the weaknesses, like biased selectivity and retrievability, and focused on the strengths such as repeatable test and inventive data collection. Furthermore, I attended three international conferences²⁵ to secure the latest research materials.

²⁵ Cloud Expo Korea 2014 (24, Oct., 2014, Busan, South Korea), IoT/RFID World Congress 2014 (05, Nov, 2014, Seoul, South Korea),

Table 4.2 Secondary data collection: strengths and weaknesses

Source of Evidence	Strengths	Weaknesses
Documentation and Archival records	<ul style="list-style-type: none">✓ Stable-can be reviewed repeatedly✓ Unobtrusive-not created as a result of the case study✓ Exact-contains exact names, references, and details of an event✓ Broad coverage-long span of time, many events, and many settings✓ Often standardised✓ Many tests can be administered to groups which saves time✓ Tests are usually already developed	<ul style="list-style-type: none">✓ Retrievability can be difficult to find✓ Biased selectivity, if collection is incomplete✓ Reporting bias-reflects (unknown) bias of author✓ Access may be deliberately withheld

Source: Yin (2009)

4.2.2. Primary Data: In-depth Interview and Focus Group Interview

In order to support the limitations and weaknesses of the secondary data, the primary data was collected using semi-structured interviews and focus group interviews. I complemented the primary data with internal archival documents and the secondary literature on platform companies, ICT companies, and consultancy and analytics firms. To collect good data, it is vital to identify appropriate respondents. Because

this thesis consists of case studies of platform businesses in the IT industry, it is crucial that data be collected from both platform companies and other IT-related firms to provide a balanced perspective on the platform business environment.

The data collection was conducted between August 2014 and January 2015. 1.5 hour recorded interviews were conducted with each of the 30 interviewees. Two focus group interviews were also conducted (see interview questionnaire, Appendix 1). This study conducted semi-structured interviews in order to draw out the various thoughts and opinions of interviewees about the research theme as much as possible. The interviewees were divided in Phase 1 and Phase 2, with the 15 interviewees in each phase. A focus group interview was then conducted when each phase was completed. The data was analysed in the intervals between the interviews. The participants in the two focus group interviews were asked to evaluate the interview and share their opinions about it in the hope of mitigating the weaknesses of interview data (see Table 4.3) identified by Yin (2009) by minimising bias and preventing data loss and also by analysing the data more thoroughly through triangulation.

For the first focus group interview, a total of 12 participants were sub-divided into the following four groups: MNE, SME, research centre, and venture capital, each of which had three participants. The second focus group interview aimed to review the primary data analysis for the last time based on the secondary data, the interview results with the 30 interviewees, and the first focus group interviews. The participants were sub-divided into the two groups: industry and academia. This

second focus group interview was conducted based on the outcomes of the first focus group interview and total in-depth interviews.

Table 4.3 Primary data collection: strengths and weaknesses

Source of Evidence	Strengths	Weaknesses
Interviews	<ul style="list-style-type: none"> ✓ Targeted – focuses directly on case study topics ✓ Insightful – provides perceived causal inferences and explanations 	<ul style="list-style-type: none"> ✓ Bias due to poorly articulated questions ✓ Response bias ✓ Inaccuracies due to poor recall ✓ Reflexivity – interviewee gives the answer the interviewer wants to hear
Observations	<ul style="list-style-type: none"> ✓ Reality – covers events in real time ✓ Contextual – covers the context of the case ✓ Insightful into interpersonal behaviour and motives 	<ul style="list-style-type: none"> ✓ Time-consuming ✓ Selectivity – broad coverage difficult without a team of observers ✓ Reflexivity – event may proceed differently because it is being observed ✓ Cost – hours needed by human observers ✓ Bias due to participant-observer's manipulation of events

Source: Yin (2009)

In this thesis, interviews with industrial managers, experts, and analysts from platform companies, consultancies, venture capital firms, and universities have two objectives: first, to explore the value chain and stream in a two-sided market which has a distinct group of users on each side, and secondly, to understand how a platform business model successfully enters the market and continues to grow its business s.

I conducted in-depth field interviews with 30 interviewees, 19 of whom are industrial managers from various platform companies, both MNEs and SMEs, with different types of platform businesses. I also conducted additional interviews with a group of experts who are from venture capital, consultancies, research centres, international organisations, governments, and universities. The focus groups were conducted twice. It was first conducted with four groups and then with two groups. Each focus group was conducted when the interviews with all 15 of the participants were completed as a secondary means of re-analysing the data obtained from the interviews and checking whether there were any errors of interpretation or collection.

The interview participants were contacted through the alumni network of KAIST, Samsung Electronics, UN International Telecommunication Union, and Manchester Business School, as well as using social networking platforms such as LinkedIn and Facebook. Interviewees who were able to see the focal phenomena from diverse perspectives were key members of their companies who fully understood their business models. Each interviewee worked at different hierarchical levels, which helped to avoid biased opinions and convergent retrospective sense-making. Managers with less than five years' working experience were excluded from the interview group in order to enhance the specificity and reliability of the results.

I asked industrial managers and experts for their perspectives on the value chain of platform businesses and platform business model based on the dynamic approach. My premise is that, in order to comprehend how a platform business should be constructed and how to be a platform provider, it is valuable to ask 30 industry workers and experts directly about their firms' strategies, how they worked, and why they were considered.

Table 4.4 Characteristics of in-depth field interviews

Platform Business Category	No. of Respondents
Multi-national enterprise	14
Small and medium enterprise	6
Advice Category	
Higher education institute	2
International organisation	1
Consulting firm	3
Society	1
Government	2
Research centre	1

My interview guide comprises three sections:

1. I asked industrial managers and experts to discuss recent, significant platform companies and to describe how successful platform business models differed from failed platform business models.
2. I asked about the value chains of platform businesses, how these value chains are different under a platform business model, and each value chain's characteristics.
3. I asked the industrial managers and experts how their platform business were built and to identify successful and failed cases and strategies within the field of platform businesses using 20 deep questions based on the semi-structured interview method.

Data from the all of three sections was analysed using grounded theory to identify the value chain in the platform business model and a step-by-step strategy that is in accordance with a dynamic approach.

Figure 4.1 Two steps data collection strategy

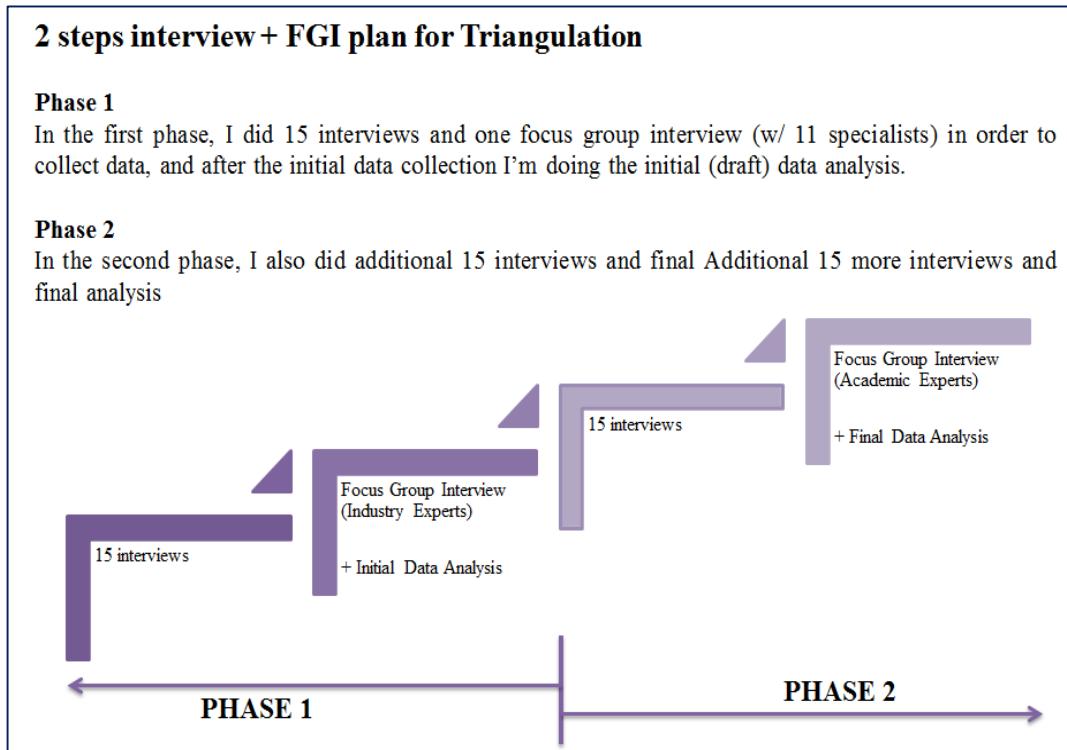


Table 4.5 Interviewees details

1. 15 Interviewees List in Phase 1			
No.	Company	Position	Date
	Team	Education	Types
1	Samsung Electronics	Manager	Aug.15, 2014
	Strategic Planning in Mobile Division	MBA	MNE
2	Accenture	Consultant	Aug.16, 2014
	General Management and Consulting Team	MBA	Consulting Firm
3	National Science & Technology Policy Institute	Principal Researcher	Aug.28, 2014
	Industrial Strategy Division	PhD	Research Centre
4	Korea Adv. Institute of Science & Technology	Professor	Sep.03, 2014
	Graduate School of Software	PhD	HEI
5	Tmaxsoft	Manager	Sep.05, 2014
	Consulting Platform Operation Division	PhD	MNE
6	LG U+	Doctoral Researcher	Sep.10, 2014
	Mobile Division	MBA	MNE
7	SK Telecom	Assistant Manager	Sep.19, 2014
	Product Planning Division	MA	MNE
8	Korea Telecom	Senior Manager	Sep.24, 2014

	Overseas Strategic Investment Team	MA	MNE
9	Samsung Electronics	Principal Engineer	Sep.24, 2014
	Samsung Ad Hub & Wallet Group	MA	MNE
10	Korea Venture Business Association	Honorary President	Sep.25, 2014
		PhD	Society
11	Samsung SDS	Advisory Specialist	Oct.01, 2014
	Business Group	BS	MNE
12	Samsung SDS	Advisory Specialist	Oct.01, 2014
	Business Group	BS	MNE
13	Daum	Assistant Manager	Oct.06, 2014
	Map Service Team	BA	MNE
14	Kakao	Assistant Manager	Oct.06, 2014
	Service Group	BA	SME
15	UN ITU, International Telecommunication Union	Consultant (P3)	Oct.10, 2014
	Asia Pacific Regional Office	MBA	Organisation

2. First Focus Group Interview in Phase 1

No.	Company	Position	Classified Group
	Team	Education	
16	SK Telecom	Sr. Vice President	MNE
	Product Planning Division, Media Business Office	MBA	
17	LG Electronics	Senior Manager	MNE
	Convergence Service Team	MBA	
18	Korea Telecom		MNE
	Retail Business Team	Manager	
19	Daou Tech	Director	SME
	Business Development Department	BS	
20	Mophon Wearables	CEO	SME
		MA	
21	Cable & Telecommunications Co., Ltd.	General Manager	SME
	Solution Division	BS	
22	NIPA, National IT Industry Promotion Agency	Team Leader	Research Institute
	IT& SW Convergence Policy Team	PhD	
23	Korea Telecom Economic Research Institute	Vice President	Research Institute
	IT Policy Research Department	PhD	
24	ROA Innovation Lab	CEO	Research Institute
		PhD	
25	Innopolis Partners LLC.	Manager	Venture Capital
	Investment Group	MBA	
26	Red Herring Inc.	President	Venture Capital
		PhD	

* Total 11 FGI participants (MNE 3, Startup 3, Research Institute 3, Venture Capital 2)

3. 15 Interviewees List in Phase 2

No.	Company	Position	Date
	Team	Education	Types
27	eBay	Manager	Oct.15, 2014
	Business Development Division	BA	MNE
28	Google	Manager	Oct.21, 2014
	Business Strategy	BA	MNE
29	RecordFarm Inc.	CTO	Oct.27, 2014
	R&D Lab	MA	SME
30	YouTube	Manager	Nov.02, 2014
	Partner Technology Manager	MS	MNE
31	AdWords	Manager	Nov.04, 2014
	Technical Account Manager	BS	MNE
32	Hyundai Home Shopping Co.,	MD	Nov.11, 2014
	Sales Division	BA	MNE
33	Microsoft	Vice President	Nov.17, 2014
	Service Planning	MA	MNE
34	ROA Consulting	President	Nov.23, 2014
		PhD	Consulting
35	Arthur D. Little	Consultant	Nov.26, 2014
	Strategy & Organisation	BA	Consulting
36	Anyfive Co., LTD	General Manager	Nov.30, 2014
	Technical Support	BA	SME
37	Naver Inc.	Assistant Manger	Dec.02, 2014
	Webtoon Team	BA	MNE
38	Korea University Holdings	Director	Dec.06, 2014
	Technology Transfer Office	BA	University
39	Yahoo	Director	Dec.11, 2014
	Managing Development	MS	SME
40	Ministry of Trade, Industry & Energy	Director	Jan.05, 2015
	Corporate Partnership Division	BA	Government
41	Ministry of Trade, Industry & Energy	Deputy Director	Jan.05, 2015
	Corporate Partnership Division	BA	Government

4. Second Focus Group Interview in Phase 2

No.	Company	Position	Classified Group
	Team	Education	
42	Korea Venture Business Association	Honorary President	Industry
		PhD	
43	ROA Consulting	President	Industry
		PhD	
44	Korea Adv. Institute of Science & Technology	Professor	Academia
	Graduate School of Software	PhD	
45	Kyunghee cyber university	Professor	Academia
	Department of ICT	PhD	

* Total 4 FGI participants (Industry 2, Academia 2)

*HEI: Higher Education Institute

*MNE: Multi National Enterprise

*SME: Small and Medium Enterprise

I gathered data on each platform firm's business model, strategy, capabilities, and management processes. This in-depth data gathering process allowed the production of detailed data. I selected interviewees who have worked in platform businesses directly or indirectly, and also select interviewees who were recommended by industry experts or experts in the ICT industry or in technological initiatives. I gathered as many insights as possible from different interviewees about their different services and business models, and completed the interviews only when I have interviewed people to secure sufficient data.

I also interviewed people outside of platform companies, such as people from consultancy and analytics firms and universities. These people have either had or still have considerable knowledge of the research topic, and I asked them to discuss platform supply strategy and revenue streams. The interviews were semi-structured because semi-structured interviews allow both the interviewers and the interviewees to be more prepared, more competent, and more freely able to present their opinions.

4.3. Data Recording Procedures and Ethics

4.3.1. Data Recording Procedures

Deciding what to record is an integral part of qualitative data collection. In particular, it is always necessary to review and modify the initial notes created during the period of actual, on-premises study in order to improve the completeness and accuracy of the data (Yin, 2010). This study utilised an observational interview protocol during the interviews and focus group interviews to observe using various

methods and manage the information records during the observation. This study created descriptive and reflective notes, as proposed by Creswell (2003). The descriptive notes contained mainly the information of interviewees, whereas the reflective notes contained mainly the thoughts and ideas generated during the interviews. In addition, any information in the interviews was recorded on a recorder and a written note after the interviewees gave their consent.

4.3.2. Ethics

Hesse-Biber and Leavy (2006) stated that a researcher needs to predict ethical problems that would likely occur during the research process. This is justified by Punch (2013), who argued that ethical problems are inevitable because social science research is designed to collect data about and from humans. A researcher should protect research participants and also trust them. Moreover, a researcher should ensure that there is not any damage to the research itself. A researcher should also inform the participants about any illegal activities or misuse associated with the organisation and facilities of research participants to overcome potential problems (Israel and Hay, 2006). There are ethical problems associated with the literature review process and the data collection and evaluation, such as privacy, distortion, and mistranslation (Israel and Hay, 2006). That is to say, an ethical problem could occur any time (Punch, 2013). Thus, it is imperative to maintain strict ethical standards for the entire period during which one works as a researcher (Locke et al., 1984; Merriam, 1988; Marshall and Rossman, 2010).

Therefore, this study follows the ethical code of conduct proposed by the American Psychological Association Ethics Office²⁶ and the British Psychological Society²⁷. The practice of ethics implies more than just following the code of conduct proposed by the professional academic societies, however: it is necessary to consider ethical dilemmas resulting from the research process (Berg et al., 2004; Kalof and Dan, 2008). In addition, it is necessary to convey the research questions and goals to the research participants, and to outline any foreseen problems (Sarantakos, 2005; Blaikie, 2009).

Hesse-Biber and Leavy (2006) stated that it is important to consider how ethical problems inherent in research could be addressed when selecting a research problem. In other words, a researcher verifies the important problems with the research and presents a rationale for the importance of the research (Spradley, 1980). It is also important to confirm the problems that may provide significant benefits to people other than those included in the study when confirming a research problem (Punch, 2013). Many ethical problems take place in the process of collecting data. Thus, extra precautions were taken in this study. No confidential information about the participants was verified in this study and the participants were informed about the risk of non-confidentiality (Giordano et al., 2007). Moreover, an accurate description of the research goals and expected outcomes was provided to the participants before the interviews and focus groups were conducted (Creswell, 2003).

²⁶ <http://www.apa.org/ethics/>

²⁷ <http://www.bps.org.uk/what-we-do/ethics-standards/ethics-standards>

4.4. Validity and Reliability

4.4.1. Verification of Research Validity

This study adopts Lincoln and Guba (1985, p. 89) criteria of evaluation: ‘Truth value’, ‘Applicability’, ‘Consistency’, and ‘Neutrality’. First of all, ‘truth value’ refers to credibility and focuses on how accurately the findings of the study reflect reality. This study confirmed the result of the analysis and the data included in the analysis with the study participants. Secondly, ‘applicability’ is a concept similar to the external validity of a quantitative study, which represents the outcomes of the focus-group interview in this study, followed again by a discussion. Specifically, as for the second focus-group interview, it is a procedure of ultimate discussion with the outcomes from the in-depth interview, conducted with 30 participants, including the in-depth interview conducted with 15 participants about the previous data collection phase 1 and an in-depth interview conducted with an additional 15 participants in the data collection phase 2, as well as the one-time focus-group interviews. There was positive feedback in this discussion about the study’s representation of platform business strategies and its growth model from the participants in the focus group interviews. Third, ‘consistency’ means that the reliability of quantitative study that can be replaced with auditability. In this study, reliability was enhanced throughout the analysis by extracting the primary data from the secondary data and triangulating the data collection. Two participants from each of the academic and academic-industrial cooperation groups were doctoral degree

holders and they analysed the original material, discussed them, derived and edited the results, and offered their advice. Fourth, ‘neutrality’ relates to the objectivity of a quantitative study. In this study, interviews were conducted with platform business companies and with non-platform business companies, such as consultancies and venture capital firms, from which various opinions were collected. In addition, an effort was exerted to maintain neutrality through advice and discussion.

4.4.2. Acquisition of Research Reliability

As Yin (2009) suggested, effort must be exerted on two issues to make research reliable. First of all, the database for the case study was developed to specifically indicate how the proofs were collected and from which sources, giving details of where and when they were recorded and the position, status, and academic background of the interviewees. Other investigators and researchers will be able to review this database of proofs obtained from the case study, allowing some of its limitations to be overcome and its reliability to be improved (Yin, 2009).

In addition, during the development of the case study protocol, the conditions under which the proofs were collected were made consistent with the study procedures and problems specified in the protocol, which included measurement tools and general rules and procedures (Mills et al., 2009). Protocol is important for improving the reliability of a case study: it allows researchers to collect data correctly in every case (Yin, 2009). The database and protocol were developed to improve the reliability of this research.

4.5. Conclusions

This chapter presented the data collection strategy used in this study. In particular, a triangulation method was utilised to mitigate the weaknesses of qualitative research, such as bias and lack of generalisability. Both primary and secondary data were collected. The primary data was collected in two phases (Phase 1 and Phase 2). In each phase, in-depth interviews with a total of 15 participants were conducted (30 interviews in total). When each phase ended, the data collected through the focus group interviews was re-analysed and evaluated. Moreover, a variety of the secondary data obtained from the interviewees, such as collected materials, newspapers, news, editorials, and companies' internal reports was compiled to be used along with the primary data in the analysis (see Table 4.6). The study aimed to avoid the ethical problems that would likely occur in the research process, which have gained a lot of attention in recent years. In addition, in order to verify the research validity, this chapter established 'Truth value', 'Applicability', 'Consistency', and 'Neutrality' as the research evaluation criteria. To make the research reliable, a database for the case study and the case study protocol was developed and the conditions under which the data and proofs were collected were made consistent with the study procedures and problems, which were specified in the protocol (Mills et al., 2009; Yin, 2009). This database made the data analysis of the next chapter exquisitely.

Table 4.6 Research methodology process

Questionnaires	Secondary Data	Primary Data
<p>Make questionnaires</p> <p><u>Questionnaires</u></p> <ul style="list-style-type: none"> - Questions asked of specific interviewees - Questions asked about individual cases - Questions asked to ascertain a pattern of findings across multiple cases - Questions asked of an entire study – for example, calling on information beyond the case study evidence and including other literature or published data that may have been reviewed - Normative questions about policy recommendations and conclusions, going beyond the narrow scope of the study 	<p>Documentary Data</p> <p><u>Documentation</u></p> <ul style="list-style-type: none"> - Agendas, announcements, meeting minutes, and official documents - Administrative documents, news and magazine articles, and public reports. <p><u>Archival Records</u></p> <ul style="list-style-type: none"> - Public use files - Service records and Organisational records - Survey Data - Statistical Data 	<p>Interviews and Focus Group Interviews</p> <p><u>In-depth interviews and FGI</u></p> <ul style="list-style-type: none"> - Needed to follow my own questionnaires and enquiries - Needed to ask actual questions in an unbiased manner - Interviewees: platform companies and non-platform companies from the ICT industry, consultancy and analytics firms, and universities

Chapter 5 Data Analysis

The data analysis in this qualitative research aims to understand the studied phenomenon by deriving valid results from the collected data, in line with the aims of qualitative study (Dey, 1993). Merriam (1988) and Marshall and Rossman (2006) have insisted that data collection and analysis should be conducted at the same time. In other words, as a qualitative study, the collection and analysis of data tend to occur simultaneously. Unlike in quantitative studies, which start to analyse the data after it has been collected in the field, qualitative studies start to analyse the data at the point of collection in the field, and gradually develops this analysis along with its collection. This research therefore conducted its data collection and analysis concurrently.

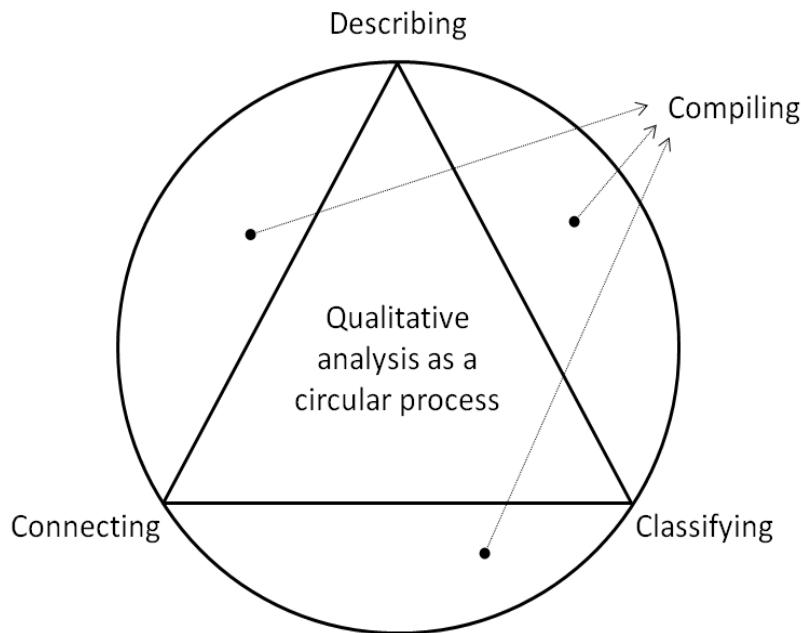
Schatzman and Strauss (1973) insisted that qualitative studies seek to classify objects, humans, and cases. It must therefore index or code its data into categories over the course of the data analysis (Jacob, 1987). In addition, it also needs to understand and explain the subjects and patterns (Agar, 1980), and the data should be repetitively reviewed and continuously coded during the analysis (Merriam, 1988). Patton (1990) emphasised that three methods were needed for qualitative data analysis. First of all, the data must be organised and accumulated in chronological order by a researcher. Secondly, mass data must be converted into a summarised and compressed form. Thirdly, a qualitative researcher must find

patterns and subjects in the data. Dey (1993) defined data analysis as a course of analytically clarifying and deriving categories while reducing the number of database or subject elements, in order to clarify and derive the characteristics subjects and meanings of the data. According to Dey (1993), analysis in a qualitative study is mainly performed as follows:

- Description: Comprehensive and thorough explanation of the situation where in which the behaviour occurs, of the intentions of the actors, and of the course of development of social behaviours.
- Classification: Categorisation of the data, or conversion of pieces of data into a subject or code.
- Connection: Creation of new meaning through the re-organisation of categorised and sub-divided data.

In order to analyse a multiple-case study, this research commingled data compilation with Dey (1993)'s process of analysis, which is adoptable for systematic analysis. Firstly the database was finalised through data sampling, which was based on pre-collected data. Then, the three procedures that were based on qualitative analysis were analysed as a circular process, as suggested by Dey (1993). Hereupon, data analysis was proceeded with mainly in four orders of 1) compilation, 2) description, 3) classification, and 4) connection to this research.

Figure 5.1 Qualitative analysis as a circular process with data compiling



Source: Author's elaboration based on Dey (1993)

To analyse the data of this research effectively, the first step is ‘compilation’. The objective in this step is to collect all the data, in order to establish the final aggregated database. The core procedure of the second stage, ‘description’, consists of the explanation of the data: in this stage the situations and results that occurred are explained comprehensively based on the data obtained from the case analysis. The third stage is ‘classification’. In this stage, the data was encoded based on the database prepared in the first stage and the description created in the second stage. Nvivo 10 was used to encode the data, making the outcome even more elaborate. The fourth stage is ‘connection’. The coded data is analysed by pattern matching and using a conceptual framework. Pattern matching applies the logic of comparing the empirically observed patterns and the expected patterns in advance, as suggested by Campbell (1975), and represents a method of suggesting theoretical propositions and comparing them to the information obtained from the case study. In addition, a

dynamic analysis of the cases of platform companies was conducted according to time flow, based on the ‘conceptual framework’ prepared by the theoretical propositions established in the literature review.

5.1. Multiple-Case Study Analysis

In-depth analysis based on using case studies is often used alongside statistical verification to research companies (Levine et al., 1982; Eisenhardt, 1989; Larsson, 1993; Stake and Savolainen, 1995; Merriam, 1998). These are powerful methods of confirming and analysing patterns (Lucas, 1974). This method is more appropriate when the case study has certain analytical levels as an organisation unit, or a wide range of conditions in interest (Jauch et al., 1980), or, if the companies are related to managerial work (Bullock and Tubbs, 1987). However, there might be some bias resulting from the researcher; this can also be an issue when deriving generalisations from only one or two cases. Hereupon, Shaughnessy and Zechmeister (1990) said that deriving the data from the data collection can enhance the generalisability of the case study research. They emphasised that generalisability is determined by the diversity of the collected data. This is why this study has selected a multiple-case study as its core research method (Kazdin, 1981), among all the methods, to overcome the weaknesses and limitations of a single case study.

In this study, 21 platforms²⁸ were targeted for analysis, as a multiple-case study proceeding in-depth interviews, with employees of these companies.²⁹ In addition, a

²⁸ Dell PC platform, Samsung Wallet platform, Instagram platform, RecordFarm platform, YouTube

meeting was also held with advisory groups who have worked for platform companies to corroborate the findings from an outside perspective. The analysis of the platform companies was also conducted in a more objective manner: various types of research methods and verification sources were used to elaborate on the results of the analysis as a triangulation through focus-group interviews, which were conducted twice.

A multiple-case study is objectively more valuable than a single-case study, in terms of the interpretations made through repetitive research (Yin, 2009). This study intends to analyse the value chain of platform companies using existing cases of several companies and their business models from a dynamic perspective. In addition, it aims to identify how the value chain differs in a platform environment. For this, value creation and network effects were focused on as a sub-analytic unit such that it was possible to derive differentiated characteristics and strategies for each of the models.

This study is based on theoretical propositions known as the evaluability hypothesis. Theoretical propositions help a researcher to know which data to focus on and which to ignore (Marshall and Rossman, 2010). In addition, they configure the overall framework of the case study, and encourage the researcher to derive alternative explanations. In other words, theoretical propositions explain the cause-and-effect relationship and provide the solution to questions of ‘how’ and ‘why’, giving the

platform, Blogger platform, eBay platform, Samsung Adhub platform, Google Adwords platform, Kakao Mobile Store platform, Korea Telecom App Store platform, Hyundai Home Shopping platform, LG U+ App Store platform, Amazon Kindle platform, Daum Map platform, Nintendo game console platform, SK Telecom T-phone platform, Microsoft (Windows and MS Office) platform, Naver Webtoon platform, Yahoo Answers platform, and Quirky platform

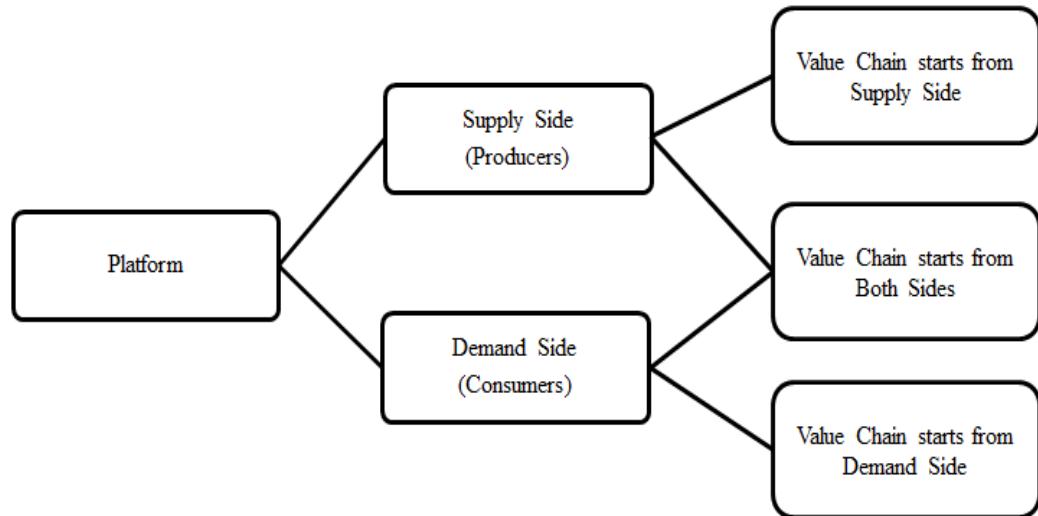
²⁹ Because some famous platforms, like YouTube and Nintendo, have enough open data and documents, interviews with industry expert and companies’ open data were substituted for interviews with company employees.

case study analysis its overall direction (Hartley, 2004; Yin, 2009). Therefore, propositions were derived, according to each of the central questions, before proceeding with the case.

Central Question 1: How are the value chain and stream changed in the platform business model?

Proposition: According to the unique nature of two-sided market, there are three major types of value chain model in the platform. In other words, there exist three types of platform business model in accordance with the value chain.

Figure 5.2 Three types of platform business model according to the direction of value chains

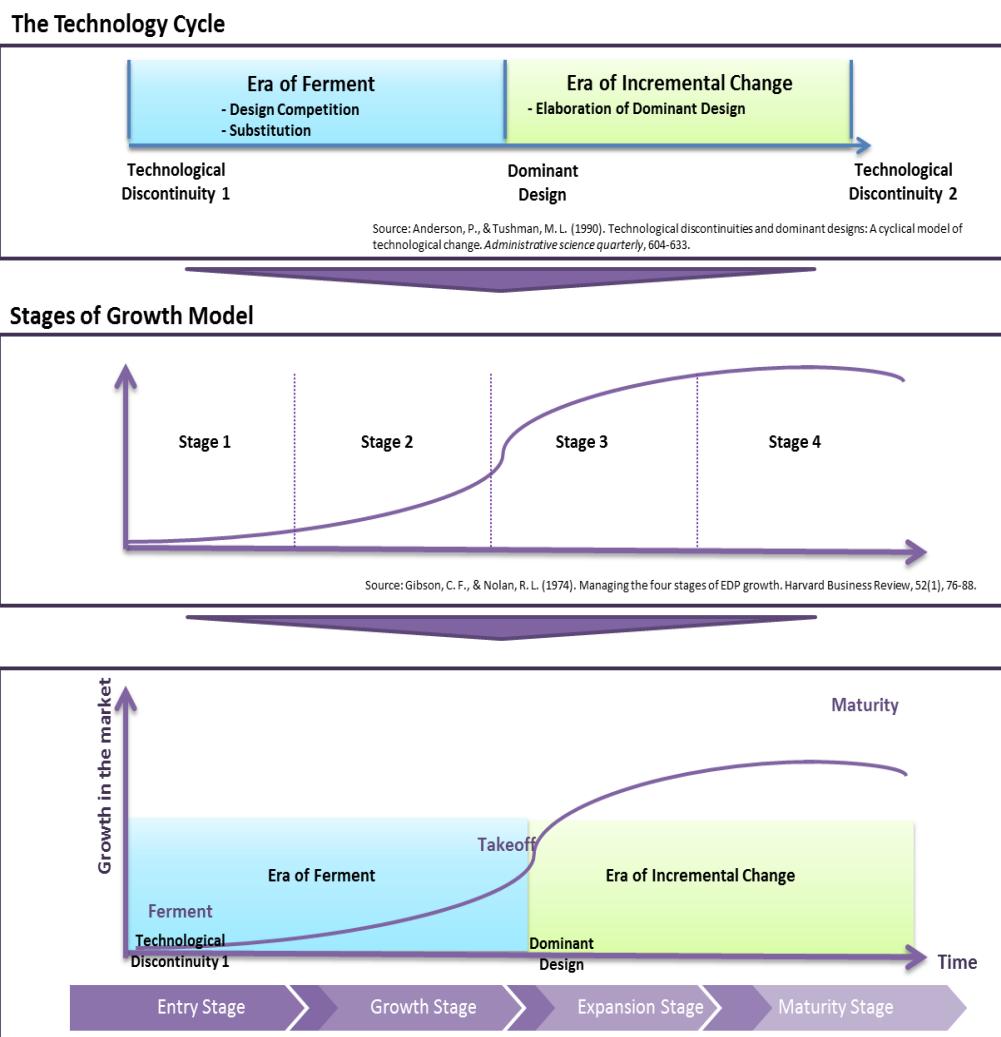


Source: Author's elaboration

Central Question 2: How could a step-by-step business strategy based on dynamic approach and capabilities be constructed?

Central proposition: According to Anderson and Tushman (1990) and Gibson and Nolan (1974), platform businesses have four major growth stages, and different core elements and strategies exist for each stage

Figure 5.3 Platform business model with four major stages

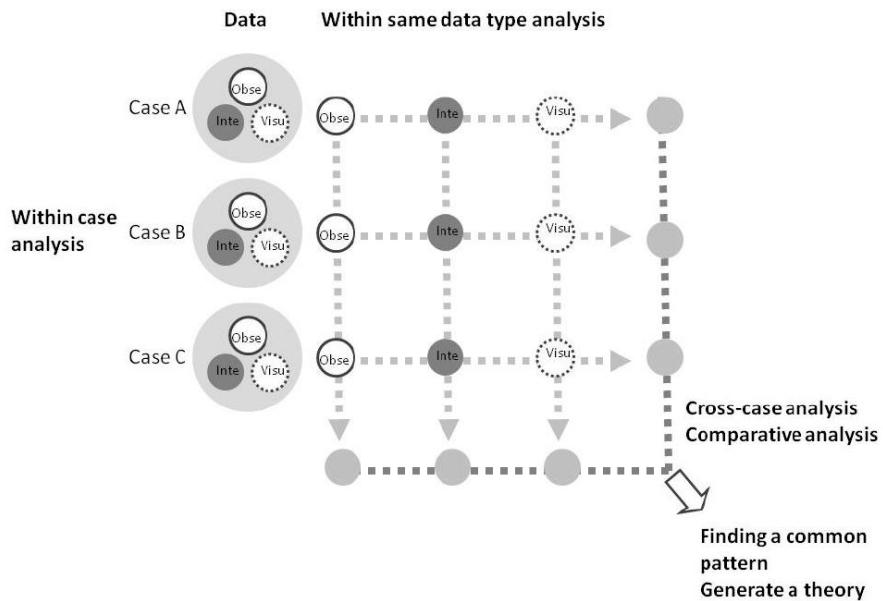


Source: Author's elaboration from Anderson and Tushman (1990) and Gibson and Nolan (1974)

To ensure the reliability of the case study and the accurate analysis of the companies, various company data and previous studies were collected between May 2014 and January 2015. During this period, practical repetitive studies were implemented on the platform companies. In addition, the propositions derived in this case were identified, and data and information were logically connected. The major part of this study's analysis was relating the data and the interviews. Therefore, internal data from the studied companies was used primarily to reduce the subjective interpretation of the researcher. In addition, inquiries were sent prior to the interview such that insufficiently covered areas could be addressed in the first interview, which was supplemented via telephone, e-mail, or visit.

In order to supplement the 'pattern matching analysis' and the 'conceptual framework', as identified by the case studies and in-depth interviews, focus group interviews were conducted twice, on 12th October 2014 and on 15th January 2015. In the first, a total of four groups, MNEs, SMEs, research institutes, and venture capital firms, were separated and proceeded with. In the second focus-group interview, the previously analysed data was reviewed. The participants were from industry and academia and were all holders of doctoral degree holders. This second focus group reviewed the outcomes derived in the primary analysis.

Figure 5.4 Data Analysis procedure of within and multiple-case studies



Source: Yin (2009)

5.2. Data Compilation; The Database

The first stage of analysis conducted in this study is data compilation, which should be performed first, regardless of the analysis of the qualitative data (Yin, 2010). The core element of this stage is preparing the database. In other words, the procedures for structuralising the data in a systematic manner were performed before the analysis was begun. Such structuralising work greatly supports a researcher's data analysis (Yin, 2010), and it is important to establish a database before coding. In general, a database is an important part of the study (Maxwell, 2005; Yin, 2010) which allows the data to be classified systematically into thoroughly prepared stages with high standards.

There has been considerable discussion since 1990 of the usage of software (CAQDAS³⁰) for qualitative data analysis (Lee and Fielding, 1991; Bull, 1992; Glesne and Peshkin, 1992; Burroughs-Lange and Lange, 1993; Dey, 1993; Bryman and Burgess, 1994; Miles and Huberman, 1994; Richards and Richards, 1994; Coffey and Atkinson, 1996; Miles and Weitzman, 1996; Mason, 2002; Hesse-Biber, 2010; Silverman, 2015). Mason (2002) insisted that utilising both manual work and computer work during the analysis to interpret and classify data made reducing the amount of data more convenient. Hesse-Biber and Crofts (2008) evaluated the period when qualitative research analysis using software programs was widely used in all the social-science areas of academia including education, nursing, sociology, anthropology, criminology, politics, business and management that it encouraged innovation and that more qualitative data was managed and analysed at this than during any other time period.

CAQDAS has been used to collect the records in this study systematically and formally. QSR Nvivo 10, which most researchers use during CAQDAS, was used for this study. Nvivo 10 was equipped with the data, an index system, and theoretical work functions so that categorising and structuralising of the data could be performed efficiently, step by step, from the perspective of a researcher; this also made it possible to process large amounts of data. This was particularly useful when loading the data collected from the previous interviews and focus-groups, as well as from webpages, social media, and online content, which was recorded on the Internet using such programmes as Evernote, which also made it possible to process the data swiftly (George and Bennett, 2005). Nvivo10 therefore seemed to be an appropriate program for this study. Nvivo was continuously used in the analysis

³⁰ CAQDAS: Computer Assisted Qualitative Data Analysis

during the compilation phase and during the coding work in the next classification phase, as well as during the analysis work in the connection phase.

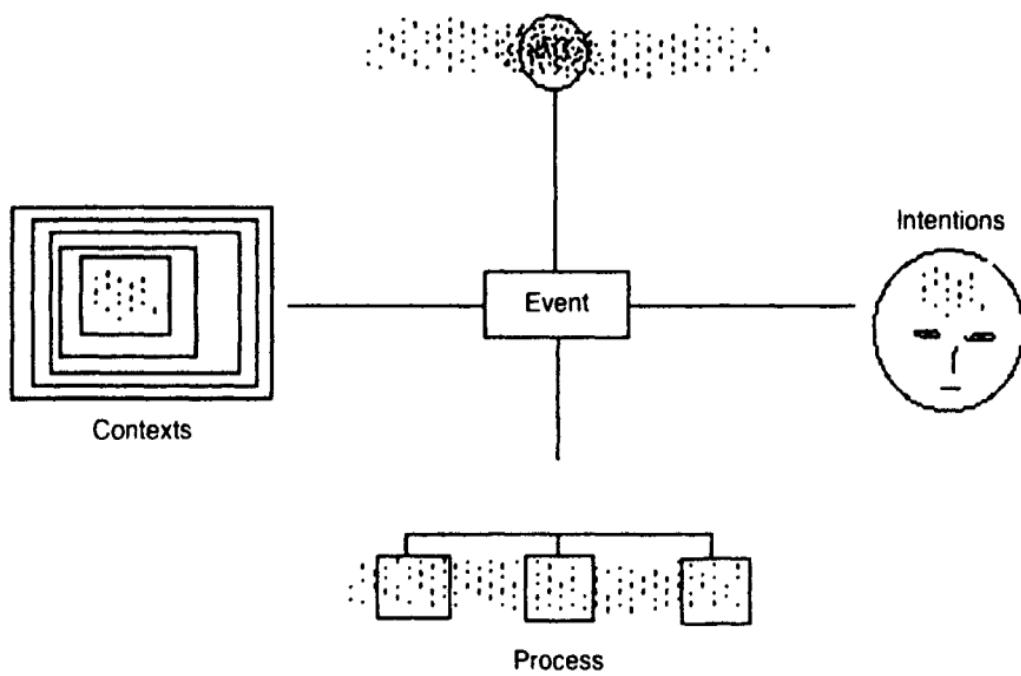
5.3. Data Description

One of the characteristics for qualitative studies is the expression system which shows the data and the results of the study in a predicative form over numbers (Marshall and Rossman, 2010). This is related to the purpose of qualitative study, which is to represent the experience, life world, and understanding of humans. There are limits to the extent that these things can be represented numerically, and since the expression of phenomena and reality numerically has limitations, qualitative studies should not convert or reduce the data, but rather should proceed with their analysis using enriched data which is a close as possible to its original format.

Therefore, ‘data description’ in a qualitative study aims to acquire transparency to facilitate comprehension of reality. In a qualitative study the researcher should distinguish his or her opinion from those of the study participants and give information in detail such that it can be fully understood: in-depth statements and expressions were particularly important. Dey (1993, p. 274) insisted that “thick description is as important as anything else in a qualitative study”. Unlike ‘thin description’, which delivers simple phenomena or behaviours, as shown on the surface, ‘thick description’ indicates the state of what happened in the field, along with the unique contextual and situational conditions, to ensure it that the data is as specific, detailed, and enriched as possible (Denzin, 1989). This not only represents the hidden intention, assumptions, and experience of the study target, but also makes

it possible to come closer to the study's target. Figure 5.5 shows where the meaning of the data is in the interview (Dey, 1993). Thus, when it comes to writing the data description, I always considered context, process, and intentions. Data description is greatly important element of the data analysis in both multiple-case studies and qualitative studies, so most of the time was invested in it. Transcripts were browsed and prepared for research impressions. The transcripts were then read one by one and line by line and analysed in terms of the components and strategies of platform businesses for each of the stages of the growth model.

Figure 5.5 Three aspects of description in qualitative analysis



Source: Dey (1993)

5.4. Classification

Classification considers how to structuralise the data properly, how to establish data compilation and description, and how to categorise it (Dey, 1993; Creswell, 2003).

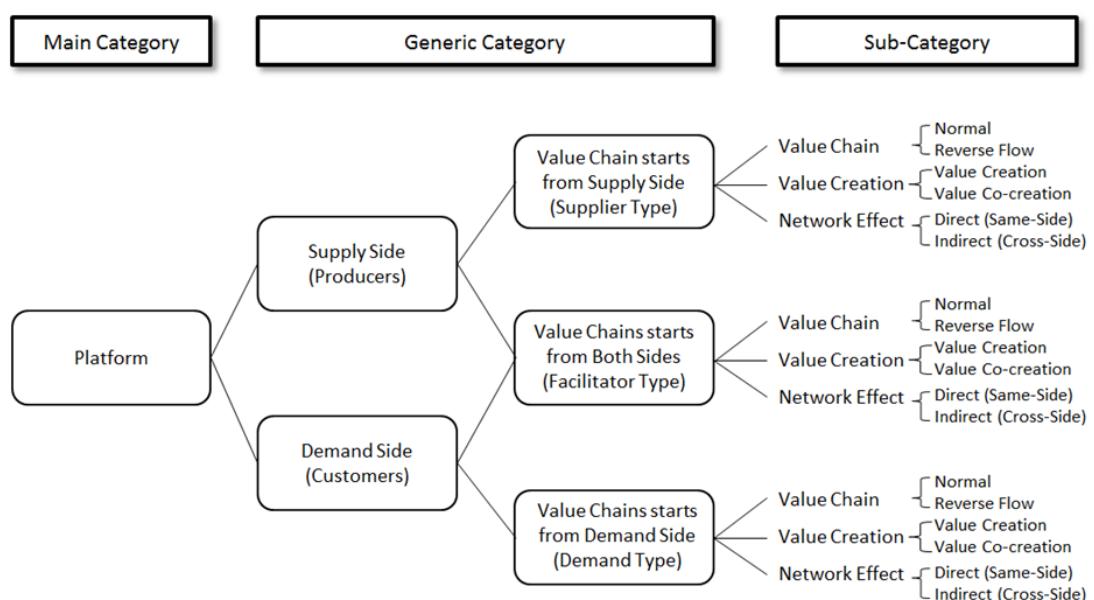
With regards to the analysis of the qualitative data, Stabell and Fjeldstad (1998) suggested that one of the most important qualitative data analysis is the categorisation of the data and connection of it with the categories. They underline that the categorisation of the data and the connecting categories needs to be done in an analytic way, because qualitative analysis demands the description as well as the interpretation of the phenomena under study. During this phase, a series of idea continuously came up throughout the analytic procedures and were recorded. Merriam (1988) and Saldana (2009) emphasised the need to stop and immediately take note of anything that comes up.

The database and description made during the previous two phases consist of behaviour, case, target, opinion, and explanation. Classification, in other words, shows that coding was performed to connect them to a certain list of items. Coding means the organising the data into pieces of text before granting it meaning (Rossman and Rallis, 2003). In this study, text and visual data were collected and data categorising sentences or temporal data were noted, before the categories are named.

Classification was undertaken based on the analytical procedures suggested by Tesch (1990). First of all, prior to coding, the database and description prepared in

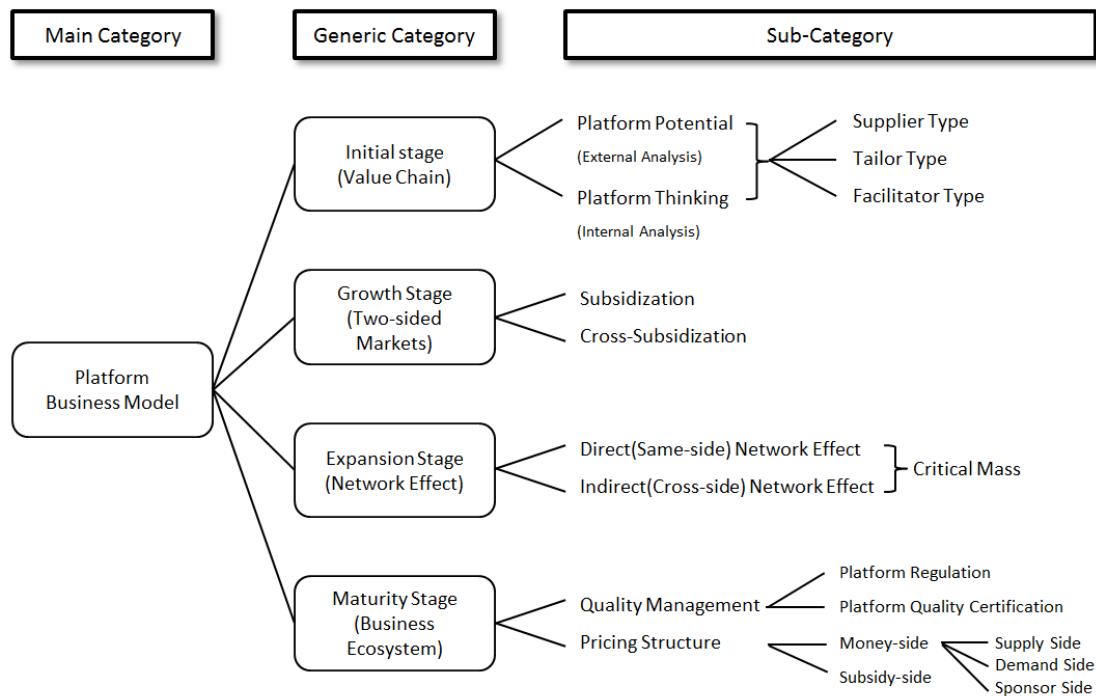
the previous phase were read thoroughly and I recorded the thoughts that came up. Core meaning was given more thought than informational content. A list of the entire subject was then prepared, grouping each of the related subjects into one category, and expressing them on a chart. They were then organised into a major subject, a unique subject, and other subjects. Collected data was then sought and prepared with this list. Subjects were coded, and codes were recorded next to the proper text. With this procedure, whether it was possible to derive new categories and codes was confirmed. The words that could best express the subject were found, and the categories were prepared. Related subjects were categorised, and related categories were connected, in the hopes of reducing the category list. The coding therefore required a considerable theoretical input. Lastly, the preliminary analysis was conducted by collecting data that belonged to each of the categories.³¹

Figure 5.6 Developing a more refined category list for central question 1



³¹ The example codes and themes developed using NVivo 10 are available in Appendix 3.

Figure 5.7 Developing a more refined category list for central question 2



5.5. Connections

The making of connections indicates the production of new meaning by re-organising the coded data. In other words, the dissected data must be put back together before it can be analysed based on emerging patterns and connections. Two different case study techniques were used based on each of the major propositions of this study. The first proposition is ‘Typology; there are three major types of value chain model in the platform. In other words, there exist three types of platform business model in accordance with the value chain’. This was analysed by matching the theoretical patterns derived from the theoretical propositions with the observed patterns confirmed by the case study.

The second proposition is ‘Dynamics; platform businesses have four major growth stages, and different core elements and strategies exist for each stage’. The ‘cause-result’ patterns of the cases analysed. They were based on the conceptual framework prepared according to the literature review and logical propositions for matching. The second proposition had to be analysed dynamically, so a more conceptual framework seemed more appropriate. Seven sub-propositions (sub-variables) were derived from the two study propositions. The overall pattern, including the sub-variables, was analysed using the conceptual framework shown in Figure 5.9.

Central proposition 1 (Typology): According to the unique nature of the two-sided market, there are three major types of value chain model in the platform. In other words, there exist three types of platform business model, in accordance to the value chain.

Sub-proposition 1: The direction of value chain might be different for each of the platform business models.

Sub-proposition 2: Value creation and value co-creation might be different for each of the platform business models.

Sub-proposition 3: Direct network effect and indirect network effect might be different for each of the platform business models.

Central Proposition 2 (Dynamics): According to Anderson and Tushman (1990) and Gibson and Nolan (1974), platform businesses have four major growth stages, and different core elements and strategies exist for each stage.

Sub-proposition 4 (stage 1): Development of new platform might be available through internal/external analysis of the company.

Sub-proposition 5 (stage 2): Solving the chicken and egg problem, an endemic problem of the platform, is the key to building two-sided markets, and this problem might be solved by subsidisation and cross-subsidisation.

Sub-proposition 6 (stage 3): To ignite network effects, platform providers must reach critical mass, and each type of platform business model will reach a critical mass point differently.

Sub-proposition 7 (stage 4): To continue the growth of the platform business, the establishment of business ecosystem is the key factor for a platform business. Platform quality management and revenue structure are required to complete the business ecosystem.

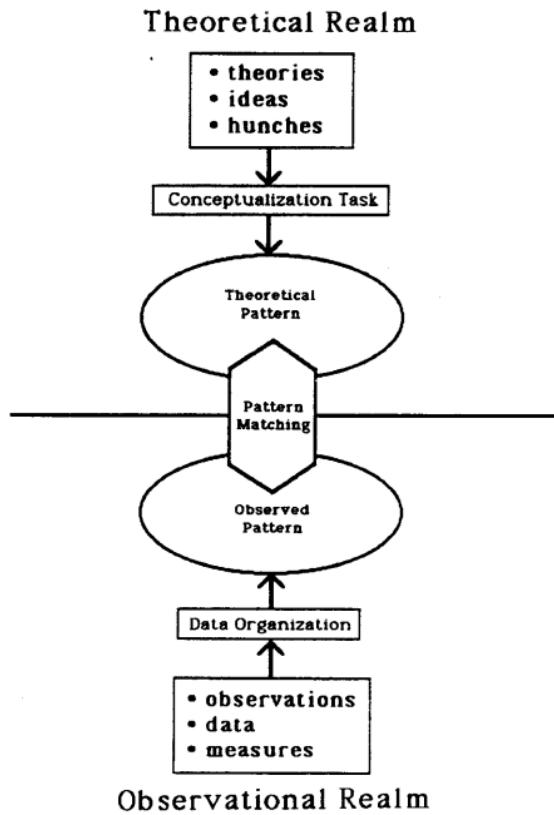
5.5.1. Pattern Matching

Yin (2009, p. 145) described “pattern-matching logic” as one of the most desirable analytical techniques for case study analysis. This technique compares the observed pattern based on experience and the predicted, theoretical pattern (Trochim, 1989). If the observed pattern is consistent with the predicted pattern, the relevant case study acquires more internal validity. Pattern matching is the essential process of ‘theory-testing with cases’ (Trochim, 1989), which consists of comparing an observed pattern (a pattern of measured primary data) with a theoretical pattern (a hypothesis based on secondary data), and deciding whether these patterns fit (resulting in a match). Unlike pattern recognition, the distinguishing characteristic of pattern

matching is that the expected theoretical pattern is made first, before the matching takes place. In particular, this method is used to anticipate the patterns of specific variables before data has been collected from the case studies. Therefore, this study anticipates the pattern of certain variables using theoretical analysis based on the literature review and other secondary data, before it collects the primary data from the case study. It enables true cases in the case study to be identified.

Yin (2009) insisted that the pattern-matching analytic technique was not just applicable to complicated case studies or variables, but also to simple patterns that targeted the minimum scope of independent and dependent variables. In other words, this technique is available even when there are only predicted patterns and observed patterns on one independent or dependent variable. As long as are variables have different, the pattern-matching technique is possible. In addition, if the number of variables is small, then it is easier to compare the results more thoroughly. Simple patterns might be more appropriate for deriving a cohesive analysis. In addition, according to Yin (2009), realistically there are no measurement methods or statistical techniques that could compare the accuracy of pattern-matching techniques. As a result, it might not be desirable to use statistical techniques for pattern matching. If there are no criteria for insisting on the accuracy, however, an effort should be taken to clarify more obvious rather than superficial patterns. Of course, Venkatraman (1989) argues that the relationship of ‘fit as matching’ also could be verified by analytical methods such as deviation score analysis, residual analysis, and analysis of variance. Because the main purpose of this research is to understand the value chain and value streams in the two-sided market, however, such statistical techniques were excluded in the scope of this study.

Figure 5.8 The basic pattern matching model



Source: Trochim (1989)

In this study, the theoretical replication of cases, applied with dependent variables, is used as a pattern (Yin, 2009). In other words, two contradicting cases were selected, in terms of independent variables. Afterwards, if there were specific independent variables, predicted patterns were derived. However, if there were no such independent variables, the results were deemed to be inconsistent with predictable patterns. Therefore, it became possible to draw a strong conclusion the effect of particular independent variables (Yin, 2009). Such a comparison method is known as congruence testing (Bennett and George, 1997). In addition, both theoretical patterns and observed patterns were limited to either ‘fit’ or ‘misfit’ in the pattern-matching, with the intention of using simple patterns if possible. The persuasive

power of the analysis results were intended to be improved through comparison of extreme cases and clarifying obvious patterns.

The concept of fit is based on an underlying theory in which whether strategies and structures fit with one another can be indicated with either a 0 or a 1, without reference to any particular outcome. Such a result or inference can be verified by the external criterion of performance in the future (Venkatraman, 1989). In this study, the concept of ‘Fit as Matching’ was applied to make an inference about fit or misfit on a theoretical basis. Inference results were verified by analysing the interview or documentary data. Proceeding with the pattern-matching, through fundamental comparisons between observed and predicted patterns, is not a measurement method nor a statistical category (Yin, 2009). Therefore, statistical techniques were not used in this study, as described above. However, fit or misfit was measured based on the contents of the documents or after receiving clear answers from the respondents.

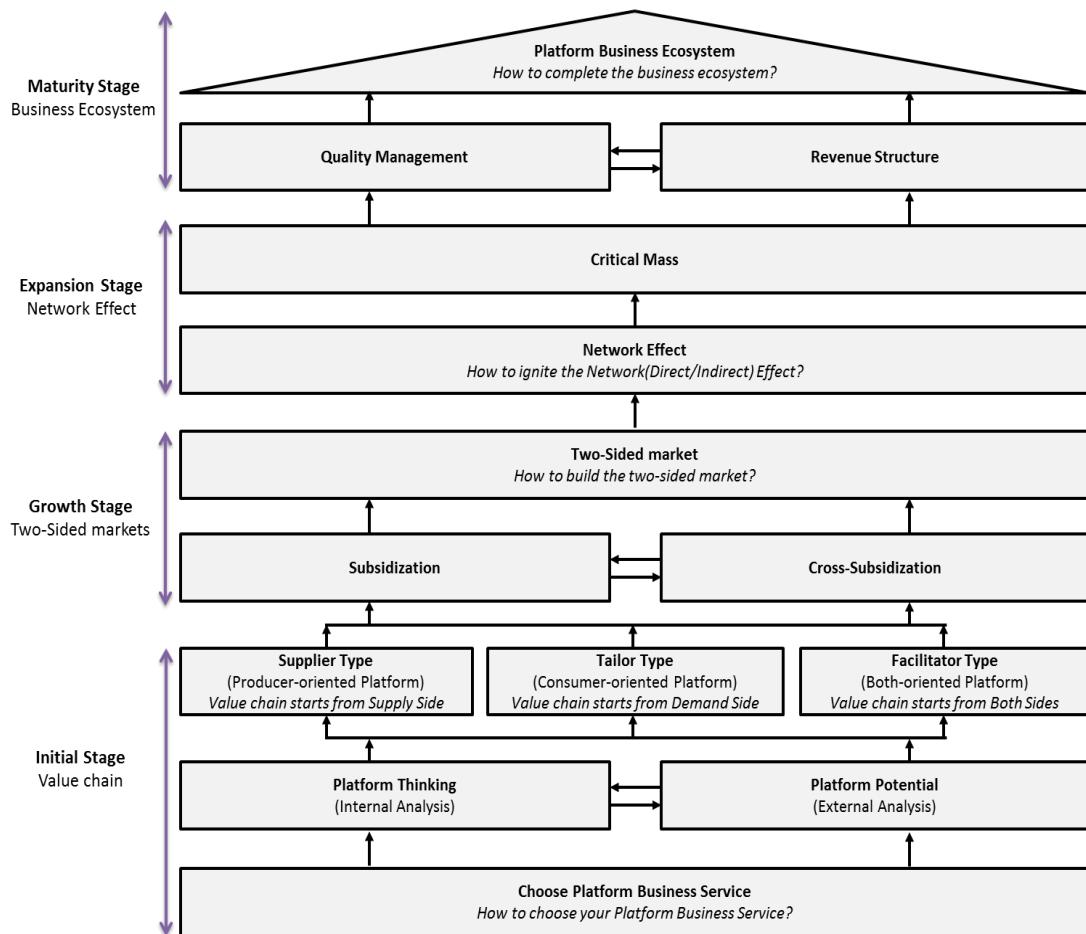
5.5.2. Conceptual Framework

A conceptual framework based on a logic model is useful for research that is related to evaluation (Mulroy and Lauber, 2004). A conceptual framework is a heuristic frame for assessing cause-and-effect relationships, which describes the logical relationship of the concepts used and identifies or explains the conditions, objects, and concept itself, hence creating a complicated connection of cases, which tend to repeat the pattern ‘cause-result-cause-result’. This can cause variables that are dependent in the initial phase to become independent in the next stage (Bickman and Peterson, 1990; Peterson and Bickman, 1992a; Rog and Huebner, 1992). In addition, when the conceptual framework is cooperatively developed, the advantages of a

conceptual framework can be maximised. The cooperative development of a conceptual framework indicates that the programme logic model is specified by the evaluations of the people applying the programme and by evaluators (Nesman et al., 2007). This procedure helps a group to specify its mission and goals clearly and explain how an order of planned behaviours influences the achievement of goals. It was maximised through the use of focus group interviews in this study.

Using a conceptual framework as an analytical method means that observed cases can be matched based on experience with theoretically predictable cases. A conceptual framework might therefore be seen as another kind of pattern-matching technique. However, since it is related to consecutive phases, it is possible to proceed with a more accurate analysis when using a conceptual framework with pattern-matching (Yin, 2010). A conceptual framework is a method of applying pattern-matching and time-series analyses at the same time. Another advantage of using a conceptual framework is that it is applicable during the establishment of an analytical environment. In the design phase, particular functions are considered for realisation. If there is no framework, then common functions cannot be derived, meaning that the system structure must be designed repeatedly and the required functions investigated every time the visual analysis environment is realised. A conceptual framework should therefore be created during the design stage. This study used a conceptual framework (see Figure 5.9) based on the literature review to analyse whether the logical prepositions were consistent with the patterns in the data and to derive the results. This study specifically analyses whether consecutive cases with the same cause-result effect were connected to each other and were repeatable, as well as whether they applied in other cases.

Figure 5.9 Platform business model conceptual framework: House of platform business



5.6. Conclusion

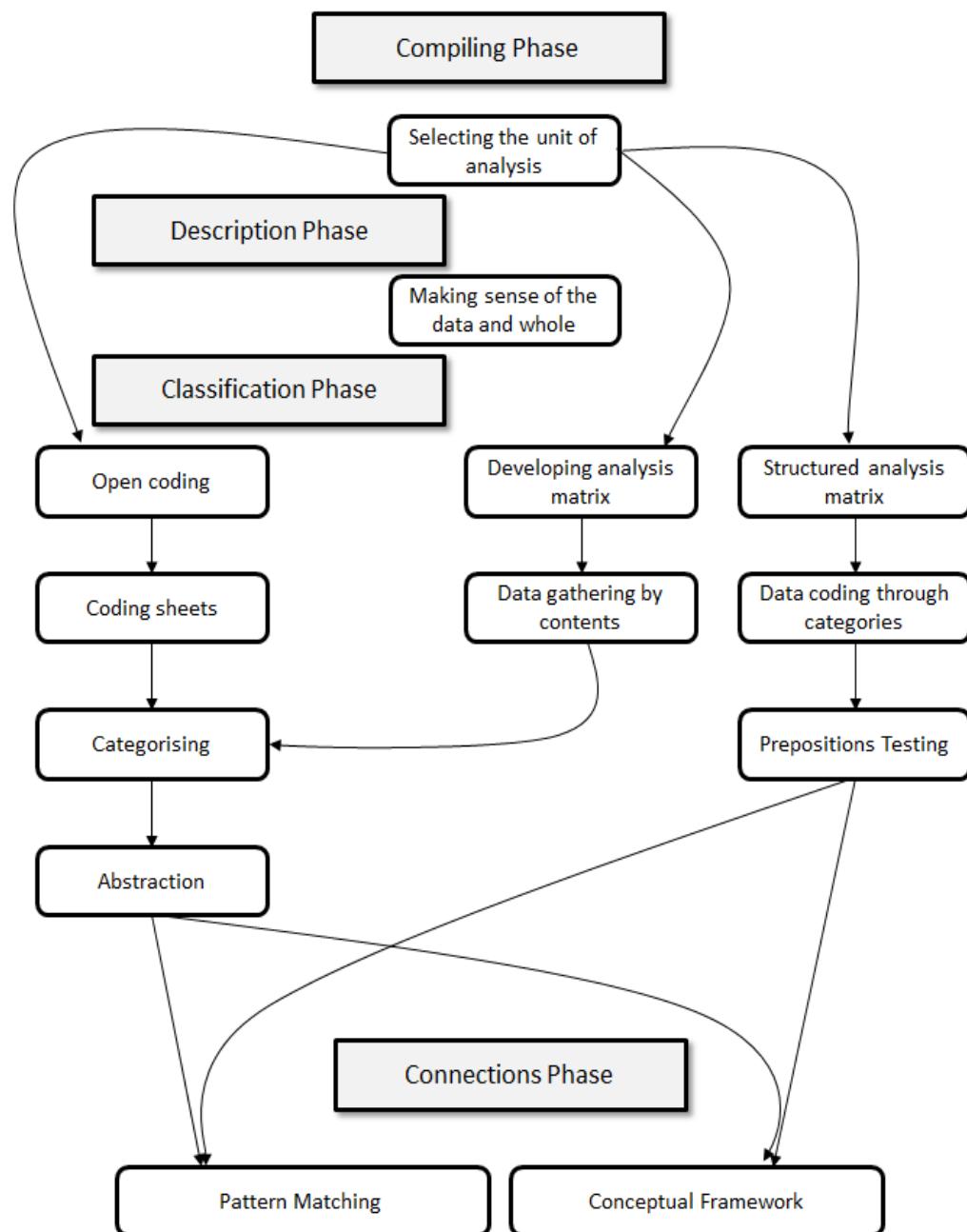
This study aims to identify the typology and dynamics of platform businesses in order to further increase our understanding of platform value chains, business models and strategies based on a dynamic approach so that platform companies can reduce their chance of failure and successfully proceed with a platform business model in the market. It intends to analyse the different types of platform business models with an accurate understanding of the value chains and streams and explore the step-by-step strategic propositions in dynamic approaches.

The data was analysed in four phases – the compilation phase, the description phase, the classification phase, and the connection phase – based on the data collected as described in chapter 4 (see Figure 5.10). In the first phase of the analysis, the data was carefully and systematically structuralised as a part of its collection to form a formal database. Much effort was exerted in the several months to conduct many of the interviews and systematically establish the database. In the second phase, it was intended to give the study transparency by thoroughly stating and expressing the data collected in a predicable manner. In the third phase, data was classified again and sub-divided into categories, making it convenient to connect the data in the next phase. In the fourth phase, the categorised data was analysed using two of core analytical methods according to the study propositions with the intention of creating new meaning.

Creswell (2003) emphasised that a study should make every effort to derive an optimal outcome of its analysis, regardless of the analytical strategies or techniques applied. This study intended to fulfil four conditions, as suggested by Yin (2009), in order to derive an optimal outcome. First of all, the proof was thoroughly reviewed during the analysis procedures and was intended to show that all possible proof was collected and interpreted as well as possible. In addition, all the possible interpretations and alternative and competing explanations were considered before the analysis proceeded. The analysis was conducted based on the important phenomena, the core issues that were established at the beginning of the study. It aimed to focus on the important issues, established at the beginning of the study, for exploring the value chain and stream in a two-sided market and for understanding how platform business model can successfully enter a market and continue to grow its business. Lastly, knowledge and experience were utilised as much as possible.

The study was therefore conducted after acquiring a considerable knowledge of recent theories and ideas in the study of platforms from the literature review. The next chapter represents the outcomes of this study by showing the findings and interpreting the analytic results.

Figure 5.10 The compilation, description, classification, and connections phases of the content analysis process



Source: Author's creation

Chapter 6 Findings

This study broadly consists of two research steps. The first step is to examine the phenomena inductively using a pattern-matching analytic technique in order to analyse and deduce the value chain and the types of platform. To this end, this study investigates multiple cases, and analyses the data through coding and pattern-matching. In this chapter, the results of this analysis are presented³². Moreover, this study further examines the direction of the value chain under a platform business model, the occurrence of value creation and co-creation, and the creation process resulting from direct and indirect network effects in accordance with the detailed propositions based on the multiple-case study analysis approach of Yin (2009). Also, this study attempts to classify the types of platform business model in accordance with the characteristic patterns of their respective value chains.

The second step is to understand and analyse how platform business models successfully enable a company to enter a new market and to continue to grow its business. This is accomplished using a conceptual framework analytic technique. This study analyses the life cycle of the platform business model with a dynamic approach that assesses the business strategies required at each stage in accordance with the deduced detailed propositions. Moreover, this study presents the overall model through a framework in this step.

For the first step of the case study, this study conducted interviews with 30 relevant industrial managers and administrators with experience of platform businesses who belonged to the 19 platform companies and 11 related institutions studied by this thesis because of their active implementation of a platform business model. The

³² Summary of 21 cases analysis is in the appendix 6.

interviews were recorded and a database constructed based on these recordings (compilation phase). Then, the data was analysed in three phases (description phase, classification phase, and connection phase), based on the model of qualitative analysis as a circular process proposed by Dey (1993). The results, thereof, are presented in this chapter. In particular, the first stage case study explained the characteristics of platform business models by matching it with a theoretical pattern and an observed pattern, using the pattern matching technique of Yin (2010). The results are classified into three parts in accordance with the results of the analysis. A summary of the study outcomes is shown in Table 6.1 below.

Table 6.1 Value chain, value creation, and network effects according to platform type

Platform Type (Typology)	Value Chain	Value Creation	Network Effects
Producer-oriented (Supplier Type)	Normal Value Chain (Value chain starts from Supply Side)	Value Creation	Direct network effect
	N/A	N/A	Indirect network effect
Consumer-oriented (Tailor Type)	N/A	Value Creation	Direct network effect
	Reverse (flow) Value Chain (Value chain starts from Demand Side)	Value Co-creation	Indirect network effect
Both-oriented (Facilitator Type)	Normal Value Chain (Value chain starts from Supply Side)	Value Creation	Direct network effect
	Reverse (flow) Value Chain (Value chain starts from Demand Side)	Value Co-creation	Indirect network effect

This study therefore analyses three types of platform business model based on the first central theoretical proposition: *According to the unique nature of two-sided markets, there are three major types of value chain model in a platform. In other words, there exist three types of platform business model in accordance with the value chain.*

- 1) Value chain starts from the supply side; producer-oriented platform (supplier type)
- 2) Value chain starts from the demand side; consumer-oriented platform (tailor type)
- 3) Value chain starts from both sides; both-oriented platform (facilitator type)

In the second step, the core elements and strategies which must be considered for each of the four chronological stages of the platform business model are analysed. This was done in accordance with the established procedure, which consisted of three sub-procedures. For the first sub-procedure, the properties of platform business models and the characteristics of each stage were analysed with reference to the previous literature. For the second sub-procedure, a conceptual framework based on the previous theories was created, and a strategy and model for each stage were established. For the last sub-procedure, the results collected from the case studies were analysed, and propositions were made from an inductive perspective. The second step of case study also investigated the cases of the aforementioned 19 companies and 11 related institutions, conducted interviews, and collected publicly available data and internal material. The collected data was coded based on the

contents of interview minutes and documents. The propositions were deduced by matching and comparing the encoded contents with the conceptual framework. The results of the second step were then classified into four chronological stages and summarised and presented for each chronological stage. The strategic questions and core elements of each chronological stage procedure are as shown in the table below (see Table 6.2).

Table 6.2 Strategic questions and considerations for each stage of the second-step of case study

Stages of growth model (Dynamics)	Strategic Questions	Core Elements
Entry Stage	How should a platform business service be chosen?	- Platform Potential (External) - Platform Thinking (Internal) - Characteristics of Platforms
Growth Stage	How should a two-sided market be built?	- Subsidisation - Cross-subsidisation
Expansion Stage	How should network effects be exploited?	- Same-side/Cross-side - Network Effects - Critical Mass
Maturity Stage	How should the business ecosystem be competed?	- The Market for Lemons - Regulation/Quality certification - Money-Side/Subsidy-Side

Source: Author's creation

Table 6.3 The cases of platform companies

Platform Style	Cases	Characteristics
Exchanges	Dell PC	PC manufacturing platform
	Samsung Wallet	Online wallet platform
	Instagram	Social network platform
	RecordFarm	Social audio platform
	YouTube	Online video platform
	Blogger	Blogging platform
Advertiser-supported media	Samsung Adhub	Online advertising platform
	Google Adwords	Online advertising platform
Transaction systems	eBay	Online auction platform
	Kakao Mobile Store	E-commerce platform
	Korea Telecom App Store	Application platform
	Hyundai Home Shopping	E-commerce platform
	LG U+ App Store	Application platform
	Amazon Kindle	E-book platform
Software platform	Daum Map	Online map platform
	Nintendo game console	Game console platform
	SK Telecom T-phone	Telephone directory platform
	Microsoft (Windows and MS Office)	Operation Platform/Office platform
	Naver Webtoon	Online web-comic platform
	Yahoo Answers	Open knowledge platform
	Kickstarter	Open idea platform

6.1. Types of Platform Business Model

This study conceptualised data by interpreting the specific statements of interviewees in terms of their background, context, and meaning. The process of ‘reading and interpreting’ was repeated several times after reading the interview minutes in order to encode and analyse the data. Concept is an abstract expression referring to incidence, object, behaviour, or interaction, and thus is defined as the “named phenomena” (Mason, 2002, p. 175). This study utilised the terms used by the interviewees for some concepts, although others were named arbitrarily based on a contextual interpretation of the terms used by the interviewees. This allowed for the creation of sub-categories that could bind the deduced concepts more meaningfully. Also, this study deduced a hierarchical structure of category, by first

identifying the relationship between them and then finding the highest level categories which encompassed the sub-categories.

Table 6.4 Deduction and categorisation of concept through data coding

Generic Category		Sub Category	Concept
Supply Side	1 st Model Value Chain starts from Supply Side (Supplier Type)	Normal Value Chain	Value Chain starts from Producers (Supply Side) to Consumers (Demand Side) *Value chain starts with the supplier and ends with the consumer
	3 rd Model Value Chain starts from Both Sides (Facilitator Type)	Reverse (flow) Value Chain	Value Chain starts from Consumers (Demand Side) to Producers (Supply Side), and then goes back to Consumers (Demand Side) *Value chain starts with the consumer and ends with the consumer
		Value Creation	Producers (Supply Side) try to make value and deliver it to consumers (Demand Side)
		Value Co-creation	Consumers (Demand Side) try to work with platform and producers (Supply Side) provide resources in the production of their own value offerings.
	2 nd Model Value Chain starts from Demand Side (Tailor Type)	Direct Network Effect	An increase in usage is caused by an increase in the number of people consuming the same product or service
		Indirect Network Effect	An increase in usage is caused by an increase in the number of people consuming the complementary product or service

Source: Author's creation

To deduce the aforementioned three platform business models, this study first classified the strategy types for each company or institution by reading and interpreting information regarding the platform model types that were being pursued by the companies or institutions to which the interviewees belonged. The study then confirmed the classification of the platform model types when respondents from the corresponding companies or institutions were repeated. The strategy types were then classified with their corresponding companies or institutions by reading and interpreting the information provided by the respondents. These classifications were then checked for consistency with the platform model strategies of the other

companies, which were deduced in the previous stage. When they were consistent, they were classified as the same type; when they were inconsistent, they were classified as a new type. This study re-confirmed the classification of the platform models by performing the same analysis when there were repeated respondents from the corresponding companies or institutions. When necessary, new strategy types were added. These tasks were repeated until all the responses had been reviewed and the above-summarised three models had been deduced.

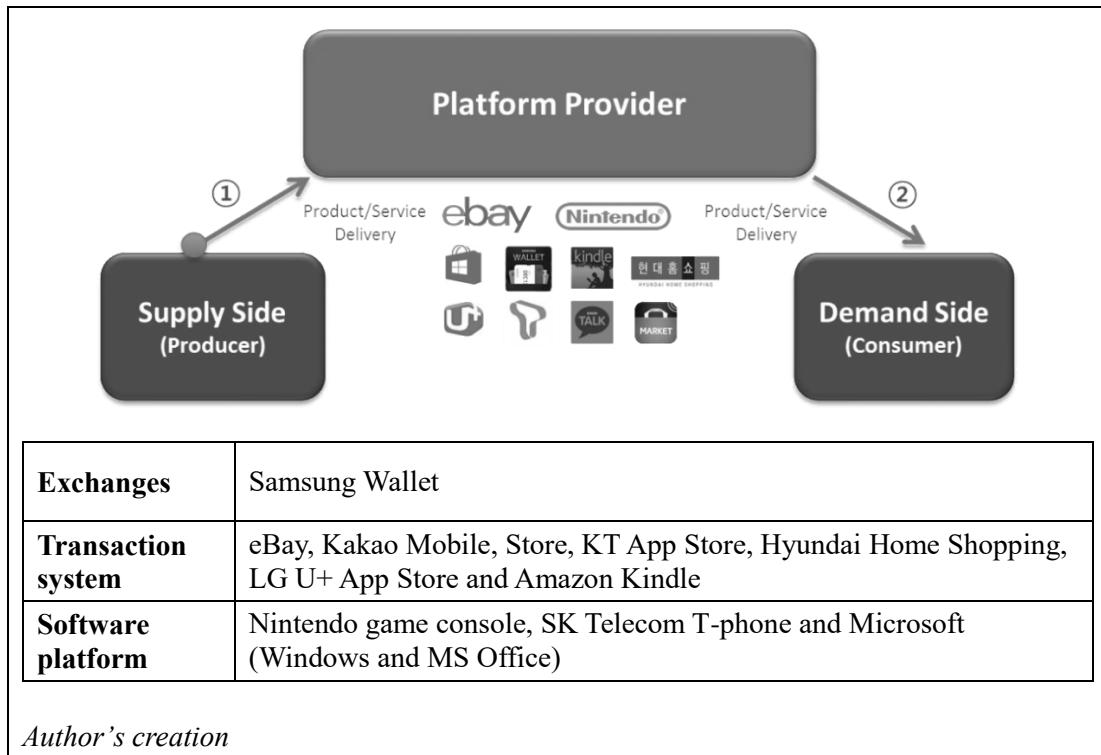
It was determined whether there would be a ‘fit’ or ‘misfit’ based on the value chain, value creation, and network effects of platform. The value chain became the important classification criterion, because value creation and significant network effects occur within the value chain. Thus, the confirmation of value creation and a significant network effect would take place within each value chain. In the process of analysing and interpreting the data, this study found that the platform types that formed a platform business model also represented some characteristic information in addition to the above strategy types. That is to say, even though each service is different, similar types of platform business model demonstrated similarity in terms of their support systems, components, and relationship with stakeholders. For example, eBay’s open market platform and KT’s app store platform show that platform business models can have the same type of value chain even when they have different service types. They therefore have a support system configured in a similar direction.

6.1.1. Value Chain Starts from the Supply Side: ‘Supplier’ Type

The first model of the platform business model based on value chain is the ‘producer-oriented platform’. In this model, the producers (supply side) deliver certain products and services to the consumers (demand side) through the platform

(see Figure 6.1). A producer-centred approach in which the producers supply products or services using the platform is thus required. This study named this model the ‘supplier type’.

Figure 6.1 Producer-oriented platform (‘Supplier’ type)

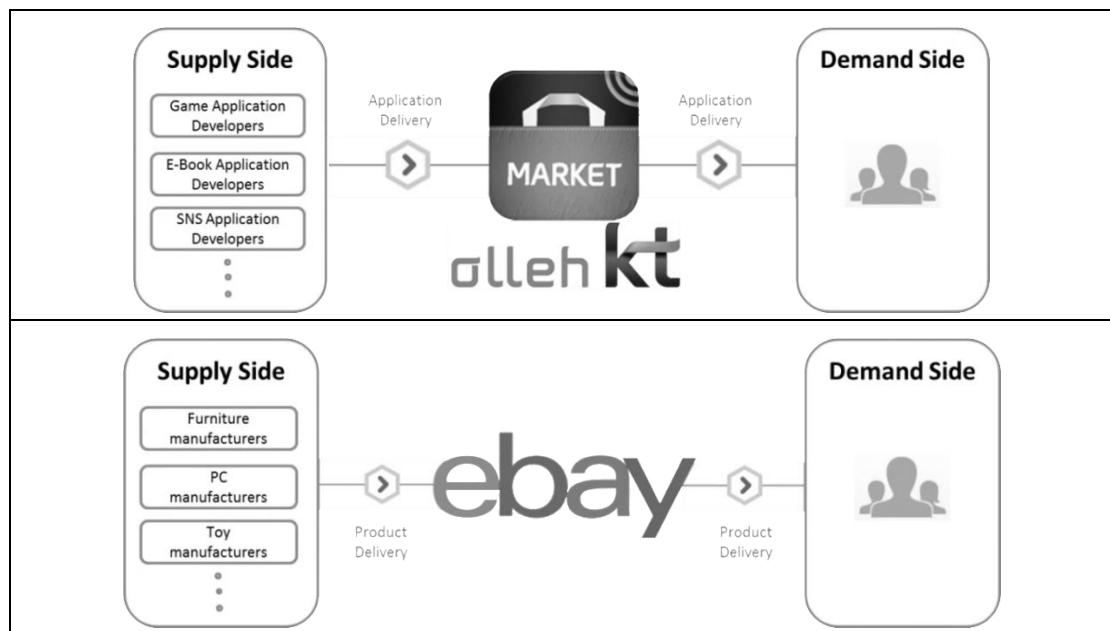


As a result of pattern matching, a normal value chain emerged for the supplier type. However, there was no reverse flow value chain because the producers created and delivered values to the consumers through a platform. The prominent cases of supplier type platforms were eBay’s open market, Microsoft Windows, LG U+ app store or KT³³’s app store, Nintendo’s games consoles, Amazon’s Kindle e-reader, the SKT T-Phone, the Kakao mobile store, Hyundai home shopping, and the Samsung wallet, just to name a few. Sellers deliver products and services to the consumers through eBay’s open market platform. Google and KT’s app store platforms enable app developers (or content providers) to develop applications and

³³ Korea Telecom

sell them to users via the platform. Kindle, the prominent e-book platform, also enables e-book content providers to deliver content to consumers. The Samsung wallet platform allows a large number of partners to provide their products and services to the consumers through its wallet, where the consumers purchase them easily.

Figure 6.2 KT's 'Olleh' market³⁴ platform and the eBay open market platform



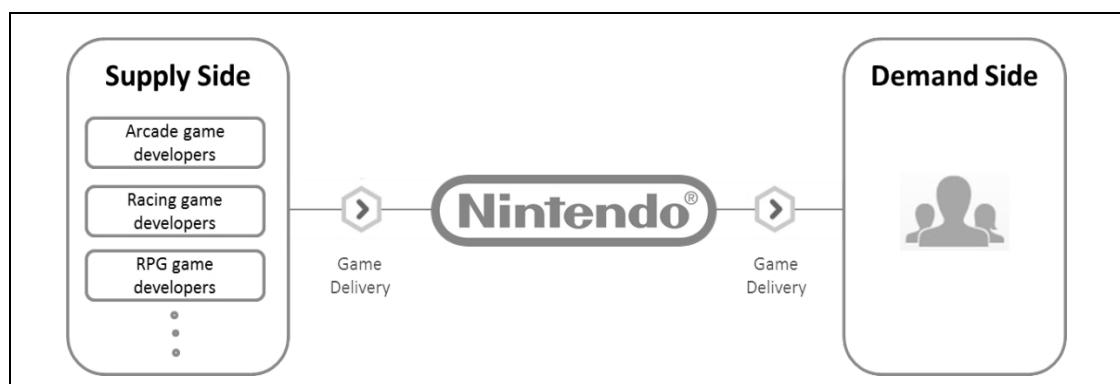
6.1.1.1. Value Chain's External Expansion

The prominent difference between a platform and a traditional value chain is that platforms expand the value chain, which was previously within an organisation, to include the outside world. Platform companies have concentrated on linking the processes between the organisations, from a competition strategy perspective, while involving a variety of third parties through the two-sided market. With a conventional value chain, a closed system forms the basis of an organisation, and the value chain is only internal. However, overall competition has intensified due to the

³⁴ Olleh Market is an open application market operated by KT.

expansion of networks and the emergence of more companies, so it is now impossible to achieve competitive advantages based only on an internal value chain. Competitive advantages can only be achieved by adopting an inter-organisational value chain that includes suppliers located at the rear side of an organisation and consumers located at the front side. This allows these stakeholders to be linked in a mega process that includes the company's own value chain, the rear-side service/product suppliers' value chain, and the front-side channel participants' value chain (distributor, purchaser, and consumer). Platforms represent a new business strategy and have emerged from necessity. As an open system based on a two-sided market, platforms have led to the external expansion of the value chain, allowing various participants to expand the value chain by participating in a platform. For instance, Nintendo expanded its value chain by encouraging the participation of third party game developers. Moreover, it could secure even more customers by providing more diverse services to them. In the end, it could complete a business ecosystem, based on a virtuous cycle structure and network effects. Such an expansion of the value chain is caused by a platform, and it not only increases the number of suppliers and consumers, but also substantially reduces process, inventory, and transaction costs by sharing information in real-time and maximises synergies through cooperation between the related organisations.

Figure 6.3 Nintendo game console platform



6.1.1.2. Value Creation and Network Effects

In supplier type value chains, value creation takes place, but value co-creation does not, because supplier type chains are producer-centred. However, there are both direct and indirect network effects in the supplier type. The theoretical patterns predict that there would not be an indirect network effect in the supplier type chain, but this study confirmed that there was an indirect (cross-side) network effect in these chains as a result of the observed pattern. A platform company acquiring a profit model and monopolistic market dominance depends on its ability to create a significant amount of transactions (interactions) between the supply side and the demand side, which are the two customer groups of a platform. Therefore, a platform provider can have a basis to form a two-sided market only by securing both a direct and an indirect network. Mr. Cho, Principal Engineer of Samsung Electronics said that Samsung Wallet continuously tried to secure credit card companies and end-users in order to produce direct and indirect network effects. They put Samsung Wallet on all Samsung smartphone devices as a native app, which is installed directly on a mobile device, in order to secure enough end-users in a short period of time. This huge number of users makes their platform business attractive to credit card companies, and the participation of the credit card companies leads to Samsung mobile users as well as other companies' smartphone users. In other words, having many end-users on the Samsung Wallet platform attracts more new users (direct network effects), and a large number of end-users also induces more credit card companies to engage with the platform.

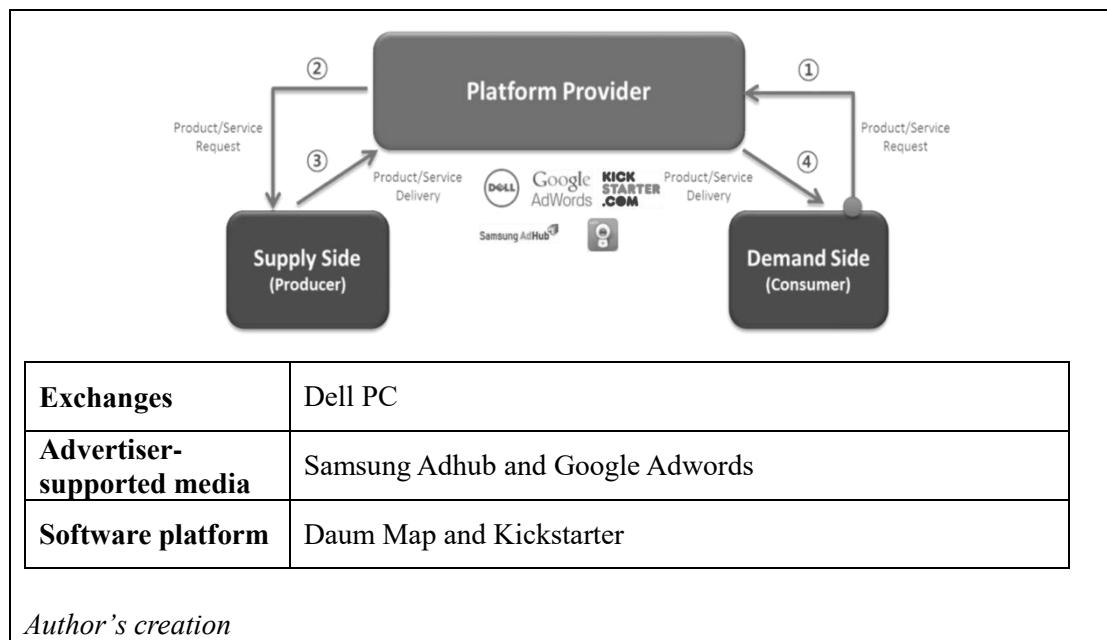
Table 6.5 First type of platform business model pattern matching

	Theoretical Pattern	Observed Pattern	Matching Result
Normal Value Chain	O	O	Fit
Reverse (Flow) Value Chain	X	X	Fit
Value Creation	O	O	Fit
Value Co-creation	X	X	Fit
Direct (Same-Side) Network Effects	O	O	Fit
Indirect (Cross-Side) Network Effects	X	O	Misfit

6.1.2. *Value Chain Starts from the Demand Side: ‘Tailor’ Type*

The second platform business model is a ‘consumer-oriented platform’. In this model, the consumers request products or services from the producers through a platform and then the producers deliver them to the consumers through the platform (see Figure 6.4). This model adopts a consumer-centred approach, and under it consumers take the lead in the use of the platform³⁵.

Figure 6.4 Consumer-oriented platform (‘Tailor’ type)



³⁵ The author of this study named it ‘Tailor type’, because the consumers first had leadership, using this platform. Also, it is because the producers supplied them back to the consumers, through a platform when the consumers would be able to request the producers for their desired products or services through a platform.

As a result of pattern matching, it was confirmed that a reverse flow value chain emerged in the case of the tailor type of value chain. This was because the consumers first requested products or services through a platform and producers then produced and delivered them back to the consumers through the platform. The prominent examples of the tailor type were Dell Computer's PC ordering platform, Samsung AdHub, Google AdWords, Daum Map platform, and Kickstarter's idea platform, just to name a few.

When the consumers (demand side) make a request through Dell's PC ordering platform, Dell provides details of their desired products to the computer parts suppliers (supply side). Kickstarter's idea platform also produces the products through the suppliers (supply side), when the users (demand side) present their idea through the Kickstarter platform, and then sells the products back to the users. Similarly, the Naver Ad platform provides adequate advertising to the consumers, based on their internet usage patterns and search keywords (demand side).

6.1.2.1. Value Chain's Reverse Flow

The value chain has a reverse flow when its starting point shifts from suppliers to customers, based on the view that the source of value creation is the customer in this situation. This kind of value chain is often found in a two-sided market. It makes it possible to implement a business model based on the on-demand economy and focuses on processing related tasks simultaneously by making it possible for all the entities involved in the business process to cooperate together by sharing information in real-time.

Figure 6.5 Dell Computer and Samsung AdHub platforms

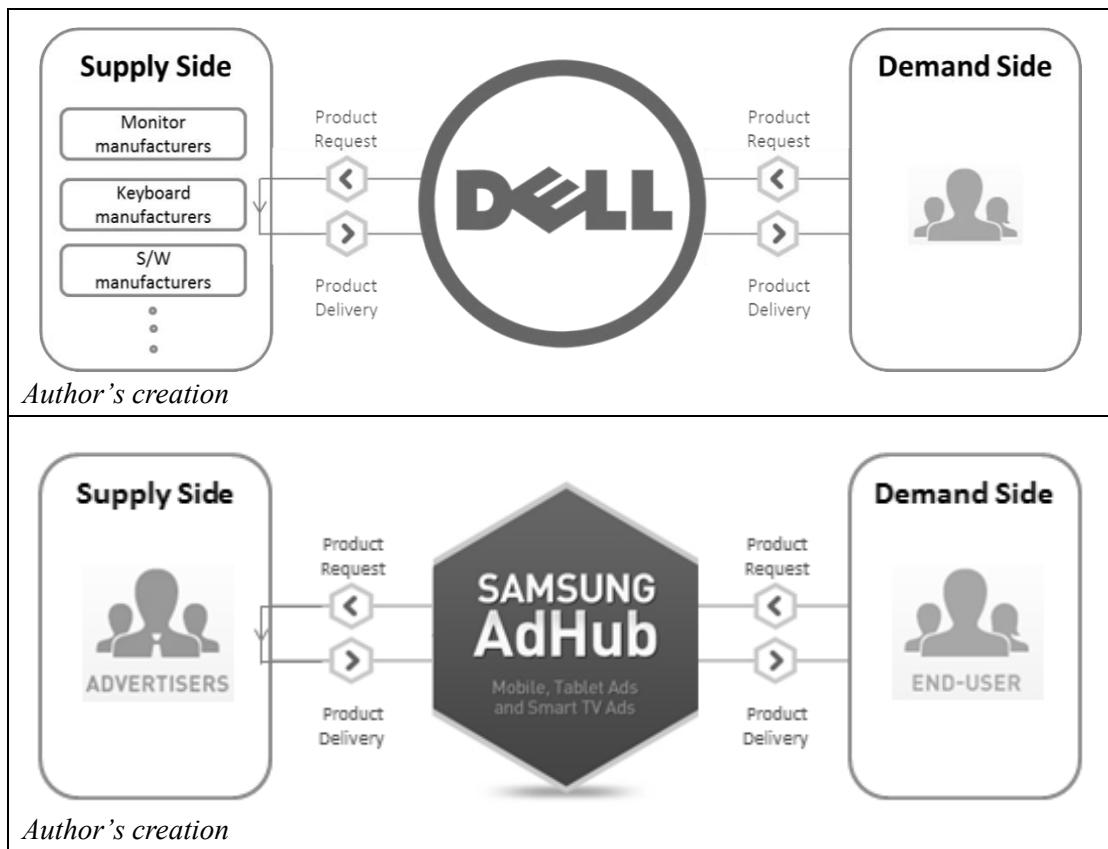


Figure 6.5 (at the top) shows the value chain back-flow model for the Dell PC platform, which allows real-time cooperation by sharing order information with PC parts suppliers, monitor manufacturers, and shipping companies in real time rather than sequentially. This model is also applied to Samsung's Adhub network platform (see Figure 6.5, bottom of the figure), through which advertisers (supply side) deliver the requested advertisements to the end-users through an ad network platform through which the end-users (demand side) also request advertising.

6.1.2.2. Value Creation and Network Effects

In the case of tailor type value chains, value creation and value co-creation take place because of their consumer-centred approach. In other words, value is co-created with the stakeholders. It is crucial to research and analyse the business value on such platforms because they allow value to be co-created (Amit and Zott, 2001; Ceccagnoli et al., 2012). Both direct and indirect network effects occur on tailor type

platforms just as they do on supplier type platforms. That is to say that a platform provider generates economic effectiveness through both same-side (direct) network and cross-side (indirect) network. Ms. Lee, an Assistant Manager for the Daum map platform, said that due to the characteristics of map data, many users lead to more users (direct network effects) as well as to many map content providers (indirect network effects). Map content providers add attractive contents to the map such as dining tips, travel guides and mobile yellow pages to increase profit, and these various contents attract more users to the Daum map platform and vice versa.

Table 6.6 Second type of platform business model pattern matching

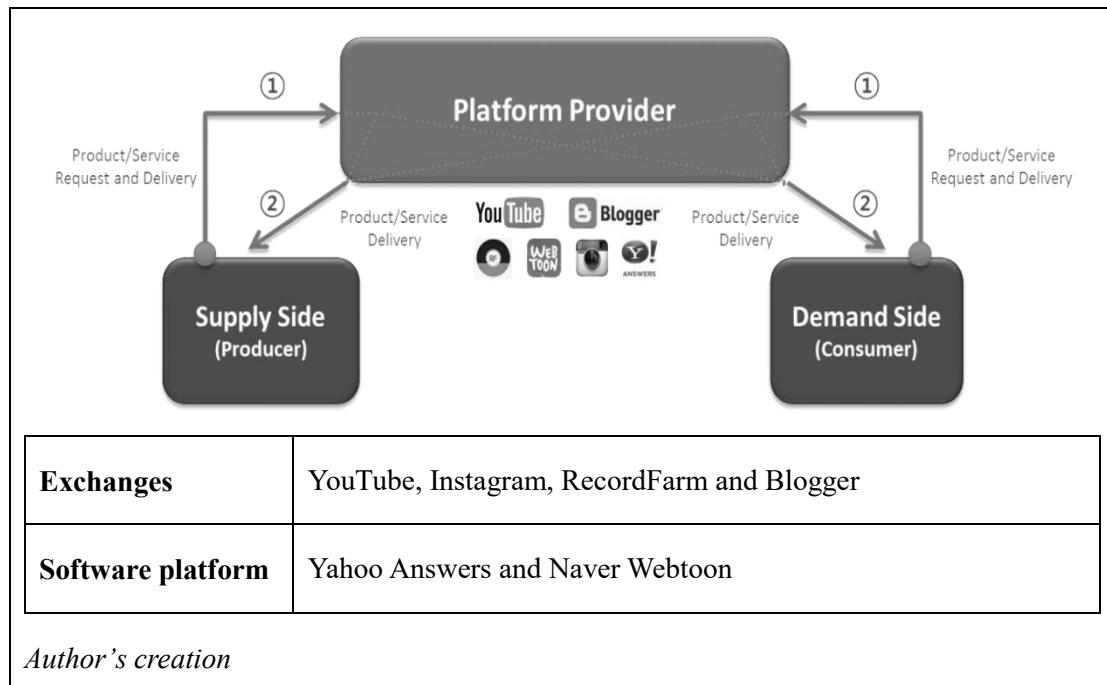
	Theoretical Pattern	Observed Pattern	Matching Result
Normal Value Chain	X	X	Fit
Reverse (Flow) Value Chain	O	O	Fit
Value Creation	O	O	Fit
Value Co-creation	O	O	Fit
Direct (Same-Side) Network Effects	O	O	Fit
Indirect (Cross-Side) Network Effects	O	O	Fit

6.1.3. *Value Chain Starts from Both Sides: ‘Facilitator’ Type*

The third platform business model based on the value chain is the ‘both-oriented platform’. In this model, the platform participants become a kind of ‘prosumer’ that acts as both a producer and a consumer (see Figure 6.6). This model leverages both the producer-centred approach and the consumer-centred approach. Consumers and producers both produce and consume products and services directly through the platform. The boundary between producers and consumers is therefore blurred and

the platform facilitates the activities of prosumers. This type of value chain has therefore been named the facilitator type.

Figure 6.6 Both producer-oriented and consumer-oriented platform ('Facilitator' type)



Pattern matching confirmed that value chain integration occurs for the facilitator type because products or services are produced and consumed through the platform from the perspective of a prosumer³⁶, rather than with a clear distinction between the consumers and producers. Some prominent cases of facilitator type platforms are Yahoo answers, Instagram, RecordFarm social audio, Naver Challenge webtoon, Google YouTube, and Blogger, just to name a few.

Users can view desired user-created content (UCC) through YouTube (demand side) and they can create and upload their own UCC (supply side) to the platform. Similarly, users of Facebook and Blogger upload their own content to the platform (supply side) and also consume the content of other users (demand side) at the same

³⁶ "A consumer who becomes involved with designing or customizing products for their own needs." in Oxford dictionary

time. In the case of the Yahoo answers platform, which is the prominent knowledge search platform, users pose questions (demand side) and also answer them (supply side) in the same platform, again both producing and consuming content.

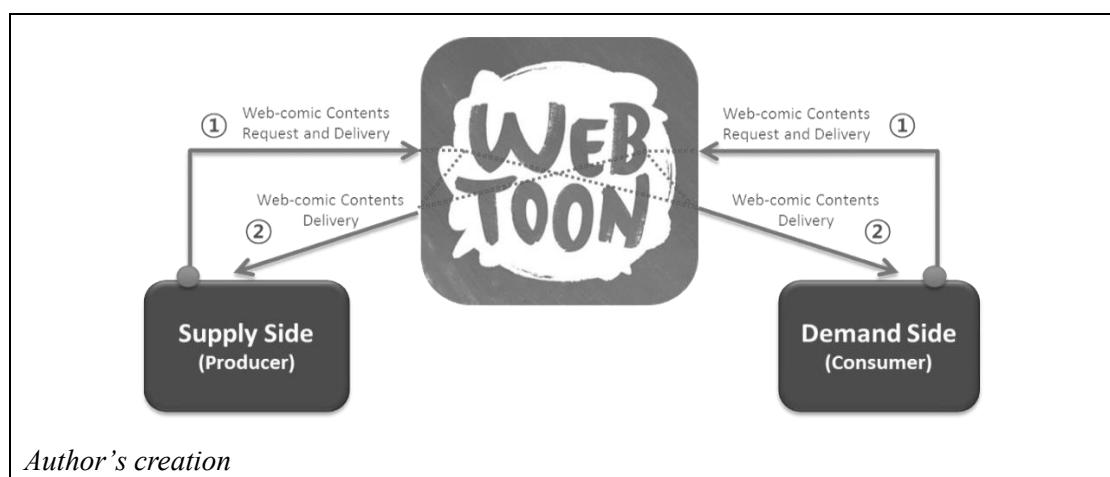
6.1.3.1. Value Chain's Integration

In a platform business model, value chain integration can be horizontal or vertical because the value chain flows constantly in one direction, regardless of whether it is reversed. The conventional supply side is responsible only for producing products or services, whereas the conventional demand side is responsible only for requesting or consuming products or services. With a facilitator type model, both the supply side and the demand side produce and consume products and services at the same time. This creates a facilitator type value chain in both directions and allows for exponential business growth, as demonstrated by Instagram and YouTube. Figure 6.7 shows the business model of the webtoon challenge platform³⁷ of Naver's webcomic service. This platform does not distribute existing cartoons to consumers; rather, it is a way for people to create and upload their own cartoons freely and read the cartoons of others simultaneously. Readers in this model no longer consume cartoons in one direction: they are now also content providers. Thanks to this facilitator type method, Naver has developed a new market in the published cartoon industry, which was widely seen to be in decline. Furthermore, it achieved substantial growth by integrating the value chain. As of 1 June 2014, 139,789 cartoonists participated in Naver's platform, and there had been 29,243,054,984 views of their work. Some popular contents have been made into motion pictures, TV dramas, books, or games. Naver's webtoon challenge platform made a valuable

³⁷ “도전만화” in Korean

deviation from traditional cartoon media.³⁸ In other words, it grew by allowing its participants to create and upload their own content, whereas traditional cartoon media produced content or purchased it externally. Also, the platform allows advertising income to be generated by inserting advertisements at the bottom of the challenge webtoons using Naver's Ad platform.

<Figure 6.7> Naver's webtoon Challenge platform



6.1.3.2. Value Creation and Network Effects

In the case of facilitator type models, normal and reverse value chains and consumer- and producer-centred approaches happen simultaneously, causing both value creation and value co-creation to take place. In other words, platform providers create and co-create business value with other firms, by encouraging complementary invention and facilitating network effects in their platform ecosystems (Ceccagnoli et al., 2012). Both same-side (direct) network and cross-side (indirect) network effects can be seen, as they can for the other two platform

³⁸ As of June 1 2014, a total of the 142 webtoons have been made into books, 37 into a motion pictures or TV dramas, and 10 into games (Source: Naver's published data, 2014).

business models. Harrison Shin, CTO of RecordFarm, states that the number of artists directly affects both artists and listeners on the RecordFarm, social audio platform. Artists want to collaborate with other artists and listeners want to hear their music. Therefore, many artists lead to more artists (direct network effects) as well as more listeners (indirect network effects) on the RecordFarm platform.

Table 6.7 Third type of platform business model pattern matching

	Theoretical Pattern	Observed Pattern	Matching Result
Normal Value Chain	O	O	Fit
Reverse (Flow) Value Chain	O	O	Fit
Value Creation	O	O	Fit
Value Co-creation	O	O	Fit
Direct (Same-Side) Network Effect	O	O	Fit
Indirect (Cross-Side) Network Effect	O	O	Fit

6.2. Platform Establishment and Growth Strategy

In the first-step case study, I was able to learn which platform business model could be applied, depending on value chain, that was an essential element of corporate strategy, in relation to platform. However, this typology needs to account for each stage of the platform business life-cycle, depending on the market growth of each

platform business, through the first-step case study. In particular, it was definitely required for the corporations to conduct strategy analysis for each chronological stage, depending on market growth, in order to start and develop their platform businesses. Virtually no studies have analysed platform business model dynamically, and the existing literature relies on static models of strategy and performance. However, strategy is increasingly dynamic (Gunther et al., 2004), and there are many different strategic issues for each growth stage. Dynamic models of strategy and performance are particularly important for platform businesses for two reasons. First, it is necessary to have an adequate strategy and analysis for each stage if the corporation is to grow successfully. Platform businesses are two-sided markets, which are much more complex than conventional one-sided markets, so it is essential to consider the variety of factors that influence the platform at each stage of the formation of the corporate ecosystem. Second, platform is an essential element of constructing and operating a business ecosystem with a virtuous cyclical structure. It is therefore essential to make adequate decisions regarding platform strategy and to consider every factor in the decision-making process in order to establish a successful growth model for the corporate ecosystem.

According to Anderson and Tushman (1990) and Gibson and Nolan (1974), the growth model can be classified into four chronological stages (entry stage, growth stage, expansion stage, and maturity stage). Each stage has a different set of issues to address in relation to the platform strategy and the growth of the corporate ecosystem. Furthermore, each issue comprises a set of different decision items and influence factors that need to be considered.

- Entry stage: Internal and external analysis for the selection of the platform business.
- Growth stage: Solutions to the chicken and egg problem that is endemic in the construction of two-sided markets.
- Expansion stage: Ways to reach critical mass in order to accelerate network effects.
- Maturity stage: Platform quality management and revenue structure construction in order to establish the business ecosystem

Therefore, the second-step case study aims to present strategic propositions and performance from the perspective of dynamic approach through the conceptual framework.

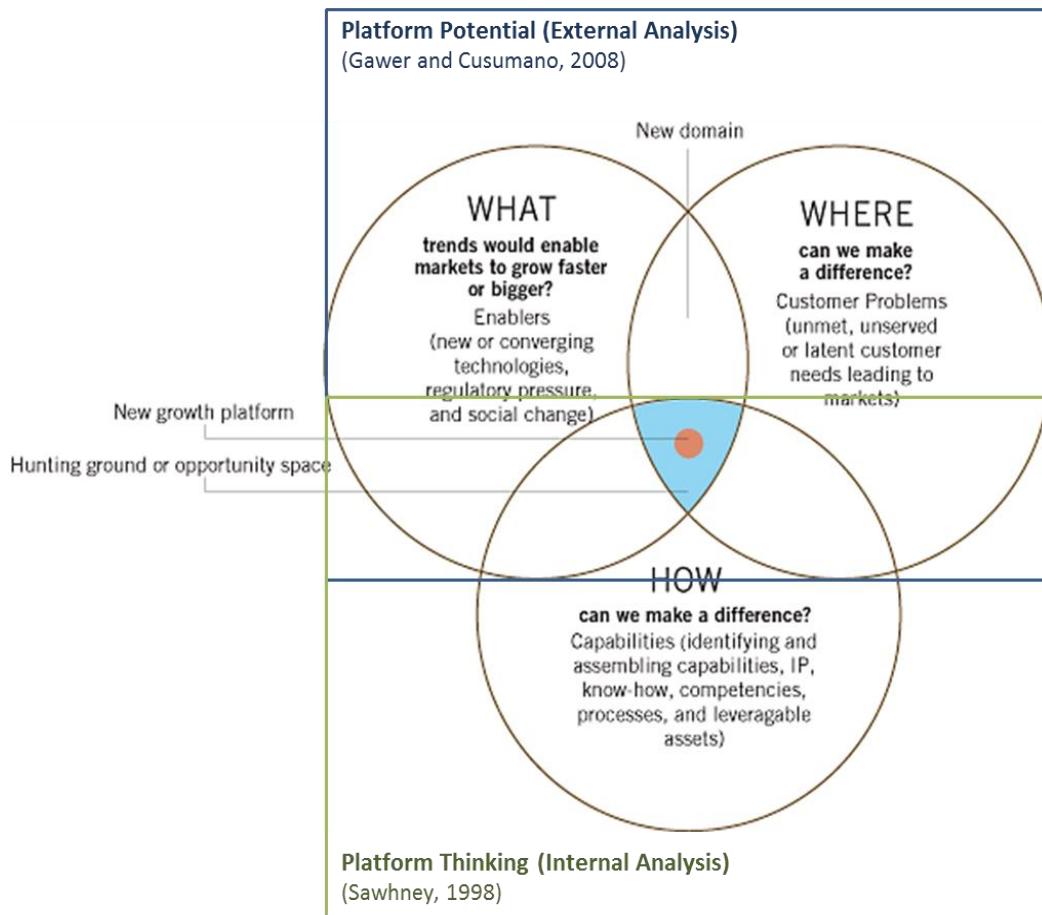
6.2.1. Entry Stage: How Should a Platform Business Service be Chosen?

As discussed in chapter 2, it is essential to discover a platform business before entering the market. A platform business service can be chosen by identifying a platform desired by a market. Platform providers are required to must decide what kind of platform they will deliver, so this study examines the ways in which the corporations can choose their platform business service. Anything can become a platform, but this does not mean that it is a good idea to choose anything as one. One of the essential requirements for the success of a platform provider is that it identifies the valuable platform. Therefore, Laurie et al. (2006) argued that it is

imperative that a corporation conducts analysis internally and externally in order to choose a valuable platform business out of the many possibilities.

To this end, Laurie et al. (2006) emphasised that it would be extremely important to find an intersection of ‘enablers’, ‘customer problems’, and ‘capabilities’. They argued that such an intersection would comprise a ‘new growth platform’ (Laurie et al. (2006, pp. 5-7). To find a new growth platform, three questions are proposed: ‘What trends would enable markets to grow faster or bigger? (enablers)’, ‘Where can we make a difference? (customer problems)’ and ‘How can we make a difference? (capabilities)’. That is, a new growth platform should solve customers’ needs (customer problems) that could not previously be satisfied by capturing the emergence of new technologies or deregulations (enablers). This framework will identify, through external analysis, what platform customers and is consistent with the ‘platform potential’, proposed by Gawer and Cusumano (2008). Moreover, corporations own or create new platforms using newly acquired competencies (capabilities). This means that new platform services can be found in the existing businesses using internal analysis. This is consistent with the ‘platform thinking’ proposed by Sawhney (1998). That is that new platforms owned by the corporations and with certain capabilities are created using newly acquired competencies, referred to as platform thinking, whereas those enablers captured the emergence of new technologies, or deregulations and customer problems (solving customer needs that were not satisfied or that lurked in the past), which refer to a potential platform. In the end, it is important for the corporations to analyse industrial environments, market competitiveness, market needs, and internal corporate competence in relation to which platform should be designed before entering a new market. Therefore, it is important to choose ‘a platform business that the market wants’ using both external and internal analysis (see Figure 6.8).

Figure 6.8 How should a platform business service be chosen?



Source: Elaboration from Sawhney (1998), Laurie et al. (2006), and Gawer and Cusumano (2008)

Kakao is a good illustration of how a company might deal with the strategic challenges posed by building a platform. Kakao's founder Bum-soo Kim is a living legend in the Korean venture capital industry. He led the Internet gaming boom in South Korea with Hangame in the 1990s.³⁹ In 2000, he organised the M&A⁴⁰ deal with Naver,⁴¹ and has since served as the CEO of Naver USA. After witnessing the huge changes in the web market caused by the introduction of the iPhone in the late

³⁹ Launched in 1999, Hangame is a popular Korean online game portal which offers casual games, MMORPGs, sports games, and other genres. Hangame has over 20 million members and is one of the country's largest game portals. It is merged with Naver in 2000.

⁴⁰ Merger and Acquisition

⁴¹ Naver is currently the South Korea's largest internet company with a market capitalisation of USD 22 billion.

2000s, he left Naver USA and founded the mobile instant messenger Kakaotalk, which realised the unlimited potential of Web 2.0 and smartphones (enablers). His choice of platform was thus mobile instant messenger, which increases customer value with free messages, free voice calls, and mobile SNS using Web 2.0 and smartphones (customer problems). He implemented a free service, even in its early phase, although the business suffered operating losses. This allowed it to secure a large-scale platform faster than its competitors (capabilities).

6.2.1.1. External Analysis: Platform Potential

It is imperative to first conduct an external analysis (identifying and analysing new technologies, deregulations, market needs, etc.), in order to plan a new platform business. This analysis hopes to assess platform potential (Gawer and Cusumano, 2008). There are some prerequisites for a platform to achieve a corporation's strategic vision and become the basis of its operating ecosystem. Gawer and Cusumano (2008) argued that the two pre-conditions given below should be satisfied, if objects like products, services, and technologies are to have platform potential.

First, “The object should perform at least one essential function within what can be described as a system of use or solve an essential technological problem within an industry” (Gawer and Cusumano, 2008, p. 2). In other words, it should be a technology, product, or service that solves technical or business issues in an industry or the pain point of a customer, by providing essential functions to the potential customers. SK Telecom’s T-phone is also a good example. SK Telecom is South Korea’s largest mobile telecommunication carrier. Since the market reached saturation point, SK Telecom has strengthened its platform business by providing its

subscribers with more competitive services. In particular, it identified the inconveniences of transferring phone numbers to a new mobile phone and of searching for the phone numbers of businesses like restaurants and cafes again and again. Based on this account, SK Telecom introduced a new platform service called the ‘T-phone’. The T-phone provided a new concept of a mobile phone address book, transforming the old mobile phone book, which simply stored phone numbers, into a personal assistant. This is advancement on Google’s cloud service, which allows users to save contact information and share it with various devices. T-phone aims to provide a customised service for each user by leveraging network technology. T-phone automatically displays contact information in the order of most frequent use. It is also able to save up to 1 million business numbers in South Korea. Moreover, it can block spam, phishing, and smishing calls and text messages. In an interview for this study, Donna Lee, the head of product the planning division at SK Telecom, said that “Mobile phone contact information can play a role of unlimited platform.”, and stressed that “It would be possible to create various services such as phone number guidance, delivery and phone number sharing by attracting a variety of 3rd parties through open API and this would provide users essential functions and benefits”.

Second, “It should be easy to connect to or to build upon to expand the system of use as well as to allow new and even unintended end-uses” (Gawer and Cusumano, 2008, p. 1). That is, the supply side and demand side should be connected easily, and a virtuous cycle should be established through various expansions. For example, RecordFarm,⁴² the social audio platform start-up founded last year, has grown by

⁴² RecordFarm is an open audio platform and SNS based in Seoul, Korea, that enables its users to record, upload, listen, share, and promote their original audio files. RecordFarm is one of the most rapidly growing internet companies in the Korean online and mobile market. Haeyong Shin, an

attracting users rapidly by providing free and unlimited functions, such as ‘upload’, ‘listen’, and ‘share’, in its early phase. It confirmed that the music market in South Korea and Asia has been changing rapidly from album sales and downloads to online streaming services. The company realised the competitiveness of the audio content created by many individuals and thus constructed a social network platform that offered ‘personal audio space’ to each individual, which is the main reason for the company’s rapid growth. “The service was designed in a way that users could use it easily in order to attract users rapidly in the early phase,” Co-Founder Harrison Shin said during the interview. “Also, we made sure that our service could be easily linked with various services with the ‘share’ function. We are preparing to construct more expanded business ecosystem through participating with diverse content providers with our open API from 2015.” he emphasised. Thanks to its ‘easy to connect and expand the system’ strategy, Shin secured USD 300,000 investment from VCs only 6 months after founding the company.

One of the important strategic elements for selecting a successful platform service is identifying enablers that can help it grow rapidly and difficulties and problems in the market and among customers. Therefore, it is important to conduct an external analysis, in addition to an internal one, in order to establish a platform service.

6.2.1.2. Internal Analysis: Platform Thinking

In addition to the external analysis, what people need the most for an internal analysis is platform thinking (Sawhney, 1998). According to Sawhney (1998) platform thinking is “the strategic process of identifying and exploiting the shared

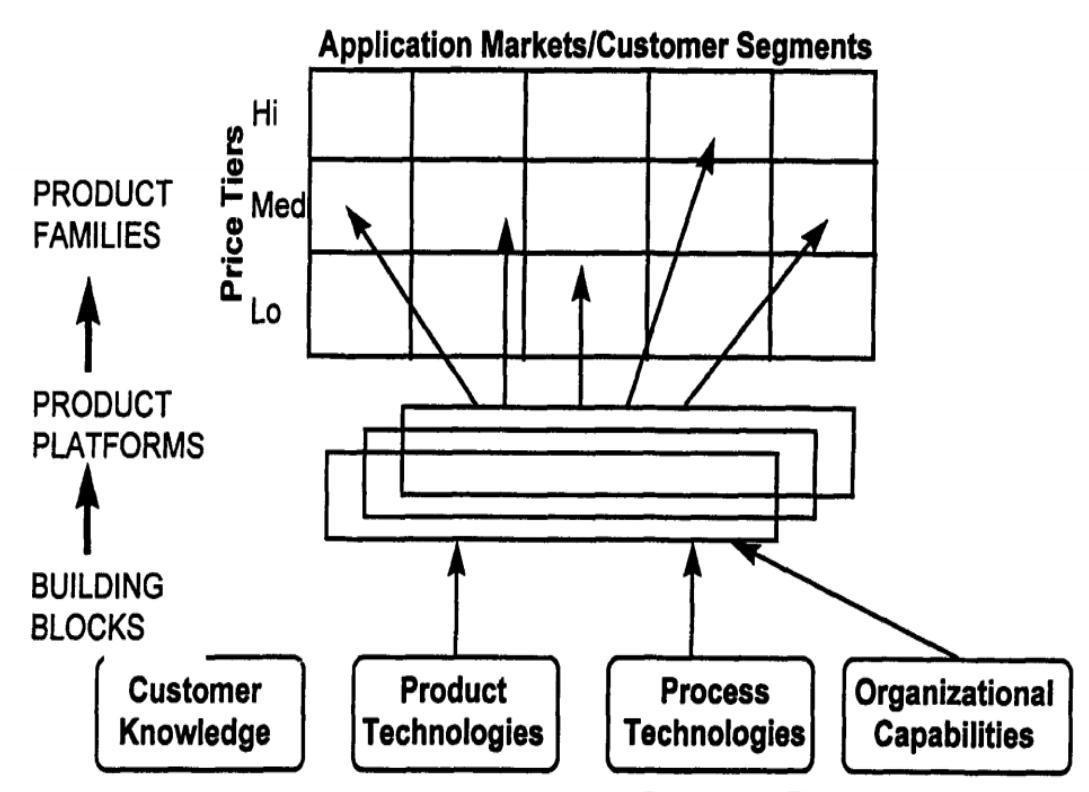
interviewee of this research, and I made this platform business based on the suggested conceptual framework in this thesis.

logic and structure in a firm's activities and offerings to achieve leveraged growth and variety" (Sawhney, 1998, p. 57). This concept can be applied to a variety of products, services, brands, and development processes to obtain a successful strategy by using resources efficiently (Ulrich, 1995; Meyer and Lehnerd, 1997; Meyer et al., 1997; Robertson and Ulrich, 1998).

The strategy proposed by Sawhney (1998) begins by selecting the common blocks and by analysing technologies, parts, the manufacturing and distribution process, and other organisational competencies comprehensively. This is called the process of building blocks. A platform can then be established by combining the blocks. There may be one platform or many platforms, depending on need. It is also possible to configure different platforms for product, process, and function. Various new products can be developed based on this platform. In particular, many third parties can be invited to participate in a platform. The Windows/Intel computer platform, the Amazon e-commerce platform (Tapscott and Williams, 2008), the Cisco platform (Gawer and Cusumano, 2002), the Sony platform (Halman et al., 2003), the Hyundai Home shopping platform, and most recently the platform of Apple's iPhone are good examples of platform thinking. The Hyundai Home shopping network platform⁴³ was created by the Hyundai Department Store Group, which is one of the largest department stores in South Korea. The company expanded its offline-centric department business into an online platform business. The Hyundai Department Store Group found a few common structures present in the process of development and in the sales of various products and leveraged them into the Hyundai Home shopping platform. In this way, the company could grow rapidly in the market to become a leader, while providing a wider range of products.

⁴³ Hyundai Home shopping platform is principally engaged in the television, catalogue and online shopping business.

Figure 6.9 Platform thinking and product strategy



Source: Sawhney (1998)

Typically too much emphasis is placed on ‘the strategy of opening to the outside’ when platform strategies are discussed. In contrast, platform thinking, in terms of platform strategy, aims to discover and strengthen the core logic inherent in one’s product/service (Sawhney, 1998) – that is to grow by creating a virtuous cycle in which revenues are reinvested in the platform, causing its utilisation to increase and creating various products and ecosystems by leveraging the aforementioned core logic. In the case of the Hyundai Department Store, it could grow rapidly in the market by focusing on the core logic of the department store and by strengthening it

on the level of its online sales service. The Hyundai Home Shopping Network went public on KOSPI⁴⁴ eight years after the launch of its service and its market capitalisation is currently approximately USD 1.5 Billion⁴⁵.

Platform strategy is not about simply about planning a new business or lending assets to an external party; rather, it is a means of examining a corporation's strategic vision and making all corporate activities consistent with that vision. That is to say, Sawhney (1998) emphasised that it would be possible to utilise the relationship with other products or services by implementing the product and service development and growth strategies from a platform perspective. In this way, it becomes possible to use a newly discovered platform business in conjunction with the other products or services. In the end, the utilisation of a platform will increase enough to create a virtuous cycle.

6.2.1.3. Conclusions

It is essential to choose an adequate platform business early using external and internal analysis. First, it is important to identify the latest technological trends and market changes using an external analysis. This study found that the two conditions must be met to assess platform potential (Gawer and Cusumano, 2008). First, essential functions that will satisfy the market and customers must be clearly identified. Second, ways to expand by including third parties sufficiently enough to initiate a virtuous cycle must be found. To do so, internal and external analyses should be conducted simultaneously. For an internal analysis, it is important to

⁴⁴ The Korea Composite Stock Price Index

⁴⁵ As of March 5th, 2015

conduct a sequential analysis using the three processes based on platform thinking (Sawhney, 1998). The first process creates building blocks by analysing products, services, and processes comprehensively. The second process is the construction of a platform by combining these blocks. The last process is the development of various new products and services, based on the established platform.

Table 6.8 Summary of strategies on entry stage coding

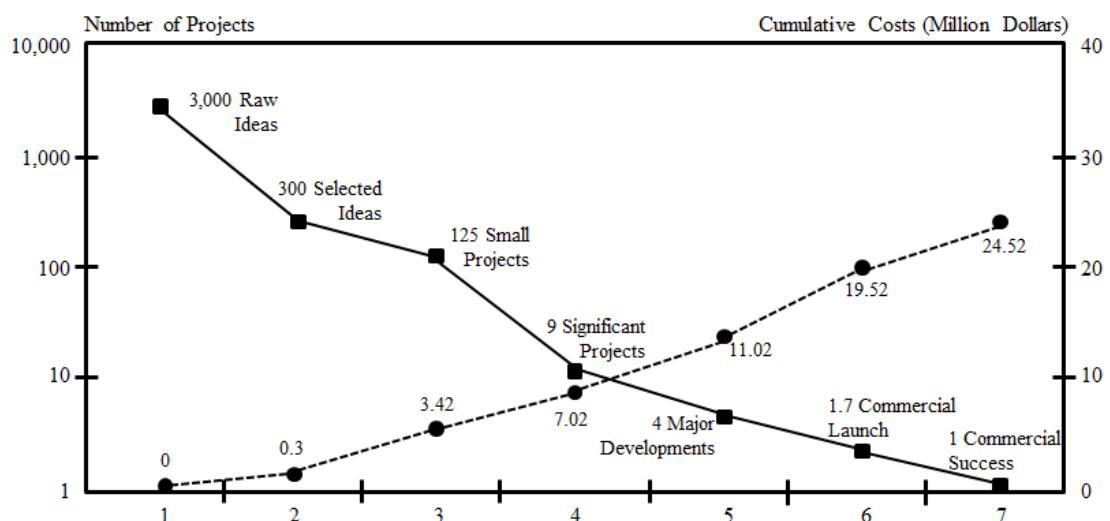
Entry Strategy		Strategies
Platform Business Model	Supplier	<p>S1 External Analysis: Platform Potential</p> <p>S1.1 Essential Function It is required to confirm the essential functions that can satisfy both the market and customers.</p> <p>S1.2 Easy to connect and expand It is required to make an easy connection between the supply side and demand side and also to make it easy to construct a virtuous cycle through various expansions.</p>
	Tailor	
	Facilitator	
Considerations	Platform Potential (External Analysis)	<p>S2 Internal Analysis: Platform Thinking</p> <p>S2.1 Building Blocks It is necessary to extract common blocks by analysing the products, services, processes, etc. within a company comprehensively.</p> <p>S2.2 Product/Service Platforms It is necessary to establish an overall platform by combining those extracted blocks</p> <p>S2.3 Product/Service Families It is necessary to develop a variety of new products based on the platform established in ‘S2.2 product/service families’</p>
	Platform Thinking (Internal Analysis)	<p>S3 Characteristics of Platforms Confirm which type of platform business model</p>

Following this, a corporation will select an appropriate platform business, confirm whether it is a supplier, tailor, or facilitator type (see chapter 5.1) through analysis of the value chains and value streams, and then, establish an adequate business strategy for each platform business model in the next stages.

6.2.2. Growth Stage: How Should a Two-sided Market be Built?

It is not easy to start and develop a new business to such an extent, so that it survives on a consistent basis. A majority of new companies face failure before becoming so. Even in the United States where the start-up ecosystem is developed, three out of four new companies fail according to the Wall Street Journal⁴⁶. According to Hammerstedt and Blach (2008), only one or two out of roughly 3,000 raw ideas will become a commercial success after undergoing an actual significant project and test.

Figure 6.10 The stage of product/service development



Source: Hammerstedt and Blach(2008)

⁴⁶http://www.wsj.com/articles/SB10000872396390443720204578004980476429190#articleTabs_comments%3D%26articleTabs%3Darticle

Platform businesses are even more complicated, because they must not only resolve those problems that the new companies usually face, but also the so-called chicken and egg problem, which is endemic in any two-sided market. Questions such as “which of two consumer groups should be made into a platform user group first?” and “how two consumer groups should be motivated to use a platform simultaneously?” are the essential parts of the chicken and egg problem (Rochet and Tirole, 2003b). A platform business model can expand and succeed rapidly in a market because of the cross-sided (indirect) network effect (Eisenmann et al., 2006), and value co-creation (Ceccagnoli et al., 2011), which can be created by inducing various participants, in addition to the direct service of a platform. So, a platform company should establish a two-sided market. However, it faces the ‘chicken and egg problem’ in the early phase of establishing a two-sided market. Thus, establishing a two-sided market by resolving ‘chicken and egg problem’ is an essential step for a platform business to grow and succeed in a market during its growth stage (Caillaud and Jullien, 2003; Rochet and Tirole, 2003b; Hagju, 2007; Eisenmann et al., 2008).

Caillaud and Jullien (2003) constructed the theoretical basis for the two-sided market, which they verified using the cases of brokerage service companies in the hope of solving the chicken and egg problem using an economic approach. A perfectly competitive market, as understood in economics, has unit costs and margins for the products and services available. Customers who purchase products and services in the market determine marginality. Thus, the price-determination structure is simple. Platforms, however, are a two-sided market, with two different properties, unlike the conventional one-sided market of economic theory. Therefore, it is not easy to create an optimised price structure, and therefore the chicken and egg problem is one of many challenges faced by a platform company. It is necessary

to consider which of two sides should be attracted first to a platform, when a platform company should make two different groups that are participating in a platform, and pay for their participation (Hagiu, 2007; Eisenmann et al., 2008). Therefore, the biggest challenges faced by platform providers in the growth stage are deciding which of two mutually different customer groups should be made the initial platform user group and how to encourage two user groups to become platform users at the same time (Rochet and Tirole, 2003b). After identifying their type of platform business model, platform providers provide subsidisation and cross-subsidisation in accordance with the attributes of their platform business model.

6.2.2.1. Subsidisation

The first participant in each platform plays the critical role in operating a corresponding platform. In addition, each of the early participants does not know whether the platform used will become a major platform, so their participation comes with a high degree of risk. On that account, a large number of consumers refuse to use a platform before it has enough users. Overcoming this problem is the first task to successfully creating a two-sided market. Active interventions by the platform operator in the price structure can be helpful: “Providing low prices or transfers to one side of the market helps the platform solve the chicken and egg problem by encouraging the benefited group's participation”, Evans (2003b, p. 196) stated. Price structure is a generic term used to describe various benefits, including monetary compensation, free services, deregulation, and solution offering. Rochet and Tirole (2003b, p. 992) refer to price structures as the ‘instruments of cross-subsidisation’. The initial free versions of software programs and initial low prices of games consoles are kinds of price structure intervention undertaken by the

platform operator. It is important in the early stages to reduce the cost of participation in a platform through subsidisation or by giving benefits and rewards. Eisenmann et al. (2006) emphasised the importance of vitalising one side of the market first through subsidisation, and then encouraging the vitalised side to affect the other side.

The platform provider must therefore determine which side to subsidise in the establishment phase. At this point, the essential point is the value chain and stream. According to the result of the analysis of chapter 5.1, a platform can be sub-divided into producer-oriented platforms (supplier type), consumer-oriented platforms (tailor type), and both-oriented platforms (facilitator type) depending on the features of the value chain. That is, it is possible to know that all the platform business models concentrate predominantly on the early formation of the business model.

First, in the case of supplier type, the value chain begins on the supply side, since it is producer-oriented. In other words, the producers deliver products and services to the consumers through the platform. According to Jaheung Koo, Sr. Manager of KT, Olleh Market is an open app market that allows users to download a variety of apps to their smartphone. It was essential for KT to secure the applications (the supply side) in the early phase, so a producer-centred approach was appropriate here. As a result, KT offered marketing tools such as ad banners, coupons, and cash in Olleh Market application providers for free(subsidisation), in order to secure as many application providers as possible after the service was launched. In this way, KT aimed to create a producer-friendly environment. Moreover, it helped app content providers to sell paid apps more easily, by allowing them to use the phone bill

service⁴⁷ for free. In this way, KT could attract a large number of content providers and also many users.

For the tailor type, the value chain begins on the demand side because it is a consumer-oriented platform. Consumers make a request to producers for a product or service through the platform. For tailor type platforms, it is necessary to adopt a consumer-centred approach. In the case of Samsung AdHub, a variety of applications in the Samsung Apps were offered for free (subsidisation), in order to secure initial users. In this way, Samsung Apps could attract the demand side and also attract advertisers.

For facilitator type platforms, which are both producer- and consumer-oriented, it is necessary to leverage a producer- and a consumer-centred approach. The boundary between the producers and consumers is blurred, unlike the aforementioned two platform business models. Thus, it is necessary to subsidise both the supply and the demand side, as Facebook's social media platform did when it allowed users a free storage service to upload pictures.

6.2.2.2. Cross-Subsidisation

Cross-subsidisation refers to the process of distributing the costs associated with production of goods or services arbitrarily for a certain purpose, rather than distributing them in accordance with the incurred costs. It therefore often refers to covering deficits in one area of an industry with profits generated in other areas (Eisenmann et al., 2006). Market-dominating companies can subsidise other side (less developed) businesses or services with windfall profits, resulting in market dominance. In other words, it is a way of supporting less profitable businesses

⁴⁷ The telecommunication provider's own payment system

financially with the profits from more profitable businesses. Cross-subsidisation violates the ‘beneficiary pays principle’ because those receiving the relevant goods or services are not matched with those bearing costs. Nonetheless, this cross-subsidisation is accepted in economics because it allows for the pursuit of various economic objectives, such as balanced development, redistribution effects, and focused growth in specific areas.

Rochet and Tirole (2003b) argued that a two-sided market could be completed if the platforms were cross-subsidised effectively. In this context, they argued that cross-subsidisation was a key factor for platform strategy and two-sided market (Rochet and Tirole, 2003b). Cross-subsidisation is a strategy for attracting participants to one side using another. Thus, cross-subsidisation should be implemented together with subsidisation as a means of allowing participants on one side to accrue new benefits. KT’s Olleh Market, as a supplier type platform, provides marketing tools like ad banners, coupons, and cash to application providers (supply side) for free (subsidisation), and makes them pay for benefits⁴⁸. In this way, customers on the demand side can acquire new benefits⁴⁹ (cross-subsidisation). In the end, there will be a virtuous cycle resulting in a larger two-sided market. Both Samsung Adhub (tailor type) and Facebook (facilitator type) had similar results. Samsung Adhub supplies various services to its users (demand side) for free (subsidisation), and makes them pay for benefits.⁵⁰ In this way, the advertisers on the supply side can acquire benefits (cross-subsidisation), Ad inventories, in which they enable to advertise. Facebook’s social media platform, a facilitator type in which the boundary between the producers and consumers is blurred, establishes a two-sided market by providing storage space to upload pictures for free (subsidisation), and the

⁴⁸ Application providers are supposed to develop and upload applications diligently

⁴⁹ i.e. customers are able to use and download applications for free.

⁵⁰ Users increase service usage traffic by using free services on a consistent basis.

benefit of checking and sharing uploaded pictures between users (cross-subsidisation) simultaneously.

6.2.2.3. Conclusions

The representative platform companies such as Google, Apple, Amazon, and Facebook, merged and acquired many technology-based companies and released thousands of open API every year. They tend to provide technologies acquired by merging technology companies to developers in the form of open APIs in order to maintain their platforms, hence offering subsidisation to developers. In addition, the services developed by subsidisation provide various cross-subsidisations to the users, who both maintain and expand the two-sided market and build the exclusive competitiveness of the platforms. In other words, they are continuously developing both subsidisation and cross-subsidisation to maintain perpetually the relationship with the two-sided customer groups and remain competitive. Therefore, the biggest challenges faced by the platform providers in the growth stage are deciding which of the two-sided groups to make the platform's first user group and how to create a two-sided group of platform users. This has been explained as the chicken and egg problem because economic efficiency occurs not between the platform providers and each of the customer groups, but from the size of each of these groups and the amount of consumption noted on both sides (Rochet and Tirole, 2003b).

Platform providers must identify which kind of business model their platform business is using internal and external analysis in the entry stage so they can use subsidisation and cross-subsidisation successfully. For the supplier type, some subsidisation of the supply side is needed, as is some cross-subsidisation of the

demand side. In contrast, the tailor type requires that the demand side be subsidised and the supply side be cross-subsidised. For the facilitator type, both the demand and supply sides need to be subsidised and cross-subsidised.

Table 6.9 Summary of strategies on growth stage coding

Growth Stage				Strategies
Supplier	Supply Side (Producer) acquisition	→	Demand Side (Consumer) acquisition	S1 Subsidisation Supplier: Provide subsidisation to supply side Tailor: Provide subsidisation to demand Side Facilitator: Provide subsidisation to both sides
	Demand Side (Consumer) acquisition	→	Supply Side (Producer) acquisition	S2 Cross-Subsidisation Supplier: Provide cross-subsidisation to demand Side Tailor: Provide cross-subsidisation to supply side Facilitator: Provide cross-subsidisation to both sides
Facilitator	Supply/demand side acquisition			

6.2.3. Expansion Stage: How should network effects be exploited?

Network effects occur when a two-sided market is constructed and two groups are attracted to each other (Eisenmann et al., 2006). Network effects (or externalities) facilitate the rapid growth of a platform company (Cusumano, 2010a). Both direct (same-side network effect) and indirect (cross-side network effect) network effects are prerequisites of two-sided markets (Eisenmann et al., 2006; Cusumano, 2010b). On that account, the growth rate increases if network effects can be encouraged between the users of the two-sided market.

Therefore, network effects are one of the essential determinants of the success of platform businesses. In the case of YouTube, the number of users increased when it had a variety of content and an adequately established platform. Initial users also attracted other people, thereby increasing the value of the YouTube platform and causing network effects. People prefer a platform service that has more content and more users, so it attracts even more users and is likely to become bigger and stronger. As in the case of YouTube, the ‘winner-take-all’ phenomenon frequently occurs in the market, principally as a result of network effects. Networks with enough users will likely continue to grow, whereas networks that have fallen behind their competitors will fail to expand, and consequently contract. There will be a starker contrast between winners and losers over time. Therefore, it is highly important for a platform to reach a point of critical mass to increase the benefits of network effects, because this allows platform providers to grow and create a corporate ecosystem that will attract more participants.

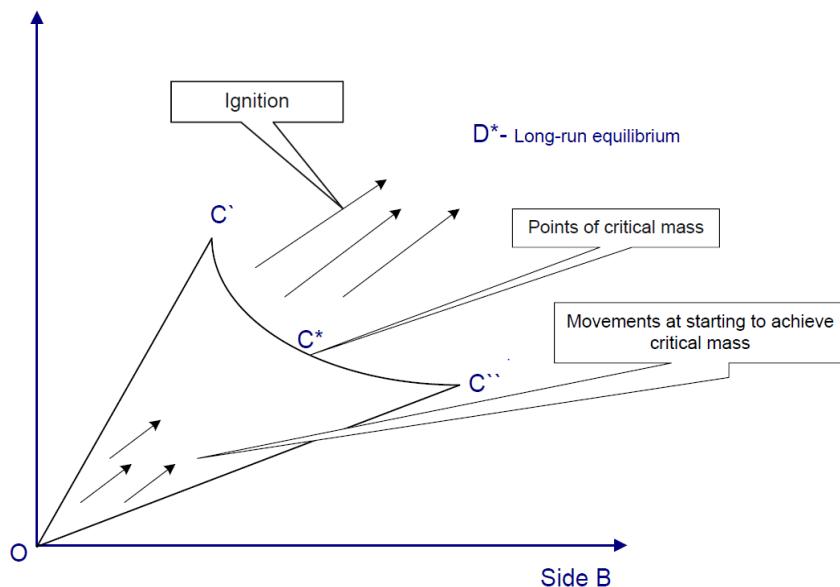
6.2.3.1. Importance of Reaching a Critical Mass

In two-sided market theory, core economic efficiency results not from the platform provider and not from any of the participant groups alone, but from the size and configuration of the participant groups on both sides. For example, the value of using the platform for the providers on eBay increases when many purchasers also use it. On the other hand, there should be providers of the platform who provide auction materials for the purchaser’s use. It is therefore important that platforms reach a critical mass point to initiate network effects (Evans, 2009). Once this critical mass point is reached, the network in which participants prefer to maintain

closer relationship with is formed either directly or indirectly, as a driving force of growth. Platform providers must secure enough participants on both sides to provide sufficient value and allow for sustainable growth. Figure 6.11 describes the important concept of “Catalytic Ignition and Critical Mass⁵¹” (Evans, 2009, p. 6).

According to Evans (2009), network effects might not be apparent if there are not enough users on both sides. When the number of platform users reaches the point of critical mass (C' - C''), it is feasible that a long-run equilibrium (D^*) will be reached. On the other hand, if the business starts from the origin 0 and is not able to reach critical mass after a certain period of time, it tends to lose the driving force of its growth and be expelled from the market. (Critical mass is in the form of points acquiring many of participants such as C' , C^* , and C'' in the market with higher network effects. If one part is much smaller than the other, it is difficult for them to grow.)

Figure 6.11 Catalytic ignition and critical mass



Source: Evans (2009)

⁵¹ For the technical development of this framework see David S. Evans and Richard Schmalensee, —Failure to Launch: Critical Mass in Platform Businesses.

6.2.3.2. Different Approaches to Critical Mass

When a network is formed by the participants of the two sides, the “penguin effect” occurs (Farrell and Saloner, 1986, p. 941). A group of penguins are required to jump into the ocean to catch fish. However, there might be natural enemies in the water. The penguins wait until one courageous penguin jumps into water. In other words, the remaining members tend to make their decision on how harmless the water is by watching the jump of the first penguin. In the platform network effect, a similar phenomenon occurs (Lyytinen and King, 2006). Even if the two sides are already established, the economic efficiency of the users in the beginning might not be high, since there are not yet many users. In addition, if there are users avoiding or waiting to use the platform, the economic loss is bigger than the economic efficiency. This phenomenon, where users wait outside the network without particularly using a product or service, is called the ‘penguin effect.’

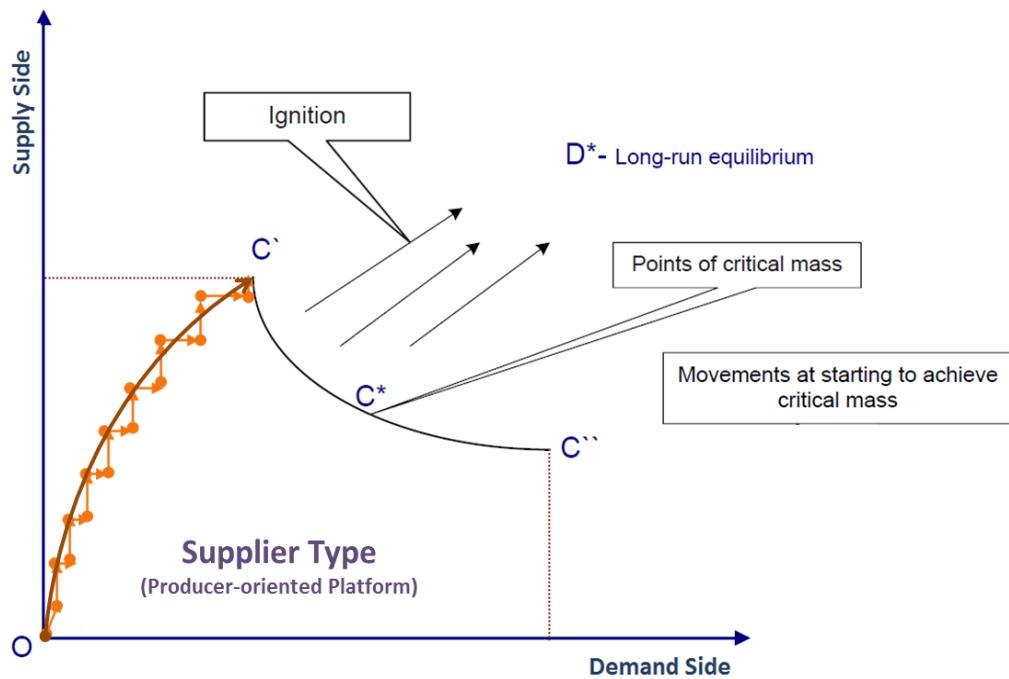
Therefore, the first group of platform users in each of the participant groups have the important role for the operation of that platform. Each of these groups does not know if the platform they are using will become the main one in the market, so they tend to take a high risk until the critical mass point is reached. Subsidisation and cross-subsidisation are provided in the growth stage, according to the characteristics of each of the platform business models, in order to overcome this ‘penguin phase’, but different methods are needed to reach critical mass for each of these models.

Supplier type platforms⁵² need to focus more on the acquisition of the supply side to reach the critical mass point of C’. The striking feature is that the platform

⁵² Producer-oriented platform business model

represents a log curve in a zigzag fashion as it reaches towards the critical mass point, according to the characteristics of the two sided market (see Figure 6.12). This ‘zigzag’ strategy enables a platform to build up value on both sides of the two-sided market (Evans, 2009). Of course, there might be a disparity on each of the platforms. However, the critical mass point is reached in a zigzag shape, with the height and length longer than the width in the beginning for the supplier type. For example, the Kindle platform focused initially on acquiring e-book content (supply side) while collecting readers (demand side). When the critical mass point is reached, the network effects increase suddenly, making it feasible to grow the platform explosively.

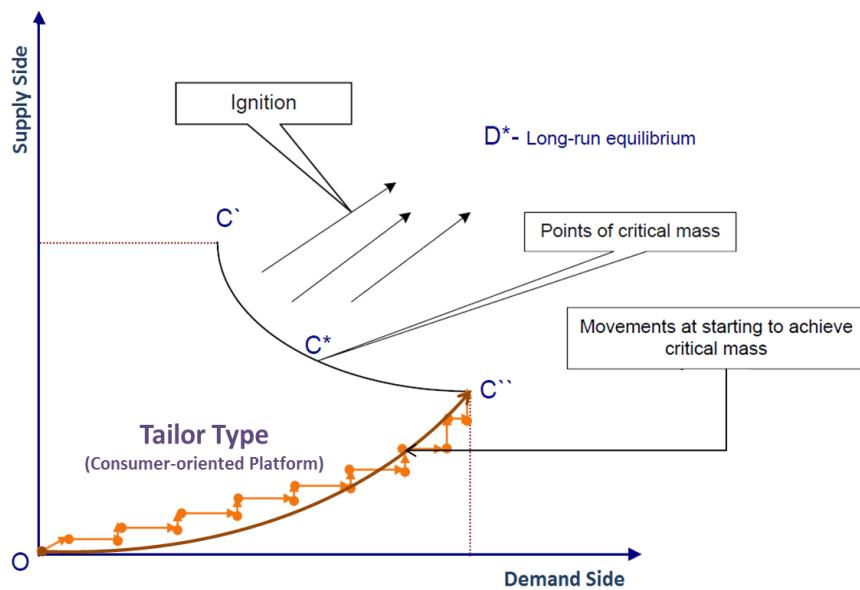
Figure 6.12 Supplier type critical mass approach



Source: Author's elaboration from Evans (2009)

A tailor type⁵³ platform should focus more on acquisitions on the demand side to reach the critical mass point C'', at which point the zigzag shape becomes an exponential curve, according to the characteristics of the two-sided market, reaching the critical mass point. Of course, there might be a disparity on each of these platforms. The tailor type reaches its critical mass point in a zigzag shape with a width that is initially greater than its height, unlike the supplier type, and it becomes similar later (see Figure 6.13). For example, Google Adwords focused on the acquisition of websites (demand side) that can display advertisements by indexing the pages while operating its search engines for free and without advertisement for 23 months. This is done to collect advertisers (supply side) and reach the critical mass point, at which point network effects suddenly increased and it became feasible to grow explosively.

Figure 6.13 Tailor type critical mass approach

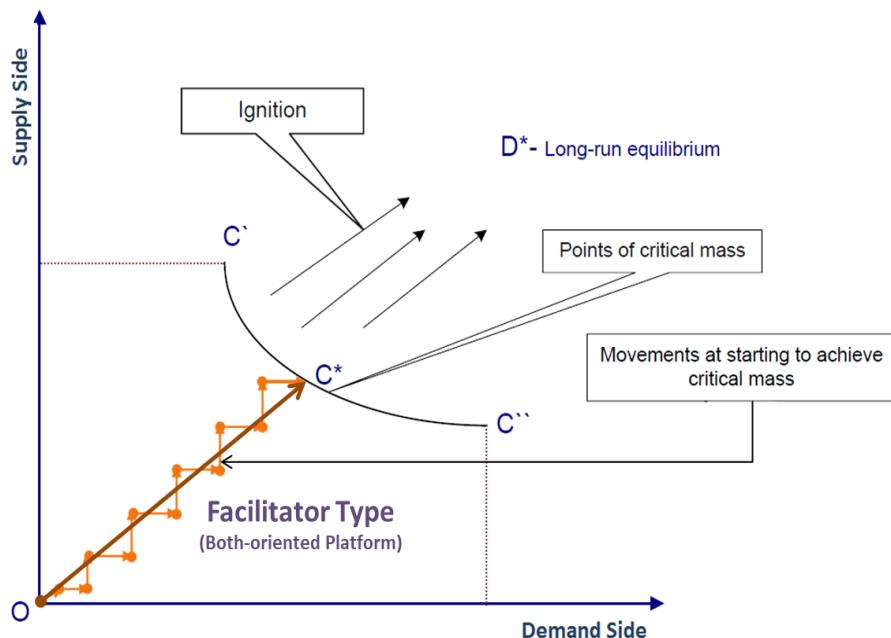


Source: Author's elaboration from Evans (2009)

⁵³ Consumer-oriented platform business model

The facilitator type⁵⁴ does not differentiate between the supply and demand sides, but instead focuses on reach the critical mass point C^* . Similarly, the platform is expanded in a zigzag shape, according to the characteristics of a two-sided market. However, unlike other the two models, which are represented by curves, the facilitator type is represented by an upward straight line after it has reached its critical mass point (see Figure 6.14). Since both producer- and consumer-centred approaches are required, the critical mass point is reached in a zigzag shape, with both sides at an equivalent distance. For example, Blogger, a blog-publishing service that allows multi-user blogs, provided usage for free and make it possible for individual bloggers to make profits from advertisement in their blogs in the hope of acquiring the users as producers and consumers. This allowed Blogger to collect the users rapidly so that it could reach its critical mass point.

Figure 6.14 Facilitator type critical mass approach

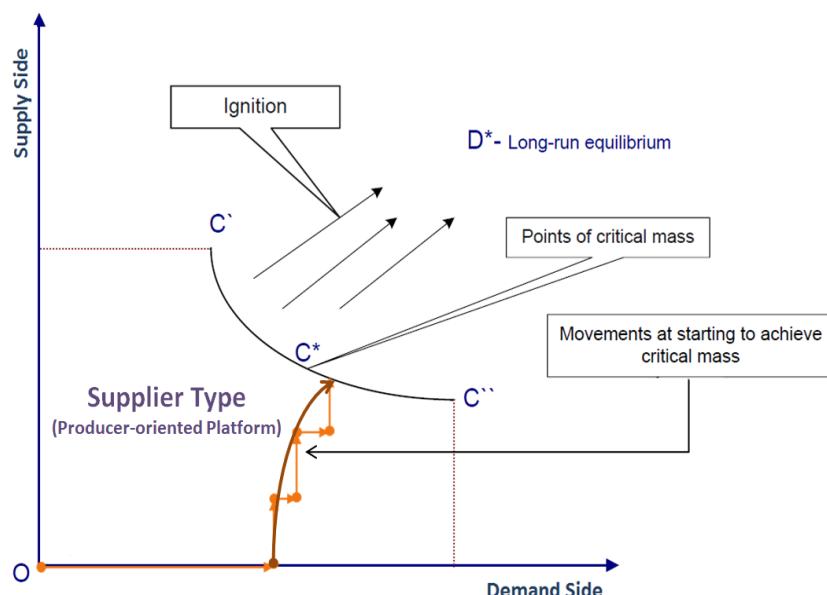


Source: Author's Elaboration from Evans (2009)

⁵⁴ Both-oriented platform business model

Business which start with partial services and later expand into platform business sometimes give one field priority (see Figure 6.15). Nonetheless, they essentially follow the rules outlined above. For example, the mobile instant messaging (MIM) services offered by Kakao⁵⁵ intended to establish application store platforms of the supplier type in order to acquire new profit models because there were many MIM users from the beginning. Similarly, the map platform Daum⁵⁶ provided its mapping service to the users from the beginning, followed by an open map API, as it came up with ideas for creating new profit models, collecting third party developers and advertisers (supply side), and expanding to become a tailor type platform. After a two-sided market has been established with participants on one side, platform business models of every type should reach their critical mass point.

Figure 6.15 Kakao MIM platform's critical mass approach (Supplier type)

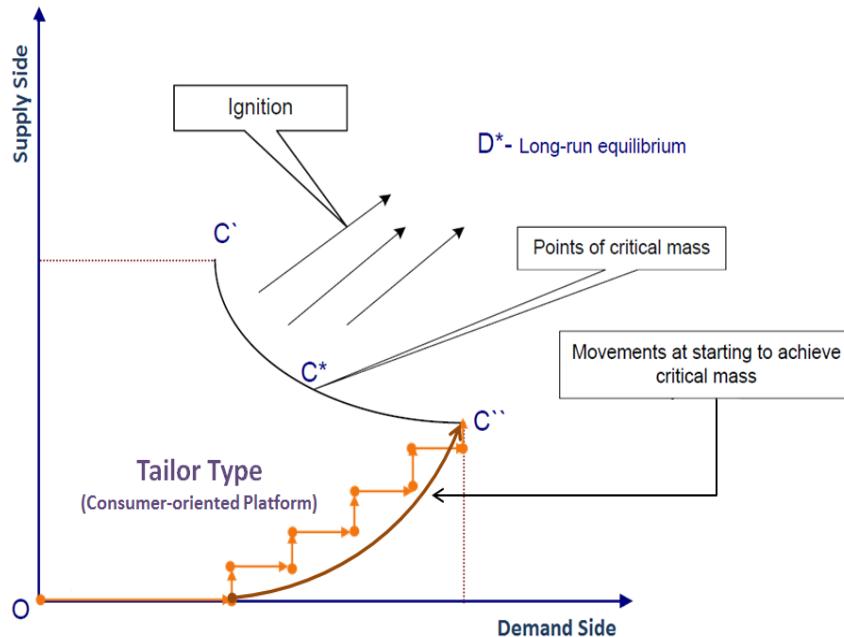


Source: Author's elaboration from Evans (2009)

⁵⁵ Kakao Corp. was named a "Top Developer" on Google's Android Market, and it was chosen as the No.1 Free SMS App by Cnet. (<http://www.cnet.com/videos/free-sms-apps/>)

⁵⁶ The second biggest web portal in Korea

Figure 6.16 Daum Map platform's critical mass approach (Tailor type)



Source: Author's elaboration from Evans (2009)

6.2.3.3. Conclusions

Shapiro and Varian (1998) emphasised the need for factors like luck, endurance, and predictive ability in the economy to sustain network effects, suggesting that they are necessary for continuous investments and to wait for opportunities, even if the number of users does not initially increase. These are necessary because one of the most important features of any platform is the network effect. Both direct and indirect network effects occur in the platform, which combine to produce a more significant impact.

Network effects are created because participants attract other participants. Therefore, after a certain threshold, the number of participants will continue to increase without the company needing to take any additional action. However, this is only true when

the number of participants is high. Network effects are a blessing for those who have grown already and a challenge for those who have not. Early phase platforms without many participants may struggle to attract new participants, and, as they keep on waiting for the number of participants to go up, no one is willing to take the risk of participation. In other words, even if the two-sided market is already established, the penguin effect will still occur.

Therefore, it is very important for the platform to reach the critical mass point in order to promote network effects. Once the critical mass is reached, network effects will attract other participants and become a strong driving force behind the company's ecosystem. Therefore, it is essential that the number of participants is increased for all types of platform in order for critical mass be reached. Each platform business model, however, has different features, which means that different approaches to reaching critical mass are appropriate for each one.

Table 6.10 Summary of strategies for expansion stage coding

Expansion Stage				Strategies
Supplier	Direct (Same-Side) Network Effect	→	Indirect (Cross-Side) Network Effect	S1 Critical Mass To encourage network effects, reaching a critical mass of resources is essential
Tailor	Direct (Same-Side) Network Effect	→	Indirect (Cross-Side) Network Effect	S2 Different approaches to Critical Mass S2.1 Supplier Type Reach the critical mass point in the log curve
Facilitator	Direct (Same-Side) Network Effect	→	Indirect (Cross-Side) Network Effect	S2.2 Tailor Type Reach the critical mass point in the exponential curve S2.3 Facilitator Type Reach the critical mass point in the upward line

Platforms derive economic efficiency only when direct and indirect network effects are internally applied to the platform in a two-sided market. Platform business providers therefore need to acquire participant groups on both sides of platform, promoting the trade and reaching the critical mass point. In addition, same-side and cross-side network effects are internally applied to the platform.

6.2.4. Maturity Stage: How should the business ecosystem be competed?

After choosing a platform business, building two-sided market, and encouraging network effects, the business should complete its ecosystem. According to the Oxford Dictionary⁵⁷, an ecosystem is ‘a biological community of interacting organisms and their physical environment’. In other words, an ecosystem is where organisms live and interact with others while establishing their own independent system. The concept of the ecosystem has been applied in various fields; the term ‘business ecosystem’ was coined by Moore (1993). Moore (1993) defined a business ecosystem as a network of interdependent existences, that is, a self-conscious community of economic subjects that largely depend on the community as a whole. Iansiti and Levien (2004b) defined a business ecosystem as a network of companies which influenced and was also influenced by the provision of value for each individual company; examples include suppliers and producers of related products and services, technical suppliers, distributors, and outsourcing companies. Peltoniemi (2006) defined the business ecosystem as the heuristic group, while much of their behaviour maintain the interdependent connection, and take an interdependent attitude for survival and domination in the market. Lastly, the business ecosystem is a system where the platform providers, value suppliers, and consumers interact with each other. Simon and Joel (2011) defined a business ecosystem as a system in which platform providers, value suppliers, and consumers interact with each other.

⁵⁷ <http://www.oxforddictionaries.com/definition/english/ecosystem>

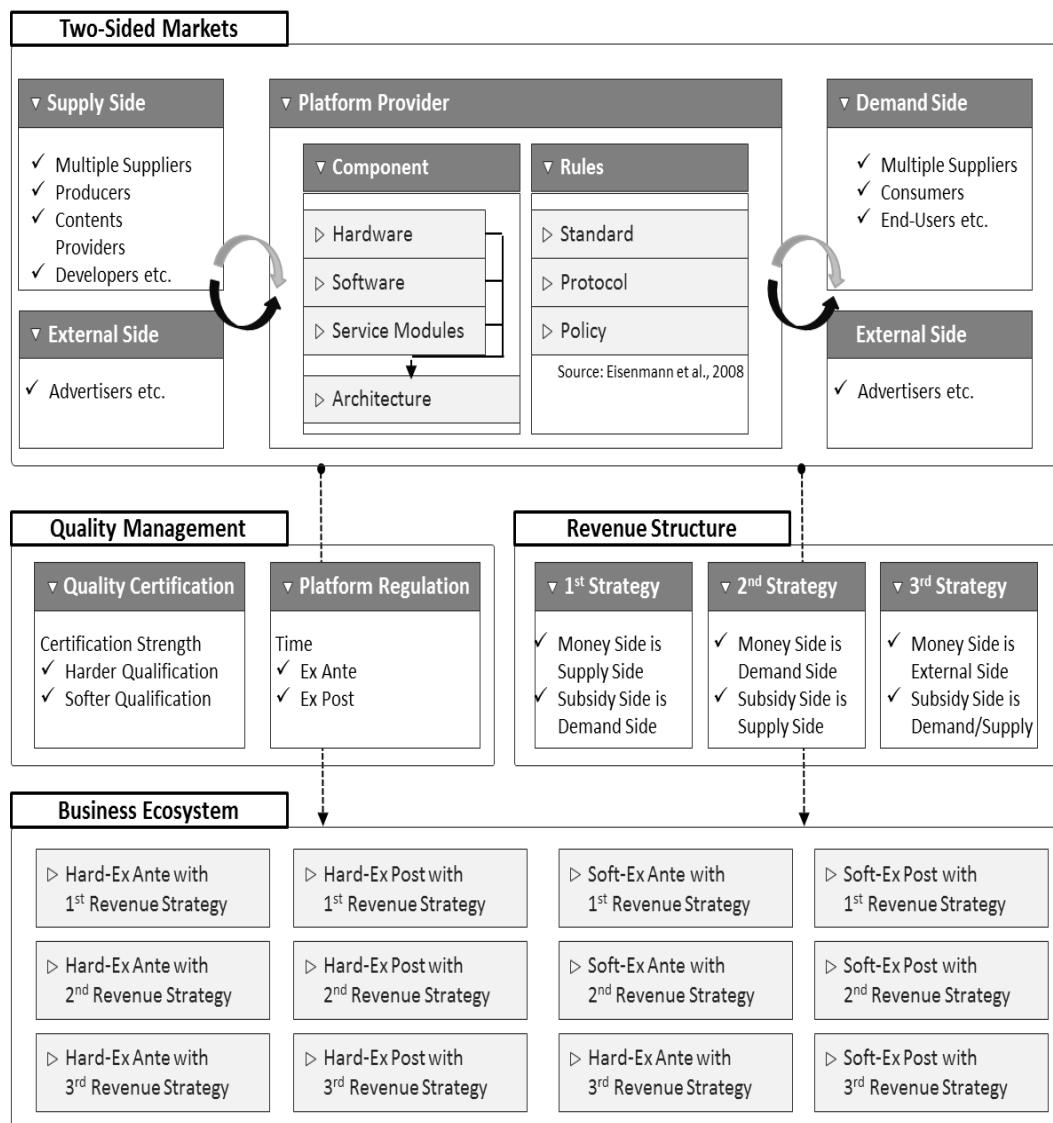
For example, Apple's ecosystem is based on communication between business holders, application developers, content providers, and smartphone users, who interact with each other through the platform provider, Apple. Business ecosystems provide value to platform participants and pay for the expenses incurred in the cycle. The participants exist and grow together. In addition, various types of platform and enriched value are created by complementary participants. These are then delivered seamlessly to the consumers, and hence, the business ecosystem is continuously growing and developing. The platform has a core role in establishing the company's ecosystem, while participating companies create value and perform the intermediary role. Many of the businesses are established based on the platform and various companies and consumer ecosystems are formed based on it. The reason Apple dominates the mobile market is that its business ecosystem was created with support from the platform participants based on a well-established and outstanding platform.

Therefore, a platform will fail if the platform participants do not continuously support it, even if it has already been established. It is necessary to establish a business ecosystem to create a win-win situation for all the participants in a platform business by building profit models and continuous quality management. Apple has succeeded in establishing an ecosystem platform through iTunes and the AppStore, and Amazon has successfully established an ecosystem platform in the field of book sales. In addition, eBay has successfully established an ecosystem platform in the field of open markets. These businesses were able to grow and expand continuously with leadership in the market. In other words, establishing a business ecosystem is important stage of making a platform business stable, if the platform is to grow and expand continuously.

The literature review suggested that creating a business ecosystem is a core strategy for successful platform providers which completed the two-sided market model. Revenue structure (Nachira et al., 2007; Teece, 2010; Amit et al., 2012) and quality management (Boudreau and Hagi, 2009; Hagi, 2009; Riedl et al., 2009) are

crucial factors for building and maintaining the business ecosystem. Firms adopt a platform business model in order to encourage the continuous innovative development of complementary products. Therefore, platform providers should manage the quality of platform, considering how to improve the loyalty of the participants and how to deal with profit and revenue structures for the participants and the platform so that they can grow at the same time. This stage is designed to support the platform companies in completing a business ecosystem.

Figure 6.17 Platform business model and business ecosystem conceptual framework



Source: Author's creation

6.2.4.1. Platform Quality Management

Platform quality management is needed to increase the number of participants, so that network effects can be improved and a powerful platform created. The issue is that merely increasing the number of participants might cause an increase in the number of unwanted participants or in opportunistic behaviours from the participants, potentially degrading the quality of platform and causing desirable participants to leave. If this happens, the platform business will fail, even if a two-sided market has already been established and a critical mass reached. In particular, participants have a high chance of encountering a market for “lemons” in a two-sided market (Akerlof, 1970, p. 489). A platform business must counteract the effects of quality uncertainty.

The Lemon problem is easily confirmed by the example of YouTube; which acts is a representative platform business. As the biggest worldwide video sharing website, YouTube is always exposed to the risk of degraded quality. According to its official website,⁵⁸ YouTube has about a billion users, who invest hundreds of millions of hours in watching video clips every day, producing billions of views. In addition, 300 hours of video clips are uploaded every minute, and the time that the users dedicate to watching video has increased by 50% in the last year. Among this massive amount of content, there might be some that is inappropriate, in violation of copyright, excessively violent, or lewd. If the content is not filtered out correctly, users and advertisers will leave the platform. YouTube has been trying to solve the issue of the degraded quality of its platform since its establishment in 2005.

⁵⁸ <https://support.google.com/youtube/answer/2797370?hl=en-GB>

There are two core issues of quality management of YouTube. The first is self-filtering. YouTube has developed an innovative copyright protection system, named ‘Content ID’,⁵⁹ which can automatically detect illegal video clips that violate copyright. As for operating principles, it uses the unique sound and video signal patterns, or video fingerprint, for all the video clips, and that is similar in a way to how criminals are caught, through fingerprint investigation. So, if a copyright holder wants to protect videos that have been uploaded, YouTube detects the video’s fingerprint and saves it to a database⁶⁰. In addition, YouTube filters the video clips where the fingerprint turns out to be identical and removes the infringing video clips by contrasting the fingerprint with the video fingerprints uploaded by the users on YouTube. Secondly, users can filter content directly by pressing the flag button when they see content that is inappropriate, repellent, or in violation of copyright, which directly reports that content to YouTube for review and, if necessary, blocking⁶¹. Such self-management tends to be reliable and earn the trust of platform participants, and as a result YouTube is now the biggest media channel in the world only ten years after it was founded. In other words, ‘trust’ is very important element that can help to solve the lemon problem (Akerlof, 1970).

Therefore, gaining the trust of the participants is a necessary strategy for managing the quality of the platform and securing its continued growth. Two strategies for doing so are ‘platform regulation’ (Boudreau and Hagi, 2009) determines whether to review the platform either ‘ex ante’ or ‘ex post’, while ‘platform quality certification’ (Hagi, 2009) decides whether to limit participation or to rely on consumers to regulate the platform quality themselves.

⁵⁹ <https://support.google.com/youtube/answer/2797370?hl=en-GB>

⁶⁰ <http://www.wsj.com/articles/SB118161295626932114>

⁶¹ <https://www.youtube.com/yt/copyright/en-GB/>

Platform Regulation

Boudreau and Hagiу (2009, p. 165) emphasised the importance of regulating the platform: they argued that ‘platform regulation’ is necessary for quality management. They insisted that platform regulation can even take the form of managing behaviours after or before they have occurred – ‘ex post’ or ‘ex ante’ respectively. As with Apple’s App store, it is possible to register the proved applications, after internally reviewing them, through quality regulation in advance⁶². On the other hand, as for Google Play as a competitor in the mobile application store, when the application is developed and registered by the developer, the relevant application is firstly registered in Google Play, and then reviewed for activities or products that may have an issue of copyright, after participating in the platform, in the future, for follow-up management.

Platform Quality Certification

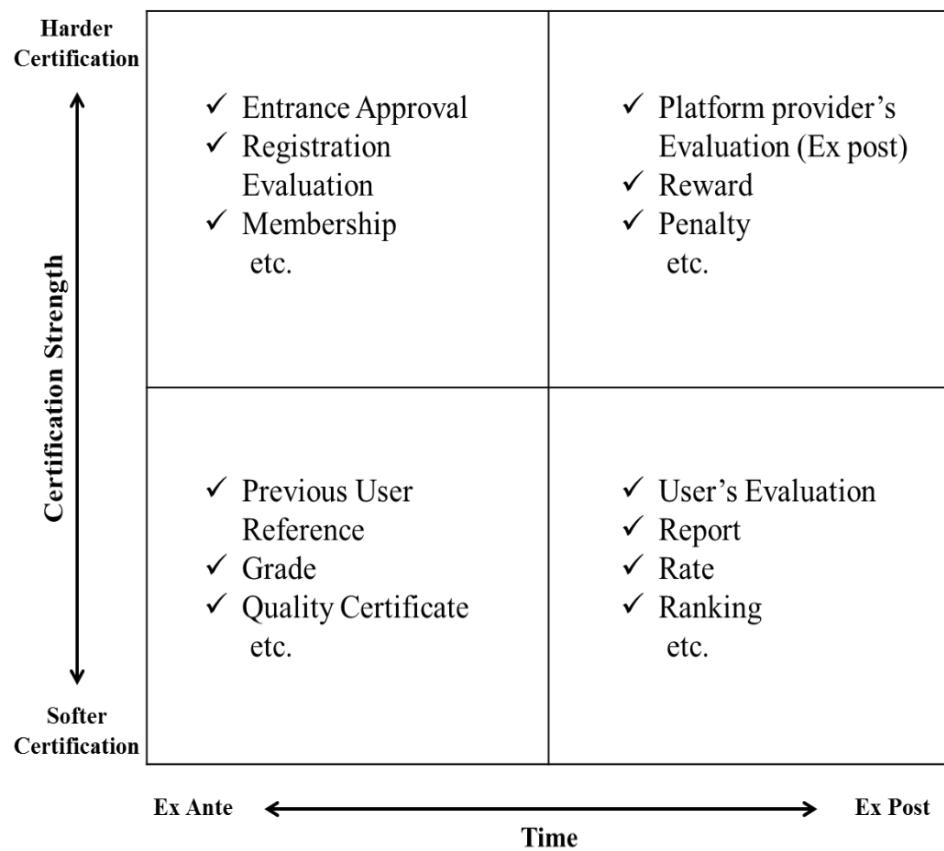
Hagiу (2009, p. 5) tried to solve the quality issue with “quality certification” in the platform. He suggested ‘hard’ and ‘soft’ methods. The ‘Hard’ method is to limit the advancement of the platform or activities, if a certain criterion is not met, and the ‘soft’ method is to provide information of satisfaction about the products, or their reliability in evaluation, making the consumers select them. For example, the Hyundai Home shopping platform manages the products supplied and the characteristics of the participants based on hard certification that assesses sellers’ stock, reputation, and competitiveness in the current market. On the other hand,

⁶² Average iOS App Store review times have been within a range of 5-10 days (<http://appreviewtimes.com>)

RecordFarm, the social-audio platform, manages quality with softer certification using user scores for the freely uploaded audio on the platform.

Therefore, it is possible to prevent quality from being degraded using a number of management options that can be represented on a 2x2 matrix comprising ‘Hard-Ex Ante’, ‘Soft-Ex Ante’, ‘Hard-Ex Post’, and ‘Soft-Ex Post’ (see Figure 5.17). In some circumstances only one of these options, although in others it is possible to use them in combination.

Figure 6.18 Platform quality management



Author's elaboration based on Boudreau and Hagiu (2009) and Hagiu (2007)

6.2.4.2 Revenue Structure

The final goal of any type of business is to produce revenue, and platform businesses are no exception. Even if the platform has developed and grown, platform business cannot be maintained if profit is not stably produced. Therefore, the platform leader must create “economic incentives for ecosystem members” (Gawer and Cusumano, 2008, p. 3). However, since growth might be slowed by creating profits, it is to judge the profit model carefully, considering the platform strategy. When setting the price, the participants’ willingness to pay the expenses of the companies is the core element that affects future growth.

Platform business holders first need to determine the money- and subsidy-sides of the business (Eisenmann et al., 2006). That is, they need to consider each group’s price sensitivity. The money-side refers to those platform participants who pay for the service, and this group that has relatively low price elasticity. On the other hand, the subsidy-side refers to those users who benefit from the platform, and this group has relatively high price elasticity. Identifying the money- and subsidy-sides is important because they create different indirect network effects, particularly cross-side network effects. If the platform providers are attractive enough to the subsidy-side, the money-side tends to be willing to pay for access. In this case, cross-side network effects occur. This is the same, in the opposite case: as there are more users on the money-side, the subsidy-side tends to be more attracted to the platform and therefore more likely to participate. The platform companies design the price structure that is imposed on the members with the aims of making the entire business ecosystem grow continuously and producing profits of their own.

The money-side can be sub-divided into three categories. The first is the supply side. For example, eBay or Nintendo can exemplify this side. For eBay or Nintendo, the demand side cannot produce profits, and the price sensitivity from the supply side is different, so the money-side is the supply side: sellers for eBay and game developers for Nintendo. The subsidy-side for both platforms is the demand side, the purchaser. Most of the purchasers are individuals who pay for the products or services produced by the supply side. They tend to be very sensitive to prices, while the sellers are mostly companies, which are less sensitive to higher prices because they make profits by selling services or products. Efficiency is created by trading the products or services on the platform. However, the supply side is less price sensitive than the demand side. If commissions are imposed on both sides, only the supply side will participate, while the demand side will not, eventually stopping the trade on the platform. Here, the demand side is also the subsidy-side.

The second is the demand side. Microsoft Windows, the PC operating system, is a representative example of it. Windows creates profit on the demand side through PC purchasers. If the number of programs is small, then PC purchasers tend not to see the value of using Windows, and the entire platform is degraded. Therefore, it is important to acquire various programs and software in order to occupy the dominant position in the market from the beginning. Related programs were acquired by providing SDK and development tool kits to developers for free as a subsidy-side. Here, the supply side is the subsidy-side.

Last is the sponsor. In this case, companies or individuals, rather than the supply or demand side, pay for expenses and are called sponsors. Models deriving profits from them are sponsor-based business models (Casadesus-Masanell and Zhu, 2013). This model is appropriate when the competition is keen or when both the supply and

demand sides have high price elasticity, which often occurs in competitive markets or when both sides are comprised mostly of individuals. As for the representative examples, the free applications of KT Olleh Appstore and Facebook, for which both free application developers (supply side) and end-users (demand side) are the subsidy-side, and advertisers are the money-side, who pay for advertisements in exchange for using the platforms and services. Similarly, as for Facebook, users are from the subsidy-side, and the advertisers are from the money-side, who provide advertisements to Facebook, and pay for them.

Table 6.11 Revenue structure strategies

Revenue Structure	Money-Side	Subsidy-Side	Cases
1st Strategy	Supply Side	Demand Side	eBay, Kakao mobile store, KT app store, Hyundai homeshopping, LG U+ app store, Nintendo Game console, Amazon Kindle, Samsung AdHub, Google Adwords, Samsung Wallet, and Kickstarter
2nd Strategy	Demand Side	Supply Side	MS Windows, MS Office, and Dell PC.
3rd Strategy	External Side	Supply Side Demand Side	Daum Map, SKT T-Phone, Yahoo Answers, Naver Webtoon, Instagram platform, RecordFarm, YouTube, and Blogger

Source: Author's elaboration

It is important to identify the money-side and the subsidy-side, depending on price elasticity, in order to maintain the balance of both sides and improve the platform's trade. This happens specifically when economic efficiency is created and the cross-network effects are internally applied to the platform. Therefore, platform business

providers should set a price structure which has been optimised for the customer groups on both sides. Establishing an appropriate profit structure model is an important strategy for building and promoting the virtuous cycle of the business ecosystem.

6.2.4.3 Conclusions

In the maturity stage, managing the quality of the platform through platform quality management is a core business procedure, as is completing the business ecosystem by improving the profit structure through the revenue structure. Therefore, it is needed to be considered how to select the participants for platform business ecosystem, how to promote their activities, and improve the trust and loyalty of the participants, and how to create a revenue structure to make both the platform and participants grow together.

First of all, it is necessary to control the platform through the platform quality management, depending on ‘time’ and ‘regulation’, in order to solve the lemon problem that can occur on platform business, due to information asymmetry. This study has proposed a 2x2 matrix based on the ‘platform regulation’ of Boudreau and Hagiу (2009) and the ‘platform quality certification’ of Hagiу (2009) which facilitates the analysis of how to proceed with quality management in a way that is appropriate for each platform. Platform providers are in need of confirming whether to manage the adjustment and control the priority on the ‘ex ante’, or on the ‘ex post’, and determine whether to develop the ‘hard’ regulations, for controlling the advancement of the platforms, or the activities, if certain level of criteria are not met, or the ‘soft’ regulations that the consumers are in charge of controlling.

Table 6.12 Different types of quality management and revenue structure strategies

	Hard-Ex Ante	Hard-Ex Post	Soft-Ex Ante	Soft-Ex Post
1st Revenue Strategy	Cert. Strength: Hard Regulation Time: Ex Ante Money Side: Supply Side	Cert. Strength: Hard Regulation Time: Ex Post Money Side: Supply Side	Cert. Strength: Soft Regulation Time: Ex Ante Money Side: Supply Side	Cert. Strength: Soft Regulation Time: Ex Post Money Side: Supply Side
2nd Revenue Strategy	Cert. Strength: Hard Regulation Time: Ex Ante Money Side: Demand Side	Cert. Strength: Hard Regulation Time: Ex Post Money Side: Demand Side	Cert. Strength: Soft Regulation Time: Ex Ante Money Side: Demand Side	Cert. Strength: Soft Regulation Time: Ex Post Money Side: Demand Side
3rd Revenue Strategy	Cert. Strength: Hard Regulation Time: Ex Ante Money Side: External Side	Cert. Strength: Hard Regulation Time: Ex Post Money Side: External Side	Cert. Strength: Soft Regulation Time: Ex Ante Money Side: External Side	Cert. Strength: Soft Regulation Time: Ex Post Money Side: External Side

Then, revenue structure in the platform business is important. Hereupon, this study was intended to establish profit structure in the platform through the money-side and subsidy-side analysis suggested by Eisenmann et al. (2006). Two-sided markets tend to have both a money-side and a subsidy-side according to the characteristics. Therefore, it is needed to separate ‘money-side’ users imposing the service usage fee when it is needed to establish revenue structure for acquiring the profit model in the platform and ‘subsidy-side’ users contributing to improve the platform value. This study has classified the group with relatively low price elasticity as the money-side and that with higher price relativity as the subsidy-side and suggested three major strategies. The first one is when the money-side is supply side, in which case the subsidy-side becomes the demand side. eBay, Kakao mobile store, KT app store, Hyundai home shopping, LG U+ app store, Nintendo game console, Amazon Kindle,

Samsung AdHub, Google Adwords, Samsung Wallet, and Kickstarter are all representative examples. The second strategy is when the money-side is the supply side, in which case the subsidy-side becomes the supply side. MS Windows, MS Office, and Dell PC are examples of the second strategy. The third strategy is when the money-side is neither the supply-side nor subsidy-side but a sponsor, a situation known as a sponsor-based business model. In this case, both supply side and demand side become the subsidy-side. Daum Map, SKT T-Phone, Yahoo Answers, Naver Webtoon, Instagram, RecordFarm, YouTube, and Blogger are representative examples.

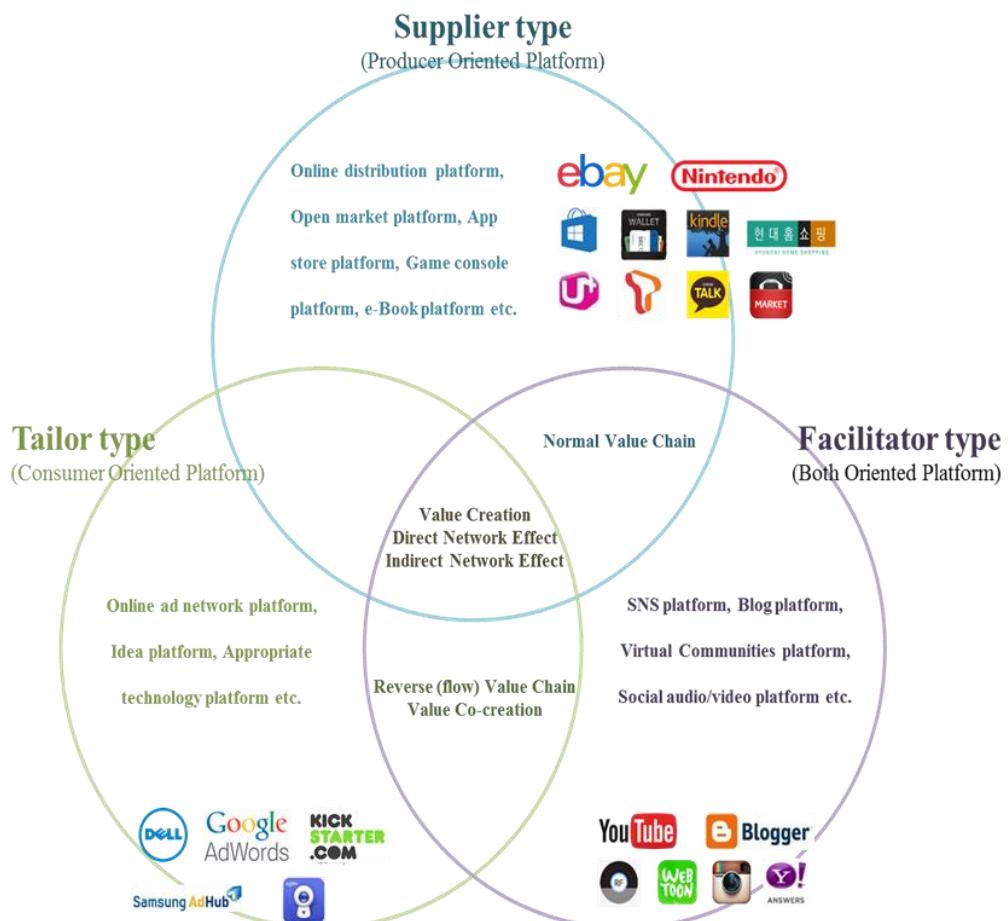
Table 6.13 Summary of strategies on expansion stage coding

Expansion Stage		Strategies
Platform Business Model	Supplier	S1 Platform Quality Management S1.1 Platform Regulation Confirm whether to manage with an ‘ex ante’ or ‘ex post’
	Tailor	
	Facilitator	
Considerations	Platform Quality Management (Platform regulation /Quality certification)	S1.1 Platform Quality Certification Confirm whether to proceed with ‘hard’ regulation that controls the advancement of platforms or activities depending on whether certain criteria are met, or ‘soft’ regulation that consumers select
	Revenue Structure (Money-side /Subsidy-side)	S2 Revenue Structure S2.1 Money-side Price elasticity is low Confirm whether to apply supply side, demand side, or sponsor if the price elasticity is low S2.2 Subsidy-side Price elasticity is high

6.3. Conclusions

The two central research propositions of this study are that ‘there are three major types of value chain model in the platform. In other words, there exist three types of platform business model, in accordance to the value chain’ and ‘platform businesses have four major growth stages, and different core elements and strategies exist for each stage’. In other words, there exist three types of platform business model in accordance with the value chain’ and that ‘according to Anderson and Tushman (1990) and Gibson and Nolan (1974), platform businesses have four major growth stages, and different core elements and strategies exit for each stage’. Based on these propositions, this study analyses a total of 7 sub-propositions, including 3 and 4 sub-propositions for each central proposition.

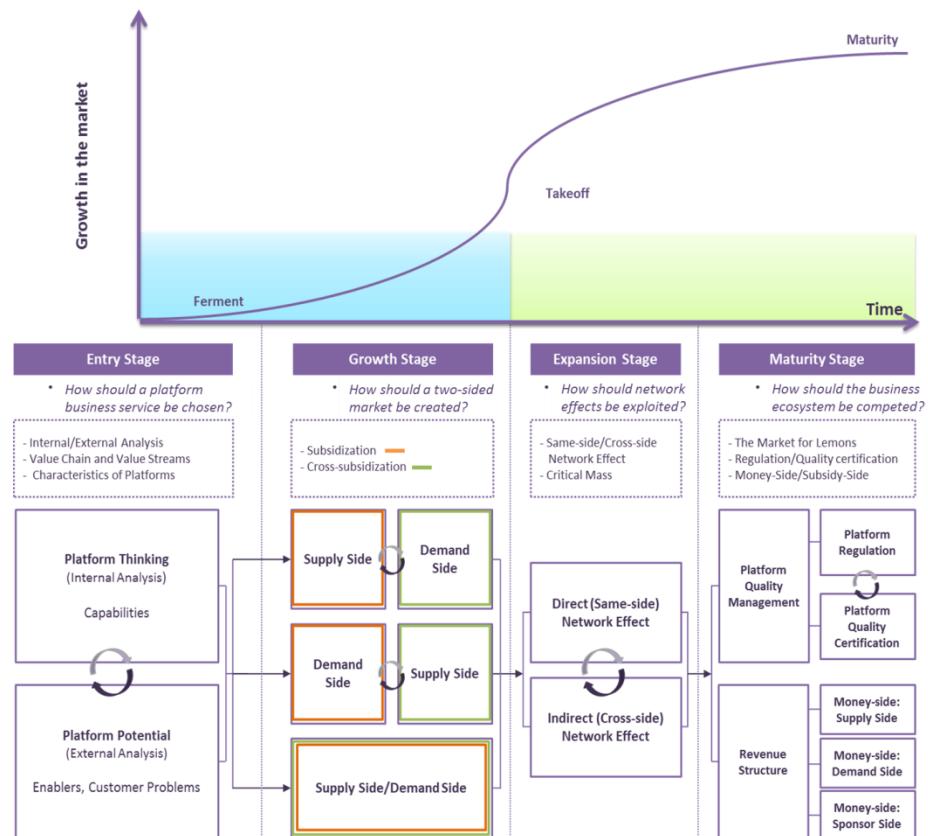
Figure 6.19 Three types of platform business model in accordance with the value chain



Source: Author's elaboration

The first proposition is that ‘there are three major types of value chain model in the platform. In other words, there exist three types of platform business model in accordance with the value chain’. This proposition was analysed using the pattern matching logic of Yin (2009) and Trochim (1989). It was confirmed whether the predicting patterns, acquired by the analysis in the literature, and the previous secondary data and the patterns observed from the consistent data, matched. The characteristics of each of the three types of platform business model⁶³ were analysed in accordance with the value chain using six core categories (normal value chain, reverse (flow) value chain, value creation, value co-creation, direct network effects, and indirect network effect).

Figure 6.20 Platform business model dynamic framework



Source: Author's elaboration

⁶³ Producer-oriented platform (supplier type), consumer-oriented platform (tailor type) and both-oriented platform (facilitator type).

The second proposition is that ‘Platform businesses have four major growth stages, and different core elements and strategies exist for each stage’. This proposition was analysed using a conceptual framework based on the logic model and theoretically grounded in the literature review. The logical propositions were analysed in terms of the pattern repetition and causality from a dynamic perspective (Peterson and Bickman, 1992b; Rog and Huebner, 1992; Yin, 2010).

First of all, in the entry stage, the strategic question of “how should a platform business service be chosen?” was provided, which dealt with the ways to cultivate new platforms. Platform potential has an external analysis for the markets and industries, and platform thinking works as an internal analysis for their capabilities in the company, and should be used for cultivating the platform. In addition, it is needed to be seen which one of three platform business models can be analysed before it is applied to the cultivated platforms.

In the growth stage, a strategic question of ‘how should a two-sided market be built?’ was provided, which dealt with the ways to acquire a two-sided market. For this, subsidisation and cross-subsidisation are exceedingly important elements, and a two-sided market is required to be established in different parts of the world, depending on the platform of business model. For the supplier-type, producer-oriented platform, subsidisation and cross-subsidisation are applied to the supply side and demand side respectively. For the tailor type, customer-oriented platform, subsidisation and cross-subsidisation are applied to the demand side and the supply side respectively. For the facilitator type, both-oriented platform, subsidisation and cross-subsidisation are

applied to both the supply side and the demand side, establishing the two-sides of the platform.

In the expansion stage, the strategic question of ‘how should network effects be exploited?’ was answered, assessing strategies for maximising network effects and establishing a dominant platform in an industry. In other words, it is important to increase the number of platform participants who are reaching out to the critical mass, to actively operate the growth engine. In addition, various methods shall be consistently applied, in order to improve the network effect for promoting the platform. According to the results of this study, two-sided markets grow in a zigzag pattern (Evans, 2009), but this exact pattern is different for each platform type after the critical mass point is reached: the supplier type, producer-oriented platform is represented by a log curve; the tailor type, consumer-oriented platform is represented by an exponential curve; and the facilitator type, both-oriented platform grows in balance for both sides, so is represented by a straight, upwards line. Hereupon, as the number of platform participants and users’ increases, the position of the platform in the market strengthens, especially if the relevant platform cannot easily be replaced by others.

In the maturity stage, a strategic question of ‘how should a business ecosystem be completed?’ was answered, assessing ways to establish a business ecosystem that grows continuously and promotes the business. According to the features of the platform, various participants tend to use a platform at the same time, and the lemon problem can occur easily. Therefore, platform quality management is important to prevent the quality from reducing, thereby encouraging the activities of participants and trading agents and preventing competitiveness deteriorating. For this, a 2x2 matrix of platform regulation and platform quality certification was suggested.

Platform regulation decides whether to manage the platform ex ante or ex post, while platform quality certification decides whether to proceed with hard regulation that controls advancement or soft regulation governed by consumers. The interviews confirmed that platform quality management is very important in industrial fields for internalised growth. In addition, as for the second strategy for establishment of a business ecosystem, a method for acquiring the profit models of the platform is suggested. For this, the revenue structure is important. The platform is required to clearly identify the money-side and subsidy-side when establishing the revenue structure. In general, the side with the lowest price elasticity becomes the money-side and that with the highest price elasticity becomes the subsidy-side. Therefore, platform providers tend to develop strategies that determine whether to have the money-side as the supply-side, the demand-side, or the external side (a sponsor), depending on the inclination of their platform business service.

These two propositions are verified by strong evidence of originality with empirical analysis through 21 multiple case studies (See Table 6.14).

Table 6.14 Summary of platform companies' supply side/demand side, subsidisation/cross-subsidisation, and money-side/subsidy-side

Platform	Type	Supply Side	Demand Side	Subsidisation	Cross-Subsidisation	Money-Side	Subsidy-Side
Samsung wallet platform	Supplier Type (1st Model)	Card Companies, Service providers	Users	Huge user pool	Payment service, mobile wallet service	Supply Side	Demand Side
eBay open market platform	Supplier Type (1st Model)	Sellers	Buyers	Open Free Market, Huge user pool	Cheap and Various products	Supply Side	Demand Side
Kakao platform	Supplier Type (1st Model)	Game developers	Users	Open Free market, Huge user pool	Mobile games	External Side	Supply Side, Demand Side
KT Olleh market platform	Supplier Type (1st Model)	App developers	Users	Open Free Market, Huge user pool	Applications	External Side	Supply Side, Demand Side

Hyundai home shopping platform	Supplier Type (1st Model)	Sellers	Users	Open Free Market, Huge user pool	Cheap and Various products	Supply Side	Demand Side
Nintendo platform	Supplier Type (1st Model)	Game developers	Users	Huge user pool	Games	Supply Side	Demand Side
LG U+ market platform	Supplier Type (1st Model)	App developers	Users	Open Free Market, Huge user pool	Applications	External Side	Supply Side, Demand Side
Microsoft (Windows and MS Office)	Supplier Type (1st Model)	App (programme) developers	Users	Huge user pool	Applications (programmes)	External Side	Supply Side, Demand Side
SKTT-phone platform	Supplier Type (1st Model)	Service developers	Users	Huge user pool	Services	External Side	Supply Side, Demand Side
Amazon Kindle platform	Supplier Type (1st Model)	e-Book providers	Users	Open Free Market, Huge user pool	e-Book contents	Supply Side	Demand Side
Samsung AdHub platform	Tailor Type (2nd Model)	Advertisers	Service users	Huge traffic	Advisements	Supply Side	Demand Side
Google Adwords platform	Tailor Type (2nd Model)	Advertisers	Service users	Huge traffic	Advisements	Supply Side	Demand Side
Dell PC Platform	Tailor Type (2nd Model)	Manufacturers	PC users	Huge user pool	Personalised PCs	Demand Side	Supply Side
Daum map platform	Tailor Type (2nd Model)	Service developers	Users	Open Free Market, Huge user pool	Cheap and Various services	External Side	Supply Side, Demand Side
Kickstarter idea platform	Tailor Type (2nd Model)	Manufacturers	Service users	Creative Ideas, Huge user pool	Product developments	Supply Side	Demand Side
Yahoo answers platform	Facilitator Type (3rd Model)	Answerers	Questioners	Question uploading space	Various knowledge	External Side	Supply Side, Demand Side
Instagram platform	Facilitator Type (3rd Model)	Photo uploaders	Photo viewers	Photo uploading space	Various photo contents	External Side	Supply Side, Demand Side
RecordFarm social audio platform	Facilitator Type (3rd Model)	Audio uploaders	Audio listeners	Audio uploading space	Various audio contents	External Side	Supply Side, Demand Side
Naver Challenge webtoon platform	Facilitator Type (3rd Model)	Web-comic uploaders	Web-comic viewers	Web-comic contents uploading space	Various web-comic contents	External Side	Supply Side, Demand Side
Google YouTube Platform	Facilitator Type (3rd Model)	Video uploaders	Video viewers	Video uploading space	Various video contents	External Side	Supply Side, Demand Side
Blogger platform	Facilitator Type (3rd Model)	Photo uploaders	Photo viewers	Photo uploading space	Various photo contents	External Side	Supply Side, Demand Side

This study has two main purposes. It has analysed the typology and dynamics of platform businesses, which have not yet been researched in detail. It has also suggested some procedures for companies looking to enter platform business and some ways for them to improve their performance through platform strategies. Many participants are required for a platform business, but gaining large numbers of participants is difficult with clear vision and leadership. It is therefore important to understand what perspectives of platforms and customers are and how much they have to succeed. Therefore, this study intends to make suggestions for companies which currently have an operating platform to grow and expand continuously. There are many studies that explain the concept and importance of the platform, and also the data that introduces the current conditions of platforms in each industry and outlines some success cases. However, there is insufficient research discussing strategies for re-organisation by incorporating and promoting the external resources, in correspondence with time flow and environmental changes. Therefore, this study aims to do a dynamic analysis of the platform business, and it identifies the typology and dynamics of platform businesses in order to further increase our understanding of the platform value chain, business models and strategies based on a dynamic approach. Of course, It does not mean that this study guarantee the platform will be successfully established with fulfilling the aforementioned conditions in this study. However, if such conditions cannot be fulfilled, it is not possible to serve as a role of the platform. Therefore, the aforementioned conditions are regarded as necessary conditions for the platform to be successfully established.

Chapter 7 Conclusion

There is a growing interest, amid the advancement of the Internet and ICT, among enterprises in strategic efforts that aim to gain first-mover advantage by utilising networks and platforms (Bessant and Tidd, 2007). This study was conducted with the purpose of establishing a basis for theoretical and academic development by deducing the status and meaning of and step-by-step strategic propositions for the strategies of platform providers. A platform has evolved to become an important engine for the sustainable growth of enterprises (Jonash et al., 2007); thus, new business models and two-sided markets have emerged with an increase in market size and an expansion in the division of labour. On that account, platforms have emerged as newer business strategies that could cause a paradigm shift in market competition.

Corporations should develop their distinctive capabilities and should also cooperate with parties around them on the basis of platforms in order to advance and innovate their management paradigm as a prerequisite for survival in a rapidly changing and fiercely competitive market (Evans et al., 2006). The diffusion of new business paradigms and innovative corporate management ecosystems based on platforms can create new markets and expand previous market areas. Indeed, the platform is an essential factor that defines the formation process of corporate ecosystem. Hence, it is necessary to implement platform strategies adequately in order to form and expand the corporate ecosystem. In particular, platforms create value for both internal and external innovation. Therefore, the platform architecture must enable the capture of a portion of these created values (Chesbrough, 2003).

A majority of previous studies of platforms have not analysed the platform business model in relation to the value chain, even though capturing value and the value chain are essential roles of the business model (Rayport and Sviokla, 1995; Timmers, 1998; Amit and Zott, 2001; Chesbrough and Rosenbloom, 2002). Moreover, previous studies of platform strategy have been limited by their use of static models to analyse strategy and performance even though strategy is increasingly dynamic and strategy related tasks vary greatly depending on the growth phase of the market (Gunther et al., 2004). Also, strategy related tasks vary greatly, depending on the growth phase in a market. On that account, it is required to conduct appropriate studies and analyse the relevant strategies for each phase through a dynamic approach.

This study was conducted with three main focuses in order to identify the typology and dynamics of platform businesses. First, it focused on understanding platform business models with the academic theories of two-sided markets, network effects, and the business ecosystem. Currently, as there is no consensus on the academic definition of a platform business model, an accurate understanding of the academic definition of the platform is important for the overall research design. Secondly, this study examined the platform strategies based on the value stream with the recognition that the strategic content to be chosen would vary depending on the type of value stream and value chain. The flow and analysis of platform value chains are essential variables that have a significant impact on the type and development phase of the platform. Lastly, this study examined platform strategies in accordance with the dynamic approach of exploring strategies suitable for each phase of the business model, because initial strategic decisions would have a significant impact on the

type and development of the business ecosystem. In other words, the nature of the platform differs depending on the type of value chain. Moreover, a detailed expansion strategy, differentiated features for the platform, and the direction of platform reorganisation should vary depending on the type of value chain as well.

Platforms change the rules of the competition (Ziv, 2005). One cannot succeed alone in the platform market, but one can achieve tremendous outcomes by cooperating with stakeholders on value creation based on a two-sided market, because doing so will make a variety of unimaginable innovations possible spontaneously. Therefore, it is very important for those companies that use platforms to create values and analyse value streams, although development, manufacturing, and sales are equally important. Furthermore, platforms promote competition. They increase the competitiveness of corporate ecosystems and organisational members to such an extent that individual companies cannot cope alone. At the same time, however, platforms also have a high failure rate. Therefore, above all things, a proper strategy is really crucial for platform business success.

7.1. Revisiting the Research Aims

Platforms are now one of the core strategies for improving the essential competitiveness of enterprises. Enterprises desire innovation and are concerned about the lack of an efficient and sustainable growth model. Hence, it is imperative to discuss how platform strategies can lead to sustainable growth and how their implementation can be decided based on internal and external analysis of enterprises. In other words, the platform business model that makes it possible to achieve

innovation and high efficiency through platform participants is intensely important strategy model that enterprises are pursuing these days.

The objectives of this research are to identify the typology and dynamics of platform businesses in order to further increase our understanding of the platform value chain, business models and strategies based on a dynamic approach. The fundamental structures of the value chain analysis and platform business model dynamic framework were designed for this study. Moreover, this research has attempted to illustrate how various value chain changes in the platform have distinct implications for different types of platform business models; and suggest platform business strategies based on a dynamic approach and depending on the distinctive features of the contents and platforms which thus far have not been clearly presented in the literature. The value chains and streams are the main framework for establishing a platform business model because it is dependent on various value streams. Furthermore, to design a company's future business strategy, taking a dynamic approach is crucial in order to reduce platform providers' likelihood of market failure. Without understanding the complicated value chain of platforms and strategies in dynamic approaches, platform-serviced companies will face difficulties in the market.

That is to say, understanding the value chain is an important element of any competitive advantage strategy (Porter, 1985). Furthermore, a business strategy for each stage of growth model that is implemented based on a dynamic approach is an essential element of the sustainable growth and development of enterprises. Enterprises that seek to become platform providers must understand the value chain accurately and have step-by-step platform business strategies if they are to

implement a competitive advantage strategy for a successful platform business. The ultimate purpose of this study is to explore how to successfully establish a platform business in the marketplace and achieve sustainable growth and innovation.

7.1.1 Value Chains and Types of Platform Business Model

To illustrate how various changes related to the value chain have distinct implications for different types of platform business model, this study mainly analysed the value chain, value creation, and network effects. In particular, the value chain has become important distinction criterion. It also aimed to verify how value creation and network effects would take place within each value chain. It did so by analysing and interpreting the data and found that the platform type associated with platform business models affects which strategy type is most appropriate.

1. ‘Supplier’ Type: Value Chain’s External Expansion

The first model of the platform business model based on the value chain is the ‘producer-oriented platform’. ‘Samsung Wallet of exchanges’, ‘eBay, Kakao Mobile, Store, KT App Store, Hyundai Home Shopping, LG U+ App Store and Amazon Kindle of transaction system’, and ‘Nintendo game console, SK Telecom T-phone and Microsoft (Windows and MS Office) of software platform’ belong to this type. In this model, the producers deliver certain products and services to the consumers through the platform. The important feature of this model is that its value chain has expanded to become external. This is known as the value chain’s external expansion.

Platform providers have focused on interconnecting organisational processes as a competition strategy by making various third parties participate in two-sided markets. For existing value chains, the closed system of traditional supply chain management is an important component of an organisation, and the value chain was therefore only internal. However, it became impossible to gain competitive advantage only by expanding networks and intensifying competition, meaning that it is now necessary for organisations to leverage inter-organisational value chains that cover not only suppliers but also end-users. In the case of supplier type, value creation takes place. However, this is a producer-centred approach. Thus, value co-creation does not take place therein. In contrast, both direct (same-side) network effects and indirect (cross-side) network effects take place.

2. ‘Tailor’ Type: Value Chain Reverse Flow

The second platform business model based on the value chain is the ‘consumer-oriented platform’. ‘Dell PC of exchanges’, ‘Samsung Adhub and Google Adwords of advertiser-supported media’, and ‘Daum Map and Kickstarter of software platform’ belong to this type. In this model, consumers request products or services from producers through platforms. Producers then deliver these products and services to consumers through platforms. This model requires a consumer-centred approach. The biggest attribute of this model is the reverse flow of the value chain, which changes the starting point of the value creation process from the supplier to the customer. Value creation is certainly based on the point that there are

customers. Such reverse thinking of value chains is the unique concept that is often found in two-sided markets. That is, it makes it possible to implement on-demand economy from a business model perspective. It is about processing relevant tasks simultaneously by allowing all the participating subjects of business process to cooperate with each other through sharing information in real-time based on the market (customer). Tailor type is a consumer-centred approach; thus, it generates value co-creation in addition to value creation. In the case of the network effect, both direct (same-side) network effects and indirect (cross-side) network effects took place similarly as in the supplier type – that is, the first platform business model.

3. Facilitator: Value Chain Integration

The third platform business model based on the value chain is the ‘both-oriented platform’. ‘YouTube, Instagram, RecordFarm and Blogger of exchanges’ and ‘Yahoo Answers and Naver Webtoon of software platform’ belong to this type. In this model, platform participants become a ‘prosumer’ that has the attributes of both producer and consumer. Thus, it is required to have both a producer-centred approach and a consumer-centred approach. Value Chain Integration in platform business models represents a horizontally/vertically integrated value chain while unidirectional flowing value chain flows in from both directions, regardless of whether it flows in forward direction or reverse direction. Previously, supply side supplies

products or services, whereas demand side requests or consumes products or services. In the facilitator type, however, both supply side and demand sides produce and consume products or services. In the facilitator type, normal value chain and reverse value chain take place; thus, value creation and value co-creation also took place. In the case of network effect, there were both direct (same-side) network and indirect (cross-side) network just like the aforementioned two other platform business models.

Table 7.1 Three types of platform business model

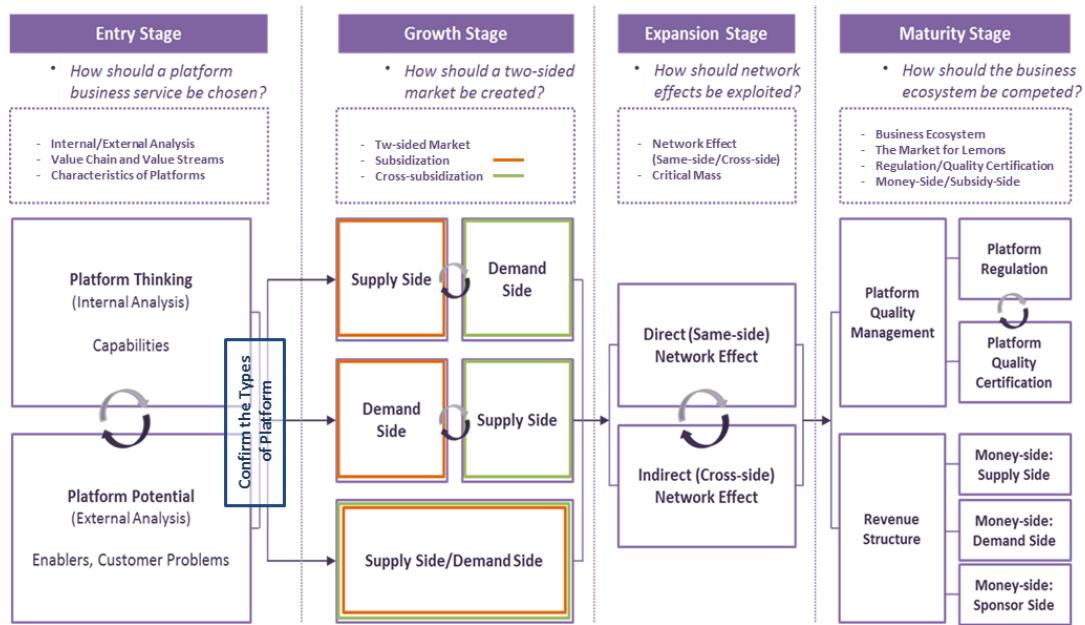
Types of Platform Business Model (in accordance with the value chain)	Supplier Type	Producer-oriented platform
		Value chain starts from the supply side
		Value chain's external expansion
		Value creation (no value co-creation)
		Direct (same side) and indirect (cross side) network effects
	Tailor Type	Consumer-oriented platform
		Value chain starts from the demand side
		Value chain reverse flow
		Value creation and value co-creation
		Direct (same side) and indirect (cross side) network effects
	Facilitator Type	Both producer-oriented and consumer-oriented platform
		Value chain starts from both sides
		Value chain's integration
		Value creation and value co-creation
		Direct (same side) and indirect (cross side) network effect

7.1.2 Platform Strategy with a Dynamic Approach: Establishment and Growth Strategy

It is necessary for companies to have appropriate strategies and perform a proper analysis for each stage, in order to grow in a market successfully (Gibson and Nolan, 1974). In particular, companies must analyse their strategies for each stage in accordance with the growth in markets in relation to the foundation and the development of the platform business. A platform business operates on a complicated two-side model, unlike most businesses, which are one-sided (Evans and Schmalensee, 2008; Kim, 2014). For this reason, it is essential to make adequate decisions by taking into consideration those platform-related influencing factors for each stage of business model based on platform (Kim, 2014). The platform is essential for establishing and operating a virtuous cycle-based business ecosystem. Therefore, it is important to make adequate decisions by taking into account the factors that influence each business model. This study therefore first examined the available platform business models depending on the value chain of the platform business. Then, it presents the essential elements and strategies for each of the four major growth stages (entry stage, growth stage, expansion stage, and maturity stage) in order for the platform to construct a successful business ecosystem. Specifically, this research used a conceptual framework (See Figure 7.1), based on the literature review to analyse how a step-by-step business strategy could be constructed. Using a conceptual framework as an analytical method means that observed cases can be matched based on experience with theoretically predictable cases. This conceptual

framework consists of the platform's core academic theories; two-sided market theory, network effect, and business ecosystem. It shows how platform providers build 'two-sided markets', evolve 'network effects', and complete a 'business ecosystem' which are core elements and strategies for each stage, and it is suggested as a key strategic model for building a successful platform business.

Figure 7.1 Platform business model conceptual framework



1. Entry Stage

The most important thing that companies have to do with their respective platform service before entering the market is to make a platform business plan. They should select their platform business service by identifying the desires of the market. Discovering the most valuable platform among various services and products is a prerequisite for the success of platform providers. Therefore, it is imperative that they analyse the whole of an

enterprise in order to select the most valuable platform business from many possibilities (Laurie et al., 2006). To do so, it is important to find the intersection of enablers, customer problems, and capabilities in order to identify a platform business through external and internal analysis.

Table 7.2 Core elements and strategies on the entry stage

	Strategic Question: How should a platform business service be chosen?
Entry Stage	1) External Analysis: Platform Potential It is imperative to first conduct an external analysis (identifying and analysing new technologies, deregulations, market needs, etc.), in order to plan a new platform business. - Essential Function Required to confirm the essential functions that can satisfy both the market and customers. - Easy to connect and expand Required to make an easy connection between the supply side and demand side and also to make it easy to construct virtuous cycle through various expansions.
	2) Internal Analysis: Platform Thinking It is required to consider a variety of products, services, brands, and development process, to obtain a successful strategy by using the efficient resources. - Building Blocks Required to extract common blocks by analysing comprehensively the products, services, processes, etc. within a company. - Product/Service Platforms Required to establish an overall platform by combining those extracted blocks. - Product/Service Families Required to develop a variety of new products, based on the established platform.
	3) Characters of Platforms After finishing both external and internal analysis, platform providers need to confirm the type of their platform in accordance with the value chain.

2. Growth Stage

It is essential to address the so-called chicken-and-egg problem, which is the chronic problem of the two-sided market (Caillaud and Jullien, 2003), in order to allow the platform to build and grow into a two-sided market. To this end, it is necessary to determine in accordance with value chain and stream the subsidisation and cross-subsidisation that will help to establish a two-sided market. Subsidisation refers to giving specific benefits to a particular group by reducing its platform participation costs or providing it with rewards. Cross-subsidisation refers to allocating costs associated with the production of relevant goods or services arbitrarily to achieve objectives, rather than allocating them based on incurred costs. Therefore, it refers to covering deficits in one area with profits generated by another area (Rochet and Tirole, 2003a). They should first identify their type of platform business model and then provide subsidisation and cross subsidisation in accordance with the attributes of their platform business model.

Table 7.3 Core elements and strategies on the growth stage

Growth Stage	Strategic Question: How should a two-sided market be built?
1) Subsidisation Providing low prices or transfers to one side of the market helps the platform solve the chicken and egg problem by encouraging the benefited group's participation. - Supplier: Provide subsidisation to the supply side - Tailor: Provide subsidisation to the demand side - Facilitator: Provide subsidisation to both sides	
2) Cross-Subsidisation Cross-subsidisation arbitrarily distributes the costs associated with the production of goods or services for a certain purpose, rather than distributing them in accordance with incurred costs. - Supplier: Provide cross-subsidisation to the demand side - Tailor: Provide cross-subsidisation to the supply side - Facilitator: Provide cross-subsidisation to both sides	

3. Expansion Stage

To encourage network effects in a two-sided market, it is important to reach a point of critical mass (Evans, 2009). Once a platform reaches a point of critical mass, it will continue to grow, resulting in direct and indirect network effects which will continue to attract participants. For supplier type platforms, which are producer-oriented, critical mass can be reached by focusing more on securing the supply side. The tailor type is a consumer-oriented platform business model that reaches a point of critical mass by focusing more on securing the demand side. The facilitator type is a both-oriented platform business model, so it reaches a point of critical mass by focusing on securing both the supply and demand sides simultaneously without any discrimination.

Table 7.4 Core elements and strategies on expansion stage

Expansion Stage	Strategic Question: How should network effects be exploited?
1) Network Effects (Network Externalities) Network effects (or network externalities) facilitate the rapid growth of a platform company, and both direct (same-side) and indirect (cross-side) network effects are prerequisites of a two-sided market. On that account, the growth rate will rise if the network effects are secured between the participant groups (in other words, the users of a two-sided market).	
2) Critical Mass To encourage network effects, it is essential to reach a critical mass of resources. A ‘zigzag’ strategy enables platform providers to build up value on both sides of the two-sided market. <ul style="list-style-type: none">- Supplier Type: Focus on acquisitions on the supply side to reach the critical mass point. (Represented graphically by a log curve in a zigzag fashion.)- Tailor Type: Focus on acquisitions on the demand side to reach the critical mass point. (Represented graphically by an exponential curve in a zigzag fashion.)- Facilitator Type: Focus on acquisitions on the both supply side and demand side to reach the critical mass point. (Represented graphically by an upward line in a zigzag fashion.)	

4. Maturity Stage

After choosing a platform business, building a two-sided market, and encouraging network effects, the business ecosystem based on the platform business should be completed. And the business ecosystem is completed by managing the platform quality and building a revenue structure. To manage quality, this study presented the platform quality management in a 2x2 matrix. In terms of revenue creation, the platform should first distinguish which is the money-side and which the subsidy-side. The essential criterion to be taken into account here is the price elasticity of each user group. This study analysed the three revenue structures by classifying the money side into supply side, demand side, and external side in accordance with two-sided market theory.

Table 7.5 Core elements and strategies of the maturity stage

Maturity Stage	Strategic Question: How should the business ecosystem be completed?
	1) The Market for Lemons Platform businesses establish a supply side and a demand side, but there is a high chance that this will create a market for lemons. Trust is the most important element that can help to solve the lemon problem.
	2) Platform Regulation/Quality Certification It is a necessity to manage the quality of the platform to gain the trust of participants and allow for continuous growth. - Platform Regulation This confirms whether to manage the platform ex ante or ex post. - Platform Quality Certification This confirms whether to proceed via hard regulation that controls the advancement of platforms or activities based on criteria or soft regulation selected by consumers.

3) Revenue Structure

The platform leader must create economic incentives for ecosystem members.

- Money-side

Price elasticity is low.

It should be confirmed whether this applies to the supply side, demand side, or sponsor.

- Subsidy-side.

Price elasticity is high.

7.2. Implications for and Contributions to Theory and Practice

7.2.1 Main Contributions to Knowledge

This research makes a strong contribution to academic and practical understanding.

There are three main contributions to academic research. First, this study's literature review summarised different academic approaches, such as operations management, industrial economics, and business strategy, which will contribute to a better understanding of the multifaceted phenomena of platforms, allowing further research can be carried out to obtain more conclusive and specific information. In particular, this literature review develops academic understanding through its integrated analysis of the platform's core academic theories: two-sided market theory, network effects, and business ecosystem.

Second, this study extends the understanding of the value chain and identifies it as a critical strategic element of a platform business. More specifically, it illustrates how various value chains have distinct implications for different types of platform business models. There have not been many studies of platform business: particular focusing on business model's value chains and streams, rather than elements, leadership, and policies (Kim, 2014). Although understanding value chains is an important element of competitive advantage strategies (Porter, 1985; Teece, 2010), there have not been relatively little attentions of value chains in platform business model, in which various value streams are occurred according to the unique nature of the two-sided market. With the 21 in-depth multiple cases studies, therefore, this study explore three types of platform business model, in accordance to the value chain. Also, it analyses and traces how each platform business model shows different value chains, value creations, and network effects. That is, this study proposes three types of platform business models which will serve as a frame of reference for analysing the impact of the different value chains in platform businesses. This is the area in which this thesis intends to make a research contribution by illustrating how various value chain changes in platforms have distinct implications for different types of platform business models.

Third, this research presented the core elements and strategies for each of the four major growth stages of platform business from a dynamic perspective, which has not been done before. Unlike previous platform business research that depicts platform strategy and each factors in static approach (Gawer and Cusumano, 2013), the platform business strategy from the perspective of dynamic approach shows the

whole business picture for platform providers. Especially, the business strategies at each stage of the growth model in a dynamic approach are essential for a corporation's sustainable growth and development for the life-cycle of a business ecosystem (Gibson and Nolan, 1974; Anderson and Tushman, 1990). The integrated multiple-case analysis makes it possible to conduct an in-depth analysis of the life-cycle of a platform business model. Through the analysis, this study suggests the 'Platform Business Model Dynamic Framework', a model for the life-cycle of a business ecosystem with four stages (entry stage, growth stage, expansion stage, and maturity stage), which serves as the conceptual framework. This finding helps corporations that are preparing or currently running platforms on how they can grow and expand on a continuous basis. An account, an accurate understanding of the value chain and the strategies of a dynamic approach will likely become critical factors for those corporations that aspire to become platform providers and use a competitive advantage strategy to follow a successful platform business model.

7.2.2 Implications for Theory

Platforms are no longer an exclusive property of a few ICT conglomerates. Enterprises can utilise platforms in all industries regardless of enterprise size. The leading platform companies, such as Facebook, Amazon, Google, eBay, Tencent, Alibaba, and Netflix, are all less than 20 years old. The platform business model is becoming increasingly important for sustainable growth and profits. Technologies are improving rapidly, and there is a wider range of customer requirements. As a

result, more and more people are demanding industrial convergence and platform services that are built by participants are growing in importance.

The key implications of this study are to obtain a deeper understanding of the value chain and the strategic propositions of platform businesses from a dynamic perspective. A platform has a different set of attributes to products or services and requires different rules of competition from those that are currently widely accepted. Therefore, they must ask: how are the value chain and stream changed in the platform business model and how could a step-by-step business strategy based on the perspective of dynamic approach? This study summarised the answers to these two questions with two key phrases: ‘value chain for typology’ and ‘the step-by-step business strategy for dynamics’.

The first main proposition is as follows: ‘according to the unique nature of two-sided markets, this study finds three major types of value chain model in a platform. In other words, it enables to classify three types of platform business model in accordance with the value chain.’ This study analysed the first proposition through pattern matching logic proposed by Yin (2009) and Trochim (1989). This study verified whether the prediction pattern deducted based on the literature review was consistent with the pattern observed from the primary data in six main areas: normal value chain, reverse (flow) value chain, value creation, value co-creation, direct network effects and indirect network effects. It then analysed the characteristics of each platform business model type.

The second main proposition is as follows: ‘Platform businesses have four major growth stages, and different core elements and strategies exist for each stage’. This study analysed the second proposition by utilising a conceptual framework based on

a logic model with a theoretical basis. In particular, this study conducted dynamic analysis by analysing the repeating causality within the conceptual framework of each stage outlined by the literature review and logical prepositions (Peterson and Bickman, 1992b; Rog and Huebner, 1992; Yin, 2010).

7.2.3 Implications for Practice

This study aimed to identify the typology and dynamics of platform businesses to understand the platform value chain, business model and strategy based on a dynamic approach. Moreover, this study aimed to inform and offer suggestions about how business performance could be substantially improved through platform strategy. It is imperative that a platform business have many participants, so it is difficult for them to succeed without a clear vision and good leadership. It is therefore important for platform providers to know the characteristics of platform service they provide from their own perspective and from that of other participants. This study analysed the different types of platform business models with an accurate understanding of the complicated value chains and streams and explored the step-by-step strategic propositions according to the key theories of platforms, two-sided markets, network effects, and business ecosystem, which have been relatively neglected in the existing literatures.

The findings of this research attempt to demonstrate to platform business providers how to establish themselves successfully in the markets and how to achieve sustainable growth and remarkable innovation, while reducing their rate of failure. Until now there has been insufficient discussion of the strategy of integrating, developing, and reorganising internal and external resources in accordance with the

flow of time and environmental changes, which is provided by this study, it could help allow platform providers to innovate and grow sustainably. In other words, it is hoped that this study will not only contribute to academic understanding but also give information to platform providers to enable their continuous innovation and growth. Platform business models are of course complex and their success cannot be guaranteed, even if the conditions identified by this study are satisfied. However, these conditions can be deemed requirements for success, because platforms cannot function properly without satisfying them.

7.3. Limitations and Future Research

This study classified the business models of platforms into three types based on the characteristics of value chains and sub-divided the three types of platform business models into four stages (entry stage, growth stage, expansion stage, and maturity stage). It then presented essential elements and strategies for each stage in order to enable platform providers to construct a successful business ecosystem. However, there are two academic limitations which need to be supported by future research.

Firstly, this study tried to conduct as meaningful research as possible with designing the conceptual framework through in-depth analysis of literature reviews and many multiple cases; however, because it focused more on interpretive studies to analyse and interpret the cases, the generalisations have a limitation. Therefore, future research is required to generalise the findings of this study with the reinforcement of empirical studies based on the accurate understanding of the platform business

model in this thesis. Of course even though this study has not strictly generalised the findings, it obtained a strong understanding of the value chain and the strategic propositions of platform businesses from a dynamic perspective through twenty-one multiple case studies with thirty in-depth interviews and two strong focus group interviews. Secondly, it focused more on a macro perspective of designing a platform strategy based on value chains and streams and therefore excluded a research approach based on micro-perspectives. Because it is required to look at the big picture of whole platform business in order to understand value chains and business strategies at each stage of the growth model in detail. Therefore, next research community will need to research specific details of strategies on the basis of the elements of each stage with the micro perspective. In addition, in terms of in-depth interview, most interviewees are Korean to secure the quality data with limited time span, however various regional arrangements will be consider for upcoming research.

Regarding the micro perspective, personally, an immediate oncoming research will focus on the detailed design of price system or profit creation. Another important point of platforms is that the growth of a platform business should not be compromised during the monetisation process. In fact, some of those prominent platform providers attempted to make their most important group for growth pay a high price. In many of those cases, many users opted to leave these platforms. This led to a sudden slow-down of growth and even a complete collapse of the platform. The process determining prices is very different in the platform business. Generally enterprises link sellers and buyers, who purchase goods from sellers, who sell these goods to buyers at prices with an appropriate amount of profit. In other words, they receive money from buyers and then give some to the sellers. However, this

traditional market strategy is no longer valid for platform businesses. Platform businesses do not solely use the traditional model, which imposes costs and margins on users (the first strategy of revenue structure in the maturity stage); they also impose costs and margins on suppliers (second strategy of revenue structure in the maturity stage) and both suppliers and users (second strategy of revenue structure in the maturity stage). Sometimes, platform businesses even impose costs and margins on outsiders (third strategy of revenue structure in the maturity stage). In addition, platform business often leverages more than one strategy.

Furthermore, the O2O (online to offline) revenue model is now emerging as a new revenue model strategy in order to overcome the limitations for existing platform service providers in relying on advertisements or commission fees. After securing traffic online, the enterprise starts to make money from offline by using the huge traffic from online. Uber,⁶⁴ one of the representatives of O2O platform providers, is expanding much faster than Facebook; and Amazon, one of the major representatives of online retail platforms, recently opened offline bookstores to expand a new profit model and complement the online service. Various O2O based platform revenue models and strategies will be considered for upcoming research.

Thus, it is important to determine on whom costs and margins should be imposed and to design price levels in a flexible and detailed manner, rather than determining them based on conventional wisdom. Platform providers must determine on whom, where and with which method they will impose costs and margins. Also, they must find out if there is any third party that is willing to take on a cost and whether there is any on/offline place for making revenue. Therefore, a follow-up study will be

⁶⁴ In 2014, Uber raised a new round of funding that would value it at \$40 billion only after three years, while Facebook achieved Uber's \$40 billion valuation during its seventh year.

needed to focus on specific strategies for creating profits cautiously without causing crises in the platform ecosystem during the monetisation process; these would include the O2O model.

Lastly, I am very interested in doing action research using RecordFarm Inc., a venture company which I founded during my PhD. Action research as a method is still a work in progress; it has emerged over time from many fields (Brydon-Miller et al., 2003). It involves actively participating in a changeable environment, whilst simultaneously conducting research. Thus, this method enables research to be conducted by many organisations or institutions, assisted or guided by academic researchers (Whyte, 1991). Therefore, it is a very suitable research method to adopt with the purpose of advancing platform providers' strategies, practices and knowledge of the environments within which they operate. The RecordFarm platform has become broadly popular, reaching 1,000,000 monthly active users within 1 year, and as a CEO and co-founder, it is very easy for me to gather and analyse the big data from the platform service. Consequently, further detailed analysis and examinations of the suggested conceptual framework in this thesis and research into the role of social marketing as an ignition tool to build the two-sided markets are needed as further research.

References

- Aerts, A., Goossenaerts, J.B., Hammer, D.K. & Wortmann, J.C. (2004). 'Architectures in context: on the evolution of business, application software, and ICT platform architectures', *Information & Management*, 41(6): pp. 781-794.
- Afuah, A. and Tucci, C.L. (2000). *Internet business models and strategies: Text and cases*. New York: McGraw-Hill Education.
- Agar, M. (1980). *The professional stranger: an informal introduction to ethnography*. Cambridge: Academic Press.
- Akella, A., Pang, J., Maggs, B., Seshan, S. and Shaikh, A. (2004). 'A comparison of overlay routing and multihoming route control', Communications of the ACM, 34.
- Akerlof, G. A. (1970). 'The market for "lemons": Quality uncertainty and the market mechanism', *The Quarterly Journal of Economics*, pp. 488-500.
- Alt, R. and Zimmermann, H.D. (2001). 'Preface: introduction to special section—business models', *Electronic Markets*, 11(1): pp. 3-9.
- Alvesson, M. and Deetz, S. (2000). *Doing critical management research*. London: SAGE Publications.
- Amit, R. and Zott, C. (2001). 'Value creation in e-business', *Strategic Management Review*, 22(6-7): pp. 493-520.
- Amit, R. and Zott, C. (2010). *Business model innovation: Creating value in times of change*. Philadelphia: The Wharton School, University of Pennsylvania Press.
- Amit, R., Zott, C. and Pearson, A. (2012). 'Creating value through business model innovation', *MIT Sloan Management Review*, 53.

- Anderson, P. and Tushman, M. L. (1990). ‘Technological discontinuities and dominant designs: A cyclical model of technological change’, *Administrative Science Quarterly*, pp. 604-633.
- Anderson, S.P. and Coate, S., (2005). ‘Market provision of broadcasting: A welfare analysis’, *Review of Economic Studies*, pp. 947-972.
- Applegate, L.M. and Collura, M. (2000). *Emerging E Business Models: Lessons from the Field*. Boston: Harvard Business Press.
- Armstrong, M. (2002). ‘Call termination on mobile networks’, Available from: <http://www.ofcom.org.uk/static/archive/oftel/publications/mobile/ctm>.
- Armstrong, M. (2006). ‘Competition in two-sided markets’, *The RAND Journal of Economics*, 37(3): pp. 668-691.
- Armstrong, M. and Wright, J. (2007). ‘Two-sided markets, competitive bottlenecks and exclusive contracts’, *Economic Theory*, 32(2): pp. 353-380.
- Arthur, W.B. (1996). ‘Increasing Returns and the New World of Business’, *Harvard Business Review*, 74(4): pp. 100-109.
- Astley, W.G. and Van de Ven, A.H. (1983). ‘Central perspectives and debates in organization theory’, *Administrative Science Quarterly*, pp. 245-273.
- Austin, S., Canipe, C., and Slobin, S. (2015). ‘The Billion Dollar Startup Club’ WSJ (18th February), Available at: <http://graphics.wsj.com/billion-dollar-club/> (Accessed on 1 March 2015).
- Baldwin, C.Y. and Clark, K.B. (2000). *Design rules: The power of modularity*. Vol. 1. Boston: The MIT Press.
- Baldwin, C.Y. and Woodard, C.J. (2009). The architecture of platforms: a unified view. Harvard Business School Finance Working Paper, (09-034).

- Ballon, P. and Walravens, N. (2008). Competing platform models for mobile service delivery: the importance of gatekeeper roles. In Mobile Business, 2008. ICMB'08. 7th International Conference. IEEE: pp. 102-111.
- Basov, S. (2005). 'Bounded rationality: static versus dynamic approaches', *Economic Theory*, 25(4): pp. 871-885.
- Beer, S. (1959). *Cybernetics and Management*. 2nd ed. 1967 ed.: London: English Universities Press.
- Bennett, A. & George, A. L. (1997). *Process tracing in case study research*. MacArthur Program on Case Studies.
- Berg, B. L., Lune, H. & Lune, H. (2004). *Qualitative research methods for the social sciences*. Vol. 5: Pearson Boston, MA.
- Bessant, J. and Tidd, J. (2007). *Innovation and entrepreneurship*. New York: John Wiley & Sons.
- Beynon-Davies. (2012). *eBUSINESS*. Basingstoke: Palgrave Macmillan.
- Bickman, L. and Peterson, K. A. (1990). 'Using program theory to describe and measure program quality', *New directions for program evaluation*, 1990(47): pp. 61-72.
- Blaikie, N. (2009). *Designing Social Research*. New York: John Wiley & Sons.
- Bogdan, R.C. and Biklen, S.K. (1998). *Qualitative research in education. An introduction to theory and methods*. Atlanta: ERIC.
- Boudreau, K. (2010). 'Open platform strategies and innovation: Granting access vs. devolving control', *Management Science*, 56(10): pp. 1849-1872.
- Boudreau, K.J. and Hagi, A. (2009). *Platform rules: Multi-sided platforms as regulators*. Cheltenham: Edward Elgar Publishing.

- Boudreau, K.J. and Lakhani, K.R. (2012). *How to manage outside innovation*. Dublin: Image.
- Boudreau, K., and Lakhani, K. (2009). ‘How to manage outside innovation’, *MIT Sloan Management Review*, 50(4): pp. 69.
- Bresnahan, T.F. and Greenstein, S. (1999). ‘Technological competition and the structure of the computer industry’, *The Journal of Industrial Economics*, 47(1): pp. 1-40.
- Brusoni, S. and Prencipe, A. (2011). Design rules for platform leaders, in Gawer, A. (eds.) *Platforms, Markets and Innovation*. Cheltenham: Edward Elgar Publishing, pp. 306-321.
- Brydon-Miller, M., Greenwood, D., and Maguire, P. (2003). ‘Why action research?’, *Action Research*, 1(1): pp. 9-28.
- Bryman, A. (2003). *Quantity and Quality in Social Research*. Abingdon: Taylor & Francis.
- Bryman, A. and Bell, E. (2007). *Business Research Methods*. Oxford: Oxford University Press.
- Bryman, A., Bryman, P.S.R.A., Mills, A.J. & Bell, E. (2011). *Business Research Methods*. Oxford: Oxford University Press.
- Bryman, A. and Burgess, R. G. (1994). ‘Reflections on qualitative data analysis’, *Analyzing Qualitative Data*, pp. 216-226.
- Brynjolfsson, E. and Kemerer, C.F. (1996). ‘Network externalities in microcomputer software: An econometric analysis of the spreadsheet market’, *Management Science*, 42(12): pp. 1627-1647.
- Bull, M.J. (1992). ‘Managing the transition from hospital to home’, *Qualitative Health Research*, 2(1): pp. 27-41.

- Bullock, R. and Tubbs, M.E. (1987). ‘The case meta-analysis method for OD’, *Research in Organizational Change and Development*, 1: pp. 171-228.
- Burroughs-Lange, S.G. and Lange, J. (1993). *Denuded Data! Grounded Theory Using the NUDIST Computer Analysis Program: In Researching the Challenge to Teacher Self-Efficacy Posed by Students with Learning Disabilities in Australian Education*. Atlanta: ERIC
- Caillaud, B. and Jullien, B. (2003). ‘Chicken & egg: Competition among intermediation service providers’, *RAND Journal of Economics*, pp. 309-328.
- Cameron, R. (2011). ‘Mixed methods research: The Five Ps framework’, *The Electronic Journal of Business Research Methods*, 9(2): pp. 96-108.
- Campbell, D.T. (1975). “Degrees of freedom” and the case Study’, *Comparative Political Studies*, 8(2): pp. 178-193.
- Campbell, D.T. and Fiske, D.W. (1959). ‘Convergent and discriminant validation by the multitrait-multimethod matrix’, *Psychological Bulletin*, 56(2): pp. 81.
- Campbell, D.T., Stanley, J.C. and Gage, N.L. (1963). *Experimental and quasi-experimental designs for research*. Houghton Mifflin Boston.
- Casadesus-Masanell, R. and Zhu, F. (2013). ‘Business model innovation and competitive imitation: The case of sponsor-based business models’, *Strategic Management Journal*, 34(4): pp. 464-482.
- Cavaye, A.L. (1996). ‘Case study research: a multi-faceted research approach for IS’, *Information Systems Journal*, 6(3): pp. 227-242.
- Ceccagnoli, M., Forman, C., Huang, P. and Wu, D. (2011). ‘Co-creation of value in a platform ecosystem: The case of enterprise software’, *MIS Quarterly*, 36(1): pp. 263-290

- Cooley, B. (2011). 'CNET Top 5: Free SMS apps' (26th September) Available at:
<http://www.cnet.com/videos/free-sms-apps/> (Accessed on 19th October 2014)
- Ceccagnoli, M., Forman, C., Huang, P. and Wu, D. (2012). 'Cocreation of value in a platform ecosystem: The case of enterprise software', *MIS Quarterly*, 36(1): pp. 263-290.
- Chacksfield, M. (2010). 'iPhone beats toilet in 'greatest inventions' list' (19th May) Available at: <http://www.techradar.com/news/phone-and-communications/mobile-phones/iphone-beats-toilet-in-greatest-inventions-list-690485> (Accessed on 15 October 2014)
- Chesbrough, H. (2003). 'Open platform innovation: Creating value from internal and external innovation', *Intel Technology Journal*, 7(3): pp. 5.
- Chesbrough, H. (2010). 'Business model innovation: opportunities and barriers', *Long Range Planning*, 43(2): pp. 354-363.
- Chesbrough, H. and Rosenbloom, R.S., (2002). 'The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies', *Industrial and corporate change*, 11(3): pp. 529-555.
- Choi, J.P., (2010). 'Tying in two-sided markets with multi-homing', *The Journal of Industrial Economics*, 58(3): pp. 607-626.
- Clandinin, D.J. and Connelly, F.M. (2000). *Narrative inquiry: Experience and story in qualitative research*. San Francisco: Jossey-Bass.
- Coffey, A. and Atkinson, P. (1996). *Making sense of qualitative data: complementary research strategies*. London: SAGE Publications.

- Collis, J. and Hussey, R. (2013). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. Basingstoke: Palgrave Macmillan.
- Cooke, P. (2012). 'From clusters to platform policies in regional development', *European Planning Studies*, 20(8): pp. 1415-1424.
- Cooper, H.M. (1984). *The integrative research review: a systematic approach*. London: SAGE Publications.
- Cooper, J.O., Heron, T.E. and Heward, W.L. (2013) *Applied Behavior Analysis: Pearson New International Edition*. London: Pearson Education.
- Corbin, J. and Strauss, A., (1994). Grounded theory methodology in Denzin, N.K. and Lincoln, Y.S. (eds.) *Handbook of qualitative research* Thousand Oaks: SAGE Publications, pp. 273-285
- Creswell, J.W. (1999). Mixed-method research: Introduction and application. in Gregory, C. (eds.) *Handbook of Educational Policy*, Cambridge: Academic Press, pp. 455-472.
- Creswell, J.W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. London: SAGE Publications.
- Cusumano, M.A. (2010a). 'Technology strategy and management The evolution of platform thinking', *Communications of the ACM*, 53(1): pp. 32-34.
- Cusumano, M.A. (2010b). *Staying power: Six enduring principles for managing strategy and innovation in an uncertain world (lessons from Microsoft, Apple, Intel, Google, Toyota and more)*. Oxford University Press.
- Cusumano, M.A. and Gawer, A. (2002). 'The elements of platform leadership', *MIT Sloan Management Review*, 43(3): pp. 51-58.

- Cusumano, M.A. and Nobeoka, K. (1998). *Thinking beyond lean: how multi-project management is transforming product development at Toyota and other companies*. Simon and Schuster.
- David, P.A. (1985). ‘Clio and the Economics of QWERTY’, *The American Economic Review*, 75(2): pp. 332-337.
- Dawson, C. (2002). *Practical Research Methods: A User-friendly Guide to Mastering Research Techniques and Projects*. Kidlington: How To Books.
- Delaney, K. (2007). ‘YouTube to Test Software To Ease Licensing Fights’ (12th June) Available at: <http://www.wsj.com/articles/SB118161295626932114> (Accessed on 25th October 2014)
- Denzin, N. K. (1970). *The research act: A theoretical introduction to sociological methods*. Piscataway: Transaction publishers.
- Denzin, N. K. (1989). *Interpretive Interactionism*. London: SAGE Publications.
- Dey, I. (1993). *Qualitative Data Analysis: A User-friendly Guide for Social Scientists*. London: Routledge.
- Dranove, D. and Gandal, N. (2003). ‘The Dvd-vs.-Divx Standard War: Empirical Evidence of Network Effects and Preannouncement Effects’, *Journal of Economics & Management Strategy*, 12(3): pp. 363-386.
- Dubosson-Torbay, M., Osterwalder, A. and Pigneur, Y. (2002). ‘E-business model design, classification, and measurements’, *Thunderbird International Business Review*, 44(1): pp. 5-23.
- Economides, N. (1996). ‘The economics of networks’, *International Journal of Industrial Organization*, 14(6): pp. 673-699.

- Economides, N. and Katsamakas, E. (2006). ‘Two-sided competition of proprietary vs. open source technology platforms and the implications for the software industry’, *Management Science*, 52(7): pp. 1057-1071.
- Eisenhardt, K. M. (1989). ‘Building theories from case study research’, *Academy of Management Review*, 14(4): pp. 532-550.
- Eisenmann, T., Parker, G. and Van Alstyne, M. (2008). ‘Opening Platforms: How, When and Why?’ Harvard Business School Entrepreneurial Management Working Paper No. 09-030. Available at : <http://ssrn.com/abstract=1264012> or <http://dx.doi.org/10.2139/ssrn.1264012>
- Eisenmann, T., Parker, G. and Van Alstyne, M. (2011). ‘Platform envelopment’, *Strategic Management Journal*, 32(12): pp. 1270-1285.
- Eisenmann, T., Parker, G. and Van Alstyne, M. W. (2006). ‘Strategies for two-sided markets’, *Harvard Business Review*, 84(10): pp. 92.
- Eisenmann, T., Hallowell, R. and Tripsas, M. (2001). *Internet business models: texts and cases*. New York: McGraw-Hill Education.
- Eriksson, C., Kalling, T., Åkesson, M. and Fredberg, T. (2008). ‘Business models for m-services: exploring the e-newspaper case from a consumer view’, *Journal of Electronic Commerce in Organizations*, 6(2): pp. 29-57.
- Evans, D.S. (2003a). ‘Antitrust Economics of Multi-Sided Platform Markets’, *Yale Journal on Regional*, 20: pp. 325.
- Evans, D.S. (2003b). ‘Some empirical aspects of multi-sided platform industries’, *Review of Network Economics*, 2(3).
- Evans, D.S. (2009). *How catalysts ignite: the economics of platform-based start-ups*. Cheltenham: Edward Elgar Publishing.

- Evans, D.S., Hagiu, A. and Schmalensee, R. (2006). *Invisible engines: how software platforms drive innovation and transform industries*. Cambridge: MIT Press.
- Evans, D.S. and Schmalensee, R. (2005). The industrial organization of markets with two-sided platforms. National Bureau of Economic Research.
- Evans, D.S. and Schmalensee, R. (2007). *Catalyst code: the strategies behind the world's most dynamic companies*. Boston: Harvard Business Press.
- Evans, D.S. and Schmalensee, R. (2008). ‘Markets with two-sided platforms’ *Issues in Competition Law and Policy (ABA Section of Antitrust Law)*, 1.
- Evans, D.S. and Schmalensee, R. (2013). The antitrust analysis of multi-sided platform businesses. National Bureau of Economic Research.
- Farhi, E. and Hagiu, A. (2008). *Strategic interactions in two-sided market oligopolies*. Boston: Harvard Business Press.
- Farrell, J. and Saloner, G. (1985). ‘Standardization, compatibility, and innovation’, *The RAND Journal of Economics*, 16: pp. 70-83.
- Farrell, J. and Saloner, G. (1986). ‘Installed base and compatibility: Innovation, product preannouncements, and predation’, *The American Economic Review*, 76: pp. 940-955.
- Fidler, R.F. (1997). *Mediamorphosis: Understanding new media*. London: SAGE Publications.
- Finch, J. (1986). *Research and policy: The uses of qualitative methods in social and educational research*. London: Falmer Press Lewes.
- Firestone, W.A. (1987). ‘Meaning in method: The rhetoric of quantitative and qualitative research’, *Educational Researcher*, 16(7): pp. 16-21.
- Fisher, F. M. (2000). ‘The IBM and Microsoft Cases: What’s the Difference?’, *American Economic Review*, 90(2): pp. 180-183.

- Flick, U. (2014). *An introduction to qualitative research*. London: SAGE Publications.
- Ford, R. and Wiedemann, J. (2010). *The Internet Case Study Book*. Cologne: Taschen.
- Freeman, C. and Soete, L. (1997). *The economics of industrial innovation*. London: Psychology Press.
- Gage, D. (2012). ‘The Venture Capital Secret: 3 Out of 4 Start-Ups Fail’ (20th September) Available at:
http://www.wsj.com/articles/SB10000872396390443720204578004980476429190#articleTabs_comments%3D%26articleTabs%3Darticle (Accessed on 20th October 2014)
- Gabszewicz, J.J., Laussel, D. and Sonnac, N. (2001). ‘Press advertising and the ascent of the ‘pensée unique’’, *European Economic Review*, 45(4): pp. 641-651.
- Gabszewicz, J.J., Laussel, D. & Sonnac, N., (2002). ‘Press advertising and the political differentiation of newspapers’, *Journal of Public Economic Theory*, 4(3): pp. 317-334.
- Gabszewicz, J.J., Laussel, D. & Sonnac, N., (2006). ‘Competition in the media and advertising markets’, *The Manchester School*, 74(1): pp. 1-22.
- Gagnon, Y.C. (2010). *The Case Study as Research Method*. Montreal: Presses de l'Universite du Quebec.
- Gallaugher, J.M., Auger, P. and BarNir, A. (2001). ‘Revenue streams and digital content providers: an empirical investigation’, *Information & Management*, 38(7): pp.473-485.

- Gandal, N. (1995). ‘Competing compatibility standards and network externalities in the PC software market’, *The Review of Economics and Statistics*, 77: pp. 599-608.
- Gans, J. S. and King, S. P. (2000). ‘Mobile network competition, customer ignorance and fixed-to-mobile call prices’, *Information Economics and Policy*, 12(4): pp.301-327.
- Gans, J. S. & King, S. P., (2003). ‘The neutrality of interchange fees in payment systems’, *Topics in Economic Analysis & Policy*, 3(1).
- Gawer, A. (2011). Platform dynamics and strategies: from products to services. *Platforms, Markets and Innovation*. Cheltenham: Edward Elgar Publishing.
- Gawer, A. (2014). ‘Bridging differing perspectives on technological platforms: Toward an integrative framework’, *Research Policy*, 43(7): pp. 1239-1249
- Gawer, A. and Cusumano, M.A. (2002). *Platform leadership*. Boston: Harvard Business Press.
- Gawer, A. and Cusumano, M.A. (2008). ‘How companies become platform leaders’, *MIT Sloan Management Review*, 49(20): pp. 28
- Gawer, A. and Cusumano, M.A. (2013). ‘Industry platforms and ecosystem innovation’, *Journal of Product Innovation Management*, 31(3): pp. 417-433
- Gawer, A. and Henderson, R. (2007). ‘Platform owner entry and innovation in complementary markets: Evidence from Intel’, *Journal of Economics & Management Strategy*, 16(1): pp. 1-34.
- George, A.L. and Bennett, A. (2005). *Case Studies and Theory Development in the Social Sciences*. Cambridge: MIT Press.

- Gergen, K.J. and Gergen, M.M. (1991). Toward reflexive methodologies. in F. Steier (Ed.), Research and Reflexivity (pp. 76-96). London: SAGE Publications
- Ghauri, P.N. and Grønhaug, K. (2005). *Research methods in business studies: A practical guide*. London: Pearson Education.
- Ghaziani, A. and Ventresca, M.J. (2005). Keywords and cultural change: Frame analysis of business model public talk, 1975–2000. in Sociological Forum (Vol. 20, No. 4, pp. 523-559). Kluwer Academic Publishers-Plenum Publishers.
- Gibson, C.F. and Nolan, R.L. (1974). ‘Managing the Four Stages of EDP Growth’, *Harvard Business Review*, 52(1): pp. 76-88.
- Giordano, J., O'Reilly, M., Taylor, H. and Dogra, N. (2007). ‘Confidentiality and autonomy: The challenge (s) of offering research participants a choice of disclosing their identity’, *Qualitative Health Research*, 17(2): pp. 264-275.
- Glesne, C. and Peshkin, A. (1992). *Becoming qualitative researchers: An introduction*. New York: Longman White Plains.
- Gobble, M.M. (2014). ‘Charting the Innovation Ecosystem’, *Research-Technology Management*, 57(4): pp. 55.
- Goertz, G. and Mahoney, J. (2012). *'A Tale of Two Cultures: Qualitative and Quantitative Research in the Social Sciences*. Princeton: Princeton University Press.
- Gomm, R., Hammersley, M. and Foster, P. (2000). *Case study method: Key issues, key texts*. London: SAGE Publications.

- Greenstein, S., (2009). Open platform development and the commercial Internet, in Gawer, A. (eds.) *Platforms, Markets and Innovation*. Cheltenham: Edward Elgar Publishing, pp. 219-248.
- Gunther, R.E., Day, G.S. and Reibstein, D.J. (2004). *Wharton on dynamic competitive strategy*. New York: John Wiley & Sons.
- Guthrie, G. and Wright, J. (2007). ‘Competing payment schemes’, *The Journal of Industrial Economics*, 55(1): pp. 37-67.
- Hagiu, A. (2007). ‘Merchant or two-sided platform?’, *Review of Network Economics*, 6(2).
- Hagiu, A. (2009). Multi-sided platforms: From microfoundations to design and expansion strategies. *Harvard Business School Strategy Unit Working Paper*, (09-115).
- Hagiu, A. and Yoffie, D. B. (2009). ‘What's your Google strategy?’, *Harvard Business Review*, 87(4). pp. 74-81.
- Halman, J.I., Hofer, A.P. and Van Vuuren, W. (2003). ‘Platform-Driven Development of Product Families: Linking Theory with Practice’, *Journal of Product Innovation Management*, 20(2): pp. 149-162.
- Hamel, G. (2002). *Leading the revolution: How to thrive in turbulent times by making innovation a way of life*. Boston: Harvard Business Press.
- Hammerstedt, R.H. and Blach, E.L. (2008). ‘Commercialization of basic research from within the university and return of value to the public’, *Animal Reproduction Science*, 105(1): pp. 158-178.
- Han, J., Lee, C. and Kim, Y. (2007). ‘An Exploratory Study on New Venture Policies for Research Institute based Entrepreneur in Korea’, *Asia Pacific Journal of Small Business*, 29(3): pp. 99-117.

- Hansen, M.T. and Birkinshaw, J. (2007). 'The innovation value chain', *Harvard Business Review*, 85(6): pp. 121.
- Hartley, J. (2004). Case study research, in Catherine C. and Gillian S. (eds.) *Essential guide to qualitative methods in organizational research* (pp.323-333). London: SAGE Publications.
- Henderson, R.M. and Clark, K.B. (1990). 'Architectural innovation: the reconfiguration of existing product technologies and the failure of established firms', *Administrative Science Quarterly*, 9-30.
- Herriott, R.E. and Firestone, W.A. (1983). 'Multisite qualitative policy research: Optimizing description and generalizability', *Educational Researcher*, 14-19.
- Herson, M. and Barlow, D.H. (1976). *Single case experimental designs: Strategies for studying behavior change*. New York: Pergamon Press.
- Hesse-Biber, S.N. & Crofts, C. (2008). 'User-Centered Perspectives on Qualitative Data Analysis Software: Emergent Technologies and Future Trends', in Hesse-Biber s. and Leavy P. (eds.) *Handbook of Emergent Methods*. New York: Guilford Press.
- Hesse-Biber, S.N. (2010). *Mixed methods research: Merging theory with practice*. New York: Guilford Press.
- Hesse-Biber, S.N. and Leavy, P. (2006). *Emergent methods in social research*. London: SAGE Publications.
- Horowitz, A.S. (1996). 'The real value of VARS: resellers lead a movement to a new service and support', *Marketing Computing*, 16(4): pp. 31-36.
- Hotelling, H. (1990). *Stability in competition*. Dordrecht. Springer.
- Huberman, A.M. and Miles, M.B. (2002). *The qualitative researcher's companion*. London: SAGE Publications.

- Huizingh, E.K. (2002). 'Towards successful e-business strategies: a hierarchy of three management models', *Journal of Marketing Management*, 18(7-8): pp. 721-747.
- Iansiti, M. and Levien, R. (2004a). *The keystone advantage: what the new dynamics of business ecosystems mean for strategy, innovation, and sustainability*. Boston: Harvard Business Press.
- Iansiti, M. and Levien, R. (2004b), 'Strategy as ecology' *Harvard Business Review*, 82(3): pp. 68-81.
- Iphofen, R. (2009). *Ethical Decision Making in Social Research: A Practical Guide*. London: Macmillan.
- Israel, M. and Hay, I. (2006). *Research ethics for social scientists*. London: SAGE Publications.
- Iyer, B. and Davenport, T.H. (2008). 'Reverse Engineering: Google's Innovation Machine', *Harvard Business Review*, 86(4).
- Jacob, E. (1987). 'Qualitative research traditions: A review', *Review of educational research*, 57(1): pp. 1-50.
- Jacobides, M.G., Knudsen, T. and Augier, M. (2006): 'Benefiting from innovation: Value creation, value appropriation and the role of industry architectures', *Research Policy*, 35(8): pp. 1200-1221.
- Jauch, L.R., Osborn, R.N. and Martin, T.N. (1980). 'Structured content analysis of cases: A complementary method for organizational research', *Academy of Management Review*, 5(4): pp. 517-525.
- Jick, T.D. (1979). 'Mixing qualitative and quantitative methods: Triangulation in action', *Administrative Science Quarterly*, 24(4): pp. 602-611.

- Johnson, J.A., Townshend, J. and Gudden, E. (1997). *Practical research*. Balcatta: R.I.C. Publications.
- Jonash, R., Koehler, H., and Onassis, I. (2007). ‘The power of platforms’, *Business Strategy Series*, 8(1): pp. 26-34.
- Jullien, B. (2005). ‘Two-sided markets and electronic intermediaries’, *CES ifo Economic Studies*, 51(2-3): pp. 233-260.
- Kaiser, U. and Wright, J. (2006). ‘Price structure in two-sided markets: Evidence from the magazine industry’, *International Journal of Industrial Organization*, 24(1): pp. 1-28.
- Kalakota, R. and Robinson, M. (2001). *E-business 2.0: Roadmap for Success*. London: Addison-Wesley.
- Kalof, L. and Dan, A. (2008). *Essentials of Social Research*. New York: McGraw-Hill Education.
- Kaplinsky, R. and Morris, M. (2001). *A handbook for value chain research*. Vol. 113, Ottawa: IDRC.
- Katz, M.L. and Shapiro, C. (1985). ‘Network externalities, competition, and compatibility’, *The American Economic Review*, 75(3): pp. 424-440.
- Katz, M.L. & Shapiro, C. (1994). ‘Systems competition and network effects’, *The Journal of Economic Perspectives*, 8(2): pp. 93-115.
- Kazdin, A.E. (1981). ‘Drawing valid inferences from case studies’, *Journal of Consulting and Clinical Psychology*, 49(2): pp. 183.
- Kilduff, M. and Tsai, W. (2003). *Social networks and organizations*. London: SAGE Publications.
- Kim, J. (2014). ‘Platform Business and Network Strategy’, *STI Policy Review*, 5(1): pp. 57-74.

- Kirkpatrick, D. (2012). *The Facebook Effect: The Real Inside Story of Mark Zuckerberg and the World's Fastest Growing Company*. London: Ebury Publishing.
- Kotler, P. and Armstrong, G. (2010). *Principles of marketing*. London: Pearson Education.
- Larsson, R. (1993). 'Case survey methodology: Quantitative analysis of patterns across case studies', *Academy of Management Journal*, 36(6): pp. 1515-1546.
- Laurie, D.L., Doz, Y.L. and Sheer, C.P. (2006). 'Creating new growth platforms', *Harvard Business Review*, 84(5): pp. 80-90.
- Le Masson, P., Weil, B. & Hatchuel, A., (2011). Platforms for the design of platforms: collaborating in the unknown, in Gawer, A. (eds.) *Platforms, Markets and Innovation*. Cheltenham: Edward Elgar Publishing, pp. 273-305.
- Lee, M. (2012). *Homo Mobilians*. Seoul: Bookconcert Publishers.
- Lee, R.M. and Fielding, N.G. (1991). 'Computing for qualitative research: Options, problems and potential' *Using Computers in Qualitative Research*. London: SAGE Publications.
- Levine, C.H., Rubin, I.S. and Wolohojian, G.G. (1982). 'Managing Organizational Retrenchment Preconditions, Deficiencies, and Adaptations in the Public Sector', *Administration & Society*, 14(1): pp. 101-136.
- Liebowitz, S.J. and Margolis, S.E. (1994). 'Network externality: An uncommon tragedy', *The Journal of Economic Perspectives*, 8(2): pp. 133-150.
- Lincoln, Y.S. and Guba, E.G. (1985). *Naturalistic Inquiry*. London: SAGE Publications.

- Locke, E.A., Frederick, E., Buckner, E. and Bobko, P. (1984). 'Effect of previously assigned goals on self-set goals and performance', *Journal of Applied Psychology*, 69(4): pp. 694.
- Lucas, W. A. (1974). *The case survey method: Aggregating case experience*. Santa Monica: RAND Publications.
- Lyytinen, K. and King, J.L. (2006). 'Standard making: a critical research frontier for information systems research', *MIS Quarterly*, 30: pp. 405-411.
- McSherry, D. (1999). 'Dynamic and static approaches to clinical data mining', *Artificial Intelligence in Medicine*, 16(1): pp. 97-115.
- Magretta, J. (2002). 'Why business models matter', *Harvard Business Review*, 80: pp. 86-92
- Marshall, C. & Rossman, G.B. (2006). *Designing Qualitative Research*. London: SAGE Publications.
- Martinez, P., (2000). 'Models made "e": What business are you in?', *Centers for IBM e-business*.
- Mason, J. (2002). *Qualitative researching*. London: SAGE Publications.
- Maxwell, J.A. (2005). *Qualitative Research Design: An Interactive Approach*. London: SAGE Publications.
- McGlade, A., (2014). *Why South Korea Will Be The Next Global Hub For Tech Startups*. New York: Forbes.
- McGrath, R.G. (2010). 'Business models: a discovery driven approach', *Long range planning*, 43(2): pp. 247-261.
- Merriam, S.B. (1988). *Case study research in education: A qualitative approach*. San Francisco: Jossey-Bass.

- Merriam, S.B. (1998). *Qualitative Research and Case Study Applications in Education. Revised and Expanded from "Case Study Research in Education."*. Atlanta: ERIC.
- Merriam, S.B. (2009). *Qualitative Research: A Guide to Design and Implementation.* New York: John Wiley & Sons.
- Meyer, M.H. (1997). *The power of product platforms.* New York: Simon and Schuster.
- Meyer, M.H. and Lehnerd, A.P. (1997). *The power of product platforms: building value and cost leadership.* New York: Simon and Schuster.
- Meyer, M.H. and Seliger, R. (1998). 'Product platforms in software development', *Sloan Management Review*, 40(1): pp. 61-74.
- Meyer, M.H., Tertzakian, P. and Utterback, J.M. (1997). 'Metrics for managing research and development in the context of the product family', *Management Science*, 43(1): pp. 88-111.
- Miles, I. (2005). 'Be here now', *info*, 7(2): pp. 49-71.
- Miles, I. (2007). 'Research and development (R&D) beyond manufacturing: the strange case of services R&D', *R&D Management Journal*, 37(3): pp. 249-268.
- Miles, M.B. and Huberman, A.M. (1994). *Qualitative data analysis: An expanded sourcebook.* London: SAGE Publications.
- Miles, M.B. and Weitzman, E.A. (1996). 'The state of qualitative data analysis software: What do we need?', *Current Sociology*, 44(3): pp. 206-224.
- Mills, A.J., Durepos, G. and Wiebe, E. (2009). *Encyclopedia of Case Study Research.* London: SAGE Publications.

- Mintzberg, H. (1979). *The structuring of organizations: A synthesis of the research*. Upper Saddle River: Prentice Hall
- Mintzberg, H., Ahlstrand, B.W., Ahlstrand, B., and Lampel, J. (2005). *Strategy Safari: A Guided Tour Through the Wilds of Strategic Management*. New York: Simon and Schuster.
- Mintzberg, H. and Lampel, J. (2012). ‘Reflecting on the strategy process’, *MIT Sloan Management Review*, 40(3): pp. 21-30.
- Moore, J.F. (1993). ‘Predators and prey: a new ecology of competition’, *Harvard Business Review*, 71(3): pp. 75-86.
- Moore, J.F. (1996). *The death of competition: leadership and strategy in the age of business ecosystems*. New York: HarperBusiness.
- Morris, M., Schindehutte, M. and Allen, J. (2005). ‘The entrepreneur’s business model: toward a unified perspective’, *Journal of Business Research*, 58(6): pp. 726-735.
- Moustakas, C. (1994). *Phenomenological research methods*. London: SAGE Publications.
- Mulroy, E.A. and Lauber, H. (2004). ‘A user-friendly approach to program evaluation and effective community interventions for families at risk of homelessness’, *Social Work*, 49(4): pp. 573-586.
- Nachira, F., Nicolai, A., Dini, P., Le Louarn, M. and Leon, L.R. (2007). Digital business ecosystems . European Commission, Brussels. Retrieved 9 April 2008.
- Naver. (2014) *Naver Annual Report 2014*. Seoul. Naver Incorporation.

- Needleman, R. (2011). 'Eric Schmidt: 'Gang of four' rules tech' (31st May) Available at: <http://www.cnet.com/news/eric-schmidt-gang-of-four-rules-tech/> (Accessed on 20 December 2014)
- Nesman, T.M., Batsche, C. and Hernandez, M. (2007). 'Theory-based evaluation of a comprehensive Latino education initiative: An interactive evaluation approach', *Evaluation and Program Planning*, 30(3): pp. 267-281.
- Neuman, S.B. and McCormick, S. (1995). *Single-subject Experimental Research: Applications for Literacy*. Newark: International Reading Association.
- Neuman, W.L. (2005). *Social research methods: Quantitative and qualitative approaches*. Boston: Allyn and Bacon.
- Nobeoka, K. and Cusumano, M.A. (1997). 'Multiproject strategy and sales growth: the benefits of rapid design transfer in new product development', *Strategic Management Journal*, 18(3): pp. 169-186.
- Nocke, V., Peitz, M. and Stahl, K. (2007). 'Platform ownership', *Journal of the European Economic Association*, 5(6): pp. 1130-1160.
- Noor, K.B. (2008). 'Case study: A strategic research methodology', *American Journal of Applied Sciences*, 5(11): pp. 1602-1604.
- O'reilly, T. (2007). 'What is Web 2.0: Design patterns and business models for the next generation of software', *Communications & Strategies*, 1: pp. 17.
- Osborne, C. (2014). Google to launch campus for Asian startups in Seoul. ZDNet. California: ZDNet. Available at: <http://www.zdnet.com/article/google-to-launch-campus-for-asian-startups-in-seoul/> (Accessed on 12 February 2015).
- Osterwalder, A. and Pigneur, Y. (2002). 'An eBusiness model ontology for modeling eBusiness', BLED 2002 Proceedings, 2.

- Osterwalder, A., Pigneur, Y. and Tucci, C. L. (2005). ‘Clarifying business models: Origins, present, and future of the concept’, *Communications of the association for Information Systems*, 16(1): pp. 1.
- Parker, G. and Van Alstyne, M.W. (2000). ‘Information complements, substitutes, and strategic product design’, *Proceedings of the twenty first international conference on Information systems*, 13-15.
- Parker, G. and Van Alstyne, M.W. (2005). ‘Two-sided network effects: A theory of information product design’, *Management Science*, 51(10): pp. 1494-1504.
- Patton, M.Q. (1990). *Qualitative evaluation and research methods*. London: SAGE Publications.
- Peltoniemi, M. (2006). ‘Preliminary theoretical framework for the study of business ecosystems’, *Emergence: Complexity & Organization*, 8(1).
- Perkmann, M. and Spicer, A. (2010). ‘What are business models? Developing a theory of performative representations’, *Research in the Sociology of Organizations*, 29: pp. 269-279.
- Peterson, K. and Bickman, L. (1992a). *Normative theory and program quality in mental health services*. Westwood: Greewood Press.
- Peterson, K. and Bickman, L. (1992b). ‘Using program theory in quality assessments of children's mental health services’, *European Journal of Gynaecological Oncology*, 290: pp. 165-165.
- Petrovic, O., Kittl, C. and Teksten, R.D. (2001). ‘Developing business models for ebusiness’. *International Conference on Electronic Commerce*, Available at SSRN: <http://ssrn.com/abstract=1658505>
- Porter, M.E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.

- Porter, M.E. (2008). *Competitive advantage: Creating and sustaining superior performance*. New York: Simon and Schuster.
- Prahalad, C.K. (2006). *The Fortune at the Bottom of the Pyramid*. London: Pearson Education.
- Prasad, A. and Prasad, P. (2002). ‘The coming of age of interpretive organizational research’, *Organizational Research Methods*, 5: pp. 4-11.
- Punch, K.F. (2013). *Introduction to social research: Quantitative and qualitative approaches*. London: Sage Publications.
- Rayport, J.F. and Sviokla, J.J. (1995). ‘Exploiting the virtual value chain’, *Harvard Business Review*, 73(6): pp. 75
- Remenyi, D. (1998). *Doing research in business and management: an introduction to process and method*. London: SAGE Publications.
- Richards, T. and Richards, L. (1994). ‘Using computers in qualitative research’, *Methods*, 1: pp. 445-462.
- Riedl, C., Böhmann, T., Rosemann, M. and Krcmar, H., (2009). ‘Quality management in service ecosystems’, *Information Systems and E-Business Management*, 7(2): pp.199-221.
- Ritchie, J., Lewis, J., Nicholls, C.M. and Ormston, R. (2013). *Qualitative research practice: A guide for social science students and researchers*. SAGE Publications.
- Robertson, D. and Ulrich, K. (1998). ‘Planning for product platforms’, *MIT Sloan Management Review*, 39(4).
- Rochet, J.C. and Tirole, J. (2002). ‘Cooperation among competitors: Some economics of payment card associations’, *Rand Journal of Economics*, 33(4): pp. 549-570.

- Rochet, J.C. and Tirole, J. (2003a). *Tying in two-sided markets and the impact of the honor all cards rule*. Mimeo, IDEI University of Toulouse.
- Rochet, J.C. and Tirole, J. (2003b). ‘Platform competition in two-sided markets’, *Journal of the European Economic Association*, 1(4): pp. 990-1029.
- Rochet, J.C. and Tirole, J. (2004). *Defining two-sided markets*. Mimeo, IDEI University of Toulouse.
- Rochet, J.C. and Tirole, J. (2006). ‘Two-sided markets: a progress report’, *The RAND Journal of Economics*, 37(3): pp. 645-667.
- Rog, D.J. and Huebner, R.B. (1992). ‘Using research and theory in developing innovative programs for homeless individuals’, *European Journal of Gynaecological Oncology*, 290: pp. 129.
- Roson, R. (2005). ‘Two-sided markets: A tentative survey’. *Review of Network Economics*, 4(2).
- Rossman, G.B. and Rallis, S.F. (2003). *Learning in the Field: An Introduction to Qualitative Research*. London: SAGE Publications.
- Rothschild, M. (2004). *Bionomics: Economy as business ecosystem*. Fairless Hills: Beard Books.
- Rumelt, R.P., Schendel, D.E. and Teece, D.J. (1994). *Fundamental Issues in Strategy: A Research Agenda*, Boston: Harvard Business Press.
- Rysman, M. (2004). ‘Competition between networks: A study of the market for yellow pages’, *The Review of Economic Studies*, 71(2): pp. 483-512.
- Rysman, M. (2009). The economics of two-sided markets. *The Journal of Economic Perspectives*, 23(3): pp.125-143.
- Saldana, J. (2009). *The Coding Manual for Qualitative Researchers*. London: SAGE Publications.

- Sandberg, J. (2005). ‘How do we justify knowledge produced within interpretive approaches?’, *Organizational Research Methods*, 8(1): pp. 41-68.
- Sarantakos, S. (2005). *Social Research*. Basingstoke: Palgrave Macmillan.
- Sawhney, M.S. (1998). ‘Leveraged high-variety strategies: from portfolio thinking to platform thinking’, *Journal of the Academy of Marketing Science*, 26(1): pp. 54-61.
- Schatzman, L. and Strauss, A.L. (1973). *Field Research: Strategies for a Natural Sociology*. Upper Saddle River: Prentice Hall.
- Schiff, A. (2003). ‘Open and closed systems of two-sided networks’, *Information Economics and Policy*, 15(4): pp. 425-442.
- Schilling, M.A. (2005). *Strategic management of technological innovation*. New York: McGraw-Hill Education.
- Schmalensee, R. (2002). ‘Payment systems and interchange fees’, *The Journal of Industrial Economics*, 50(2): pp. 103-122.
- Schumpeter, J.A. (1942). *Capitalism, Socialism and Democracy*. Abingdon: Taylor & Francis.
- Schwab, K., Porter, M.E. and Sala-i-Martin, X. (2007). *The global competitiveness report 2007-2008*. Basingstoke: Palgrave Macmillan.
- Schwalbe, K. (2013). *Information Technology Project Management*. Boston: Cengage Learning.
- Seawright, J. and Gerring, J. (2008). ‘Case selection techniques in case study research a menu of qualitative and quantitative options’, *Political Research Quarterly*, 61(2): pp. 294-308.

- Seelos, C. and Mair, J. (2007). ‘Profitable business models and market creation in the context of deep poverty: a strategic view’, *Academy of Management Perspectives*, 21(4): pp. 49-63.
- Shapiro, C. and Varian, H. (1998). *Information Rules: A Strategic Guide*. Boston: Harvard Business Press.
- Shaughnessy, J.J. and Zechmeister, E.B. (1990). *Research methods in psychology*. New York: McGraw-Hill Education.
- Sieber, S.D. (1973). ‘The integration of fieldwork and survey methods’, *American Journal of Sociology*, 78(6): pp.1335-1359.
- Silverman, D. (2015). *Interpreting Qualitative Data*. London: SAGE Publications.
- Simon, P. and Joel, M. (2011). *The Age of the Platform: How Amazon, Apple, Facebook, and Google Have Redefined Business*. Melbourne: Motion Publishing.
- Smedlund, A. (2012). ‘Value cocreation in service platform business models’, *Service Science*, 4(1): pp. 79-88.
- Spradley, J.P. (1980). *Participant Observation*. New York: Holt, Rinehart and Winston.
- Stabell, C.B. and Fjeldstad, Ø.D., (1998). ‘Configuring value for competitive advantage: on chains, shops, and networks’, *Strategic Management Journal*, 19(5): pp. 413-437.
- Stake, R.E. (1995). *The art of case study research*. London: SAGE Publications.
- Stake, R.E. and Savolainen, R. (1995). *The art of case study research*. London: SAGE Publications.
- Sterman, J.D. (2000). *Business dynamics: systems thinking and modeling for a complex world*. New York: McGraw-Hill Education.

- Sviokla, J. and Paoni, A. (2005). 'Every Product's a Platform', *Harvard Business Review*, 83: pp. 17-18.
- Tapscott, D., Lowy, A. and Ticoll, D. (2000). *Digital capital: Harnessing the power of business webs*. Boston: Harvard Business Press.
- Tapscott, D. and Williams, A.D. (2008). *Wikinomics: How mass collaboration changes everything*. Westminster: Penguin.
- Tashakkori, A. & Teddlie, C. (2003). *Handbook of Mixed Methods in Social & Behavioral Research*. London: SAGE Publications.
- Teece, D.J. (2010). 'Business models, business strategy and innovation', *Long Range Planning*, 43(2): pp. 172-194.
- Teece, D.J., Pisano, G. and Shuen, A. (1997). 'Dynamic capabilities and strategic management', *Strategic Management Journal*, 18(7): pp. 509-533.
- Tesch, R. (1990). *Qualitative research: Analysis types and software tools*. London: Psychology Press.
- Thompson, J.D. and MacMillan, I.C. (2010). 'Business models: Creating new markets and societal wealth', *Long Range Planning*, 43(2): pp. 291-307.
- Tidd, J., Pavitt, K. and Bessant, J. (2001). *Managing innovation*. Vol. 3: New York: John Wiley & Sons.
- Timmers, P. (1998). 'Business models for electronic markets', *Electronic Markets*, 8(2): pp. 3-8.
- Townsend, A.K. (2009). *Business Ecology: Why Most Green Business Practices Don't Work-- and what to Do about it*. Atglen: Schiffer Publishing.
- Trochim, W.M. (1989). 'Outcome pattern matching and program theory', *Evaluation and Program Planning*, 12(4): pp. 355-366.

- Ulrich, K. (1995). ‘The role of product architecture in the manufacturing firm’, *Research Policy*, 24(3): pp. 419-440.
- Utterback, J.M. and Abernathy, W.J. (1975). ‘A dynamic model of process and product innovation’, *Omega*, 3(6): pp. 639-656.
- Utterback, J.M. and Suarez, F.F. (1993). ‘Innovation, competition, and industry structure’, *Research Policy*, 22(1): pp. 1-21.
- Valletti, T.M. and Houpis, G. (2005). ‘Mobile Termination: What is the “Right” Charge?’, *Journal of Regulatory Economics*, 28(3): pp. 235-258.
- Venkatraman, N., (1989). ‘The concept of fit in strategy research: toward verbal and statistical correspondence’, *Academy of Management Review*, 14(3): pp. 423-444.
- Vise, D.A. and Malseed, M. (2005). *The Google Story: For Google's 10th Birthday*. New York: Random House.
- Weill, P. and Vitale, M. (2013). *Place to space: Migrating to eBusiness Models*. Boston: Harvard Business Press.
- West, J. (2003). ‘How open is open enough?: Melding proprietary and open source platform strategies’, *Research Policy*, 32(7): pp. 1259-1285.
- Whyte, W.F.E. (1991). *Participatory action research*. London: SAGE Publications.
- Wolcott, H.F. (1999). *Ethnography: A way of seeing*. Lanham: Altamira Press.
- Wright, J. (2002). ‘Access pricing under competition: an application to cellular networks’, *The Journal of Industrial Economics*, 50(3): pp. 289-315.
- Wright, J. (2004). ‘One-sided logic in two-sided markets’, *Review of Network Economics*, 3(1): pp.68-69
- Yin, R.K. (2009). *Case study research: Design and methods*. Vol. 5, London: SAGE publications.

- Yin, R.K. (2010). *Qualitative research from start to finish*. New York: Guilford Press.
- Yin, R.K. (2011). *Applications of case study research*. London: SAGE Publications.
- Zaheer, A., Gulati, R. and Nohria, N. (2000). 'Strategic networks. *Strategic Management Journal*, 21(3): pp. 203.
- Ziv, N.D. (2005), 'Toward a new paradigm of innovation on the mobile platform: redefining the roles of content providers, technology companies, and users', *Proceedings of the Mobile Business Conference*, pp. 152-158.
- Zott, C., Amit, R. and Massa, L. (2011). 'The business model: recent developments and future research', *Journal of Management*, 37(4): pp. 1019-1042.

Appendix 1. Interview Protocol and Questions

Instructions

1. **(Opening)** Good morning (afternoon). My name is Junic Kim, PhD Student at Manchester Business School, University of Manchester. Thank you for taking the time for this interview.
2. **(Purpose and Composition)** This interview involves three parts. The first part is the platform service and its business model, in which I will ask you about your experiences as an industry manager (expert, Vice President or Professor) at your company (university). The purpose is to obtain your perceptions and experiences of being inside and outside a platform business. The second part is about value chains and streams in the platform business model. I will give you specific questions in terms of a variety of value creation, value streams and network effects of the platform in order to gain an understanding of the types of platform business model. The third part is the platform establishment and growth strategy with the dynamic approach, in which I will ask about platform business selection, two-sided market, network effect strategy, platform quality management, revenue structure and so on.
3. **(Time Line)** The interview should take about 1.5 to 2 hours. There are no right or wrong, or desirable or undesirable answers. I would like you to feel comfortable about saying what you really think and how you really feel.

Tape Recorder Instructions

If it is okay with you, I will be tape-recording our conversation. The purpose of this is so that I am able to record all the necessary details whilst carrying on an attentive conversation with you. I assure you that all the information you provide will be confidential and used only for the purposes of this study. The data will be collected and stored in accordance with the Data Protection Act 1998 and will be disposed of in a secure manner.

Preamble/Consent Form Instructions

Before we get started, please take a few minutes to read and sign the participant information sheet. (Hand interviewee the participant information sheet) (After the interviewee returns the participant information sheet, turn tape recorder on.)

Interviewee Background Inquiries

1. What is your name?
2. Who is your present or most recent employer?
3. What is the highest level of education you have received?
4. What are/were your major responsibilities and positions at (present/most recent job)?
5. Discuss/determine skills and level of expertise related to (position title).

SECTION I – General Questions

Questions about General Question in terms of platform service and business to experts

General Question: What is platform business model and why is it important for business organisations in the ICT industry?

(In the ICT industry as well as other industries, many business organisations that had successfully adopted the platform business model eventually came to dominate the market)

1. Why is platform important in the ICT industry these days?
2. What is the reason that platform for platform becoming more popular these days?
3. Since when has your company been a platform company? (only for industry

managers)

4. What are the difficulties for things to companies who are platform service providers?
5. Does your company continue to grow by using the platform business model?
6. After adopting the platform business model, did the market share and dominating power of your company increase? (If yes, by how much?)
7. Who are your company's competitors? Do the competitors also adopt a platform business model? (working as platform providers)
8. (If your company is a platform provider) How is your company's growth speed different from those competitors that do not adopt a platform business model?
9. (If your company is not a platform provider) How is your company's growth speed different from those competitors that adopt a platform business model?
10. Do you think that innovations come about because of the platform business model? (If yes, please give some examples.)

SECTION II –Specific Research Questions

Questions about Research Question 1

Research Question 1: How are the value chain and stream changed in the platform business model?

Research Proposition 1: According to the unique nature of the two-sided market, there are three major types of value chain model in the platform. In other words, there exist three types of platform business model, in accordance to the value chain.

1. What are the value chains and streams in the platform business model?
2. Where is value chain started: from the supply side, the demand side, or the external side?
3. How important is value creation and value chain in a platform service?
4. How are the value chain and stream different in each type of platform business model?
5. How are the value creation and value co-creation different in each type of platform business model?

6. How are the direct network effect and indirect network effect different in each type of platform business model?
7. If value chain is started from the supply side, how does it happen?
8. If value chain is started from the demand side, how does it happen?
9. If revenue is started from the both sides, how does it happen?

SECTION III

Questions about Research Question 2

Research Question 2: *How could a step-by-step business strategy based on the perspective of dynamic approach be constructed?*

Research Proposition 2: According to 'Technology Cycle' by Anderson and Tushman (1990) and 'Stages of Growth Model' by Gibson and Nolan(1974), platform businesses have four major growth stages, and different core elements and strategies exist for each stage.

1. How long has your company's platform service been operating?
2. How to choose your platform business service?
3. How is the supply of your platform service performing currently?
4. What are the main difficulties when you supply a platform service to the market?
5. What were the important factors when your company first prepared and designed a platform service? (Which is the most important considerations?)
6. How to build the two-sided market?
7. When was the hardest period whilst operating a platform service?
8. How to ignite the network effect?
9. Do you have any other methods of network effect generation? (if yes, please explain in detail)
10. How to complete the business ecosystem?
11. How to continue to grow the platform business beyond the market for lemons?
12. How to design the revenue structure?
13. Is your platform service free or is there a charge?

14. (If your company runs parallel free and charge strategies) Who is your platform service free for?
15. (If your company runs parallel free and charge strategies) Who is charged for using your platform service?

Closing

1. (**Maintain Rapport**) I appreciate the time you took for this interview. Is there anything else you think would be helpful for this research to know so that I can successfully research platform business for your company?

(**Action to be taken**) I should have all the information I need. Would it be alright to call or email you if I have any more questions? Thanks again. I look forward to seeing you again soon.

Appendix 2. Participant Information Sheet

NB: the information described in this template should be adapted, where necessary, for children, adults with learning difficulties or non-English language speakers. If applicable, alternative means of providing the same information through a different medium should be described.

The Platform Business Model and Strategy

: Dynamic Analysis of Value Chain and Platform Business

Participant Information Sheet

You are being invited to take part in a research study [as part of a student project – *participants should be told about the overall aim of the research and whether it will be for a degree*]. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

Who will conduct the research?

I would like to invite you to take part in a research study. My name is Junic Kim and PhD student under supervision of Professor Ian Miles and Dr Kieron Flanagan who are eminent scholars at Manchester Institute of Innovation Research, Manchester Business School, and University of Manchester.

Title of the Research

The Platform Business Model and Strategy: Dynamic Analysis of Value Chain and Platform Business

What is the aim of the research?

This research focuses on platform business and its strategy, which constitute an important business innovation model for various industries, creating value primarily by enabling direct interactions between two or more distinct types of affiliated customers, the type being referred to as a multi-sided platform.

Why have I been chosen?

The interviewees in this study are experts who work in platform companies, consultancies, analytics firms and universities.

What would I be asked to do if I took part?

Taking part will involve an interview with me, on one or two occasions. Overall, it will take approximately two hours to complete interview stage. Breaks will be available as required at any point during the session. With your permission, I would like to audio-record the meeting so that we may be able to rate the consistency of scoring between our different researchers. I will ask you to complete a set of questionnaires. I am interested in a wide range of factors in business organisations which may be of relevance, and the questionnaires will be asking you about your background and companies, industry, and platform business. Please note I will be asking you about difficult issues such as your company's strength and weakness. I am fully trained in talking to people about such experiences in a sensitive, non-judgemental and empathic way.

What happens to the data collected?

The data collected will be used for my PhD thesis and academic journals. It is only completely anonymised if it is impossible to identify the individuals from that information or any other information that the University holds or is likely to hold.

How is confidentiality maintained?

All the information you give me will be confidential and used only for the purposes of this study. The data will be collected and stored in accordance with the Data

Protection Act 1998 and will be disposed of in a secure manner. The information will be used in a way that will not allow you to be identified individually. Thus, all the information which is collected about you during the course of the research will be kept strictly confidential. The only limits to this confidentiality would be if you were to tell us something that suggested that there would be a reason for us to be worried about potential harm to yourself, or to someone else. In these circumstances it would be vital for us to share this information appropriately. Please note that this is likely to be only a very rare occurrence.

What happens if I do not want to take part or if I change my mind?

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and will be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time without giving a reason and without detriment to yourself.

Will I be paid for participating in the research?

Your participation in this study is voluntary.

What is the duration of the interview?

1x ½ to 2 hours

Where will the research be conducted?

Interviewees' Company premises or a quiet place such as a Café

Will the outcomes of the research be published?

The outcomes of the research will be published in a peer-reviewed journal.

Criminal Records check (if applicable)

N/A

Contact for further information

Junic KIM, junic.kim@manchester.ac.uk

*Manchester Institute of Innovation Research (MIoIR), The Harold Hankins Building,
Manchester Business School, University of Manchester, Oxford Road, Manchester,
M13 9PL, UK.*

What if something goes wrong?

*You should provide contact details for any agency which might provide assistance if
the participant subsequently wants help or advice. This might be yourself, or in the
case of vulnerable subjects, a specialist agency.*

*If a participant wants to make a formal complaint about the conduct of the research
they should contact the Head of the Research Office, Christie Building, University of
Manchester, Oxford Road, Manchester, M13 9PL.*

Appendix 3. Example of codes and themes developed using

NVivo 10

Nodes

Types of Platform for RQ1

- Name
- Value Chain
 - Value Chain starts from Supply Side
 - Network Effect
 - Value Chain
 - Normal Value Chain
 - Value Creation
 - Platform Types
 - Online distribution platform
 - Open market platform
 - Game console platform
 - e-Book platform
 - App store platform
 - Value Chain starts from Demand Side
 - Value Creation
 - Value Co-creation
 - Value Chain
 - Reverse (flow) Value Chain
 - Platform Types
 - Web search platform
 - Online ad network platform
 - Idea platform
 - Appropriate technology platform
 - Value Chain starts from Both Sides
 - Value Creation
 - Value Co-creation
 - Value Chain
 - Value Chain Integration
 - Platform Types
 - SNS Platform
 - Blog Platform
 - e-Auction Platform
 - Virtual Communities platform

Nodes

Four major stages for RQ2

- Name
- Business Ecosystem
 - Critical Mass
 - Virtuous Circle
- Initial Stage (Value Chain)
 - Characteristics of Platform
 - Supplier Type
 - Tailor Type
 - Facilitator Type
 - External Analysis
 - Internal Analysis
- Growth Stage (Two-sided market)
 - Cross-Subsidization
 - Subsidization
 - Facilitator Type
 - Supplier Type
 - Tailor Type
 - Switching Cost
- Expansion Stage (Network Effect)
 - Network Effect (Network Externality)
 - Indirect(Cross-side) Network Effect
 - Direct(Same-side) Network Effect
 - Critical Mass
- Maturity Stage (Business Ecosystem)
 - Quality Management
 - Platform Regulation
 - Ex-ante
 - Ex-post
 - Platform Quality Certification
 - Hard
 - Soft
 - Pricing Structure
 - Money Side
 - Subsidy Side

Sources

Nodes

Classifications

Collections

Queries

Reports

Models

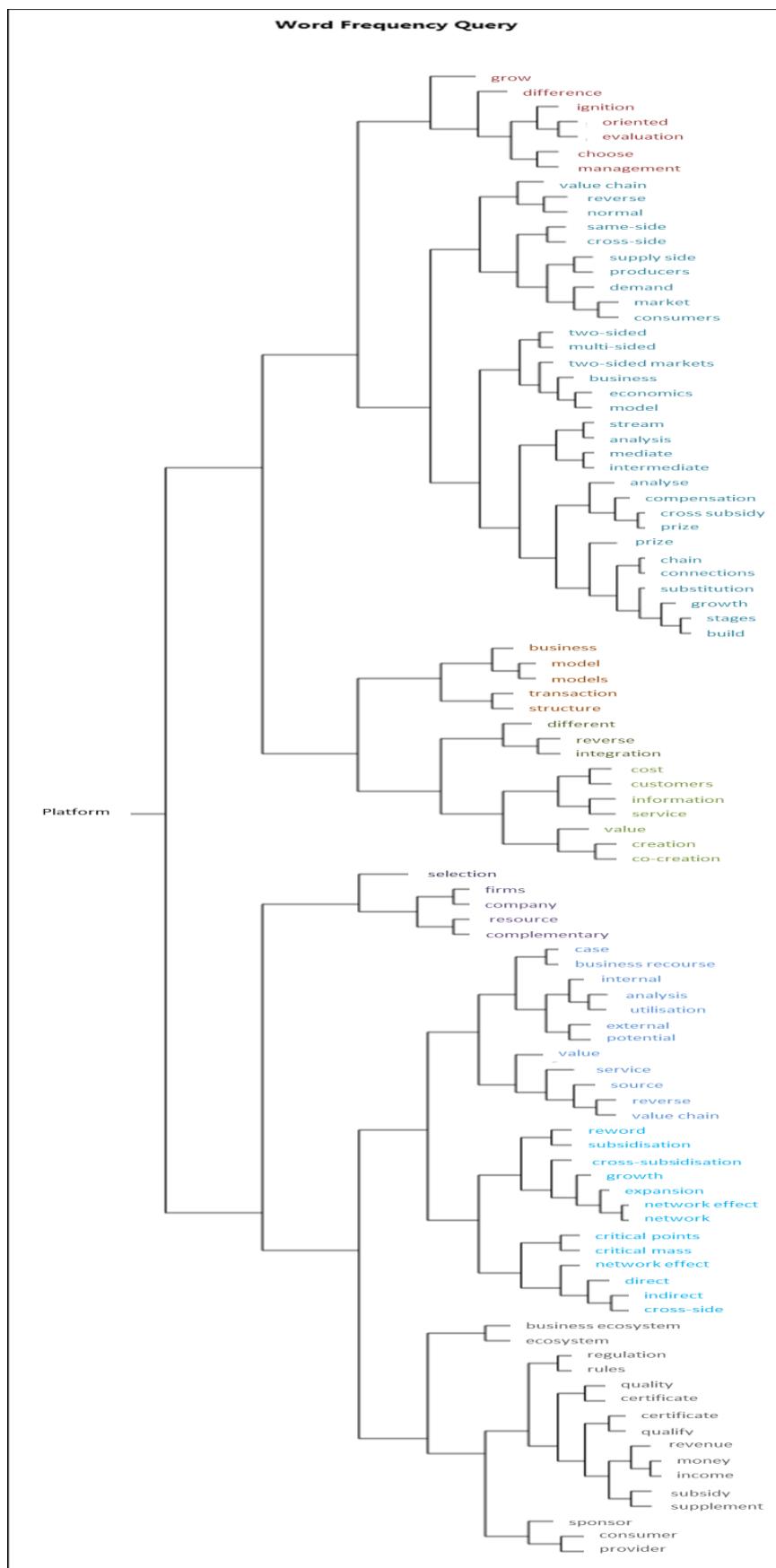
Folders

JK 40 Items

JK 52 Items

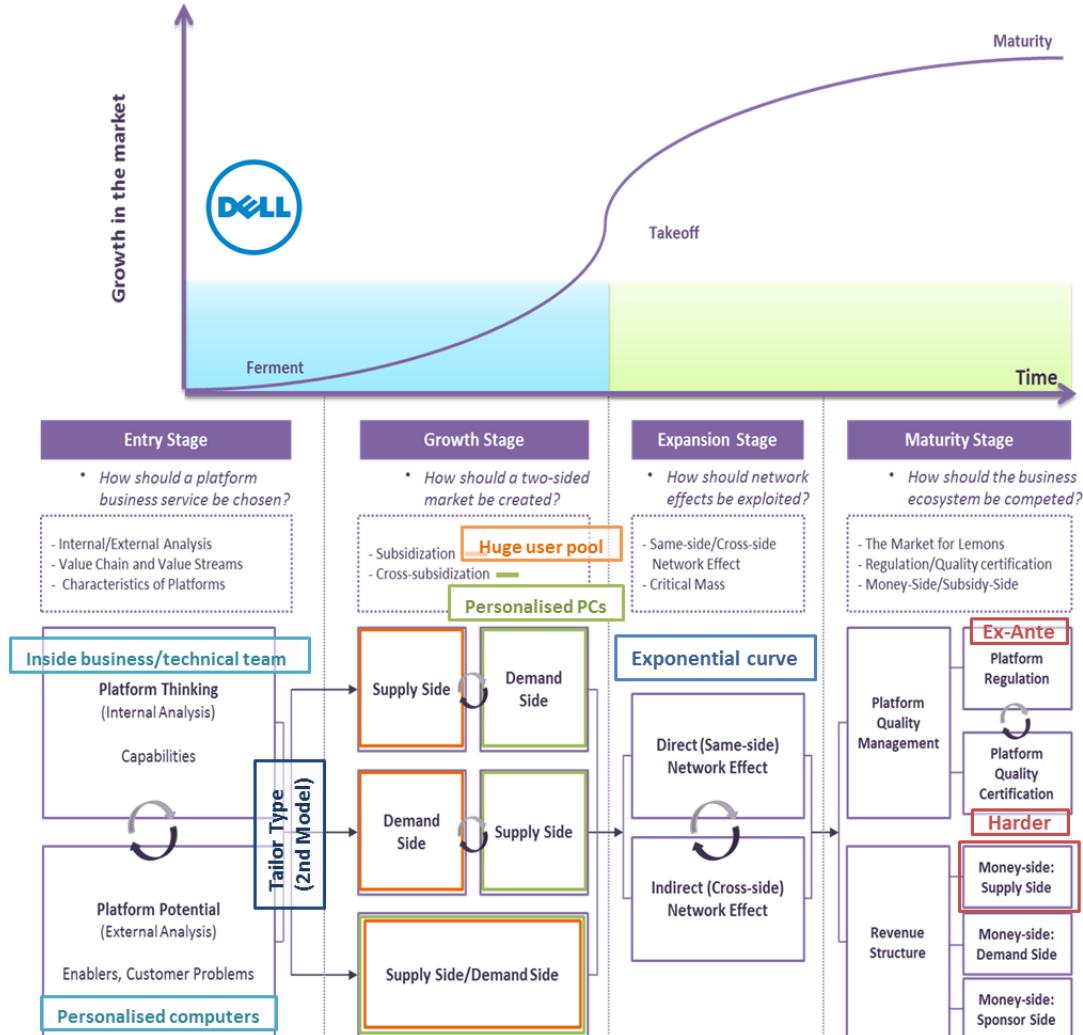
(92 items in total)

Appendix 4. Word Frequency Query by Nvivo 10



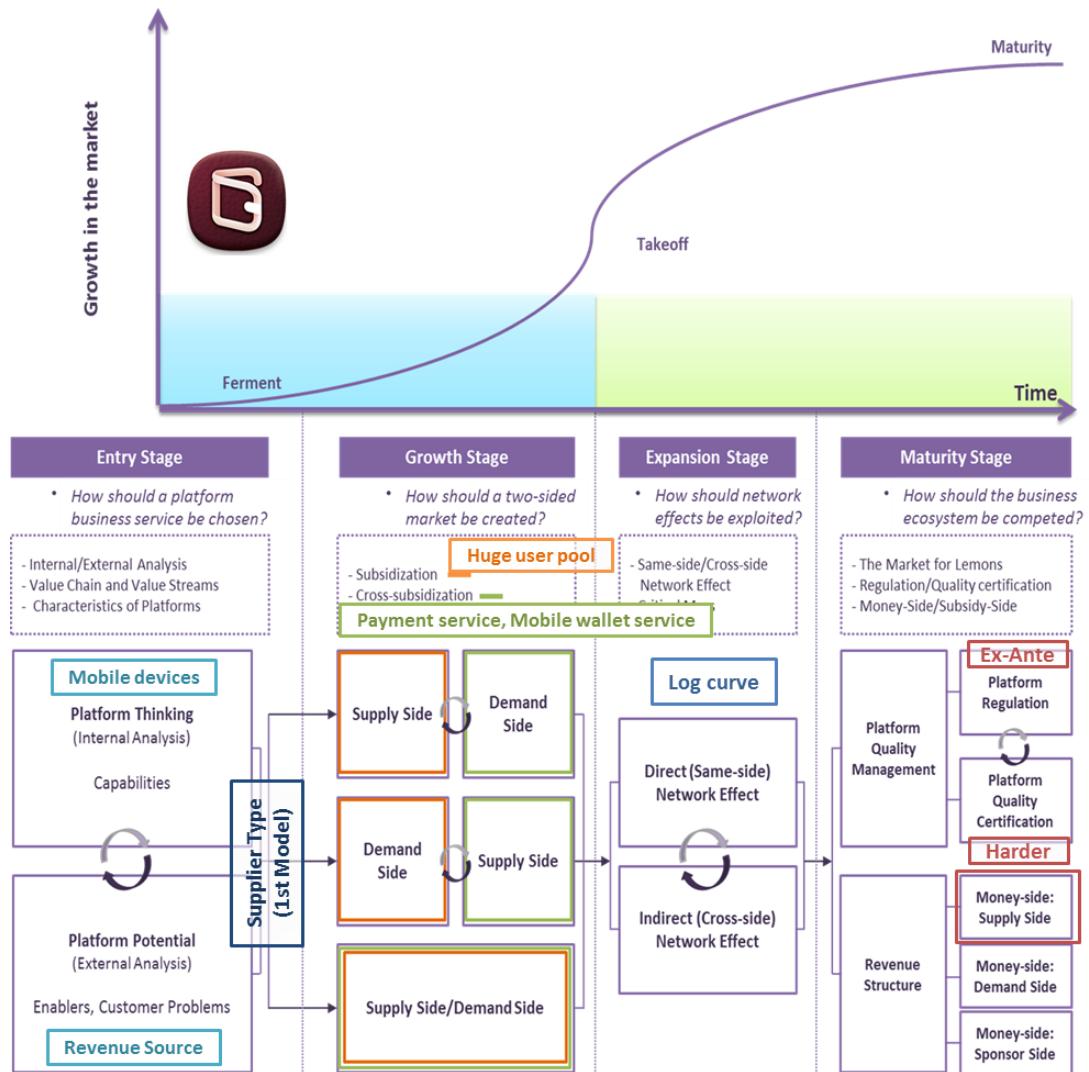
Appendix 5. Summary of 21 Cases Analysis

1) Dell PC



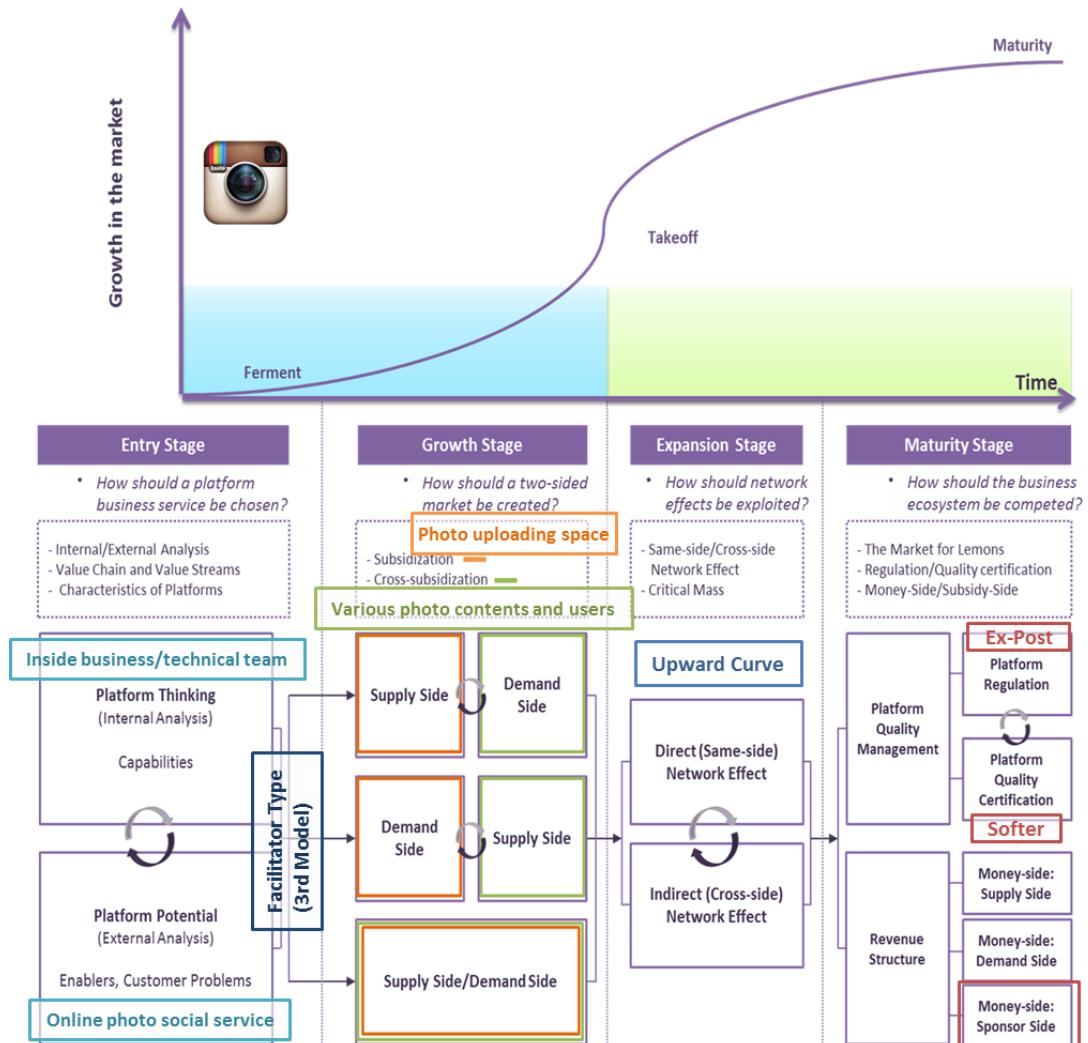
Platform Type	Tailor Type (2nd Model) Supply Side: Manufacturers / Demand Side: PC Users
Entry Stage	Platform Thinking (Internal): Inside business/technical team Platform Potential(External): Personalised computers
Growth Stage	Subsidisation: Huge user pool Cross-Subsidisation: Personalised PCs
Expansion Stage	Exponential curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Demand Side / Subsidy Side: Supply Side

2) Samsung Wallet



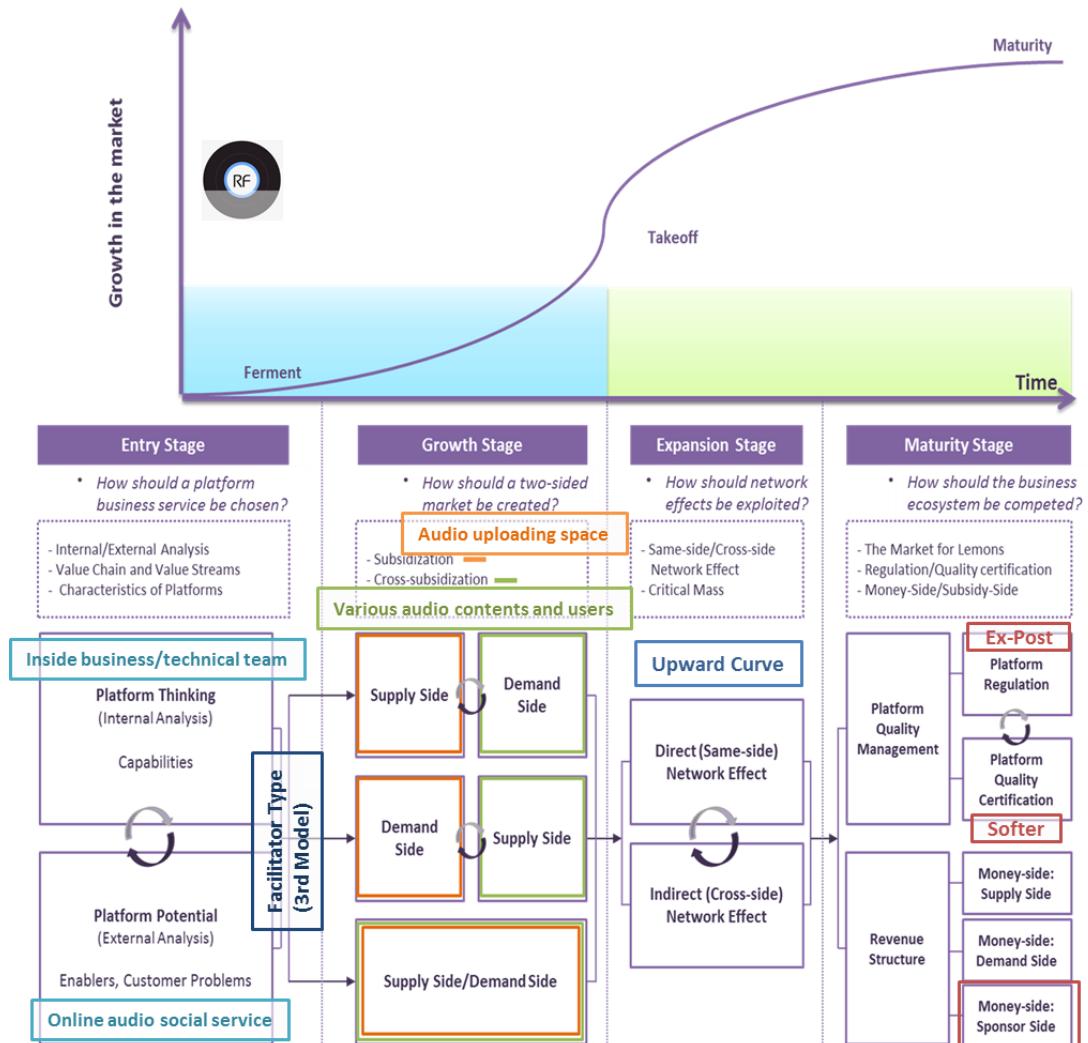
Platform Type	Supplier Type (1st Model) Supply Side: Card Companies / Demand Side: Service Users
Entry Stage	Platform Thinking (Internal): Mobile devices Platform Potential(External): Revenue source
Growth Stage	Subsidisation: Huge user pool Cross-Subsidisation: Payment service, Mobile wallet service
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side

3) Instagram



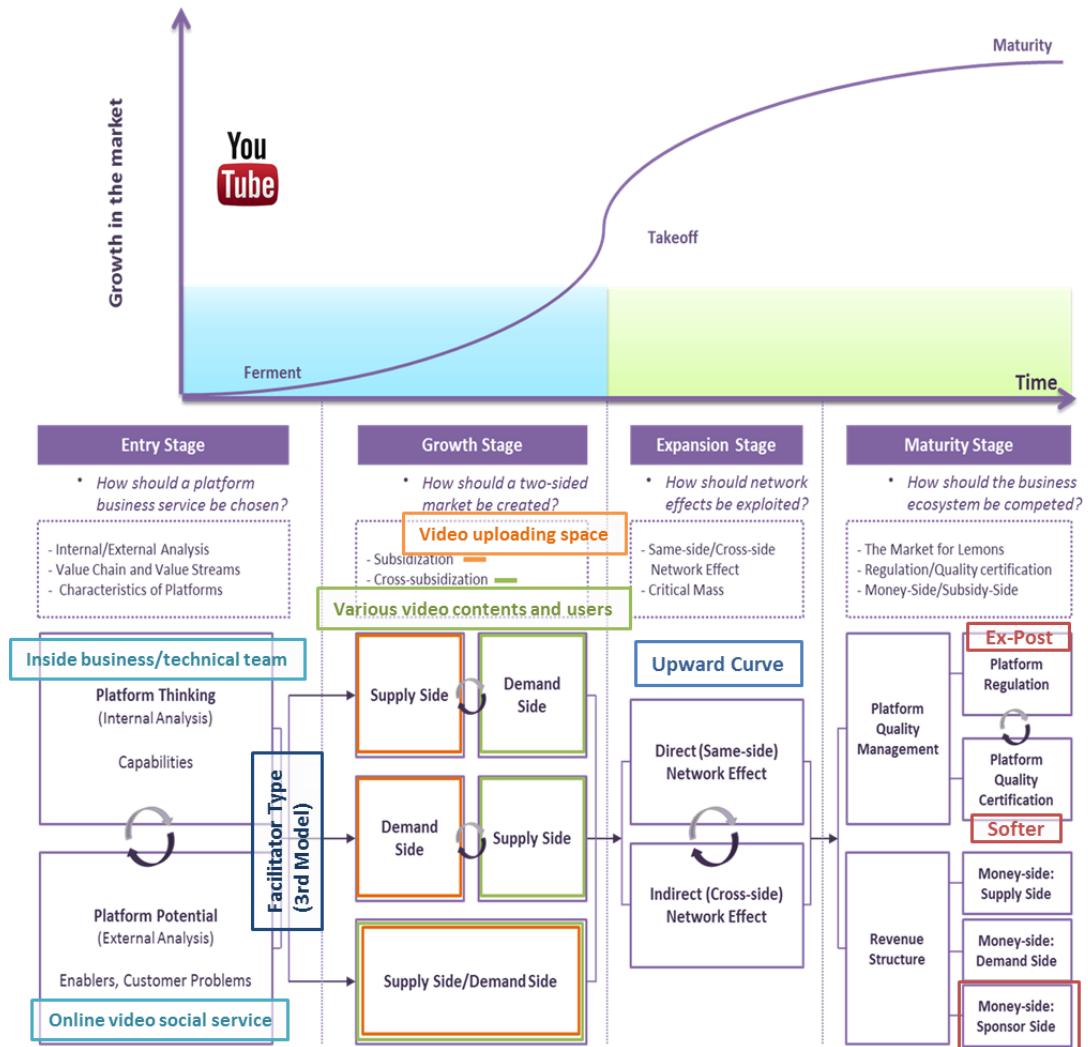
Platform Type	Facilitator Type (3rd Model) Supply Side: Photo uploaders / Demand Side: Photo viewers
Entry Stage	Platform Thinking (Internal): Inside business/technical team Platform Potential(External): Online photo social service
Growth Stage	Subsidisation: Photo uploading space Cross-Subsidisation: Various photo contents and users
Expansion Stage	Upward line Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Softer certification/ Ex-Post Money Side: External Side / Subsidy Side: Supply and Demand Side

4) RecordFarm



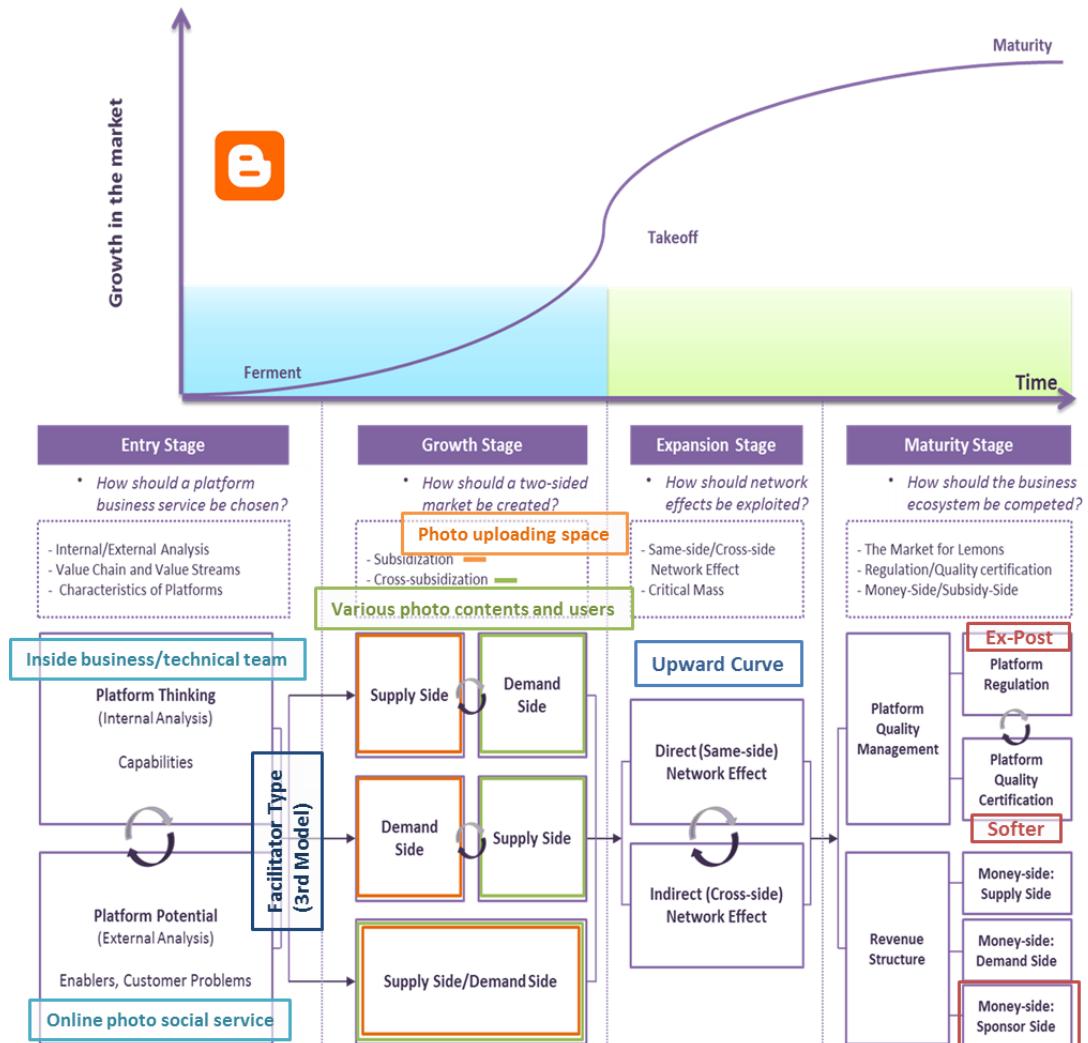
Platform Type	Facilitator Type (3rd Model) Supply Side: Audio uploaders / Demand Side: Listeners
Entry Stage	Platform Thinking (Internal): Inside business/technical team Platform Potential(External): Online audio social service
Growth Stage	Subsidisation: Audio uploading space Cross-Subsidisation: Various audio contents and users
Expansion Stage	Upward line Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Softer certification/ Ex-Post Money Side: External Side / Subsidy Side: Supply and Demand Side

5) YouTube



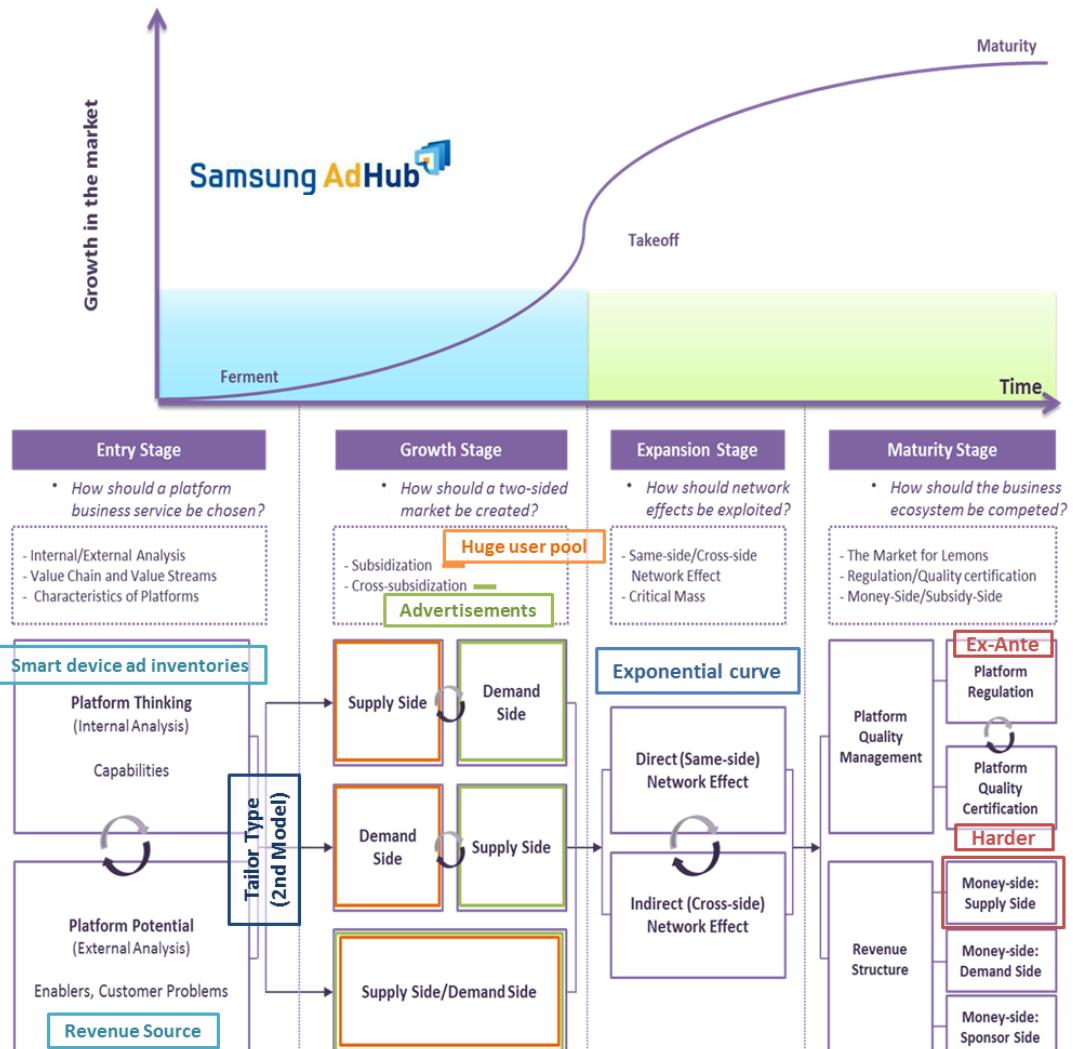
Platform Type	Facilitator Type (3rd Model) Supply Side: Video uploaders / Demand Side: Viewers
Entry Stage	Platform Thinking (Internal): Inside business/technical team Platform Potential(External): Online video social service
Growth Stage	Subsidisation: Video uploading space Cross-Subsidisation: Various video contents and users
Expansion Stage	Upward line Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Softer certification/ Ex-Post Money Side: External Side / Subsidy Side: Supply and Demand Side

6) Blogger



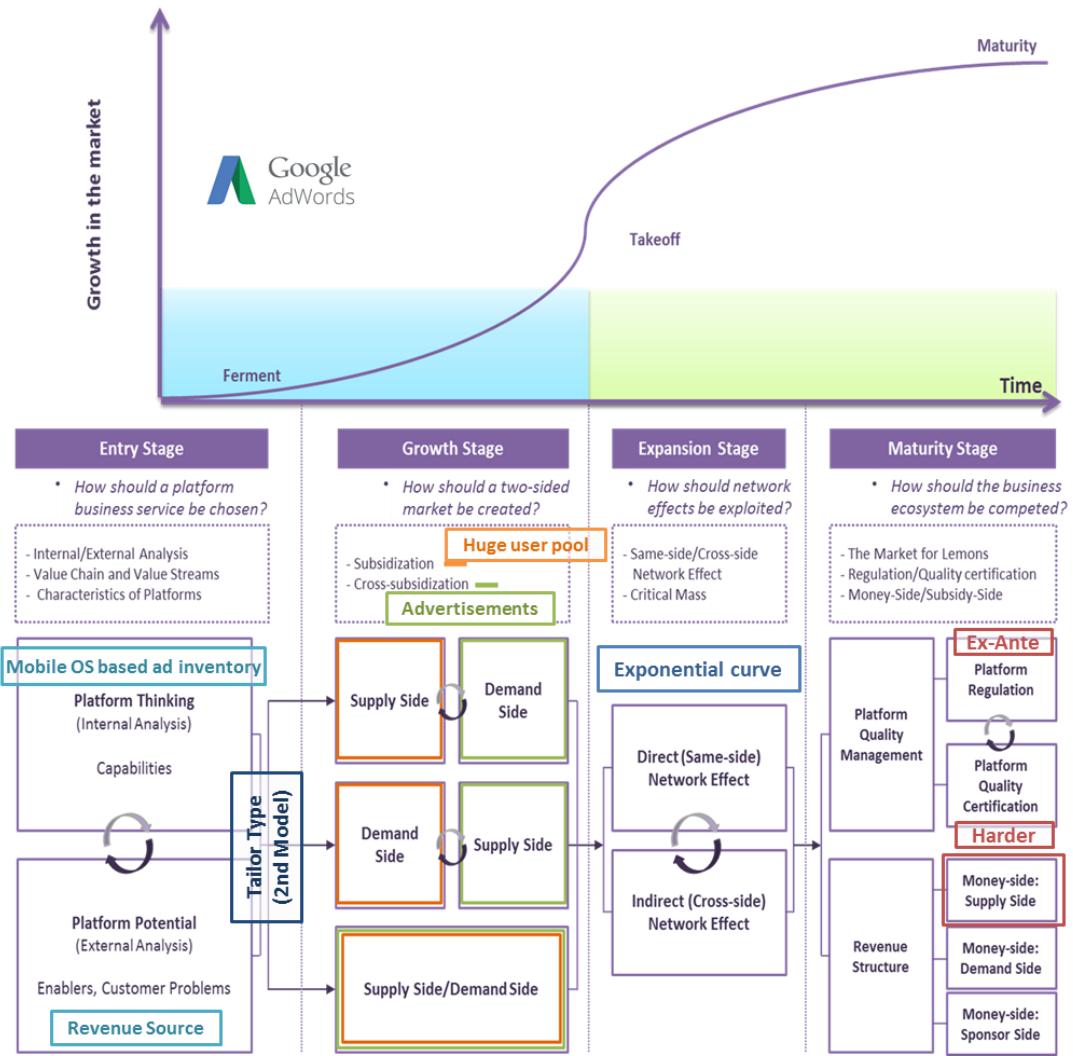
Platform Type	Facilitator Type (3rd Model) Supply Side: Photo uploaders / Demand Side: Viewers
Entry Stage	Platform Thinking (Internal): Inside technical team Platform Potential(External): Online photo social service
Growth Stage	Subsidisation: Photo uploading space Cross-Subsidisation: Various photo contents and users
Expansion Stage	Upward line Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Softer certification/ Ex-Post Money Side: External Side / Subsidy Side: Supply and Demand Side

7) Samsung Adhub



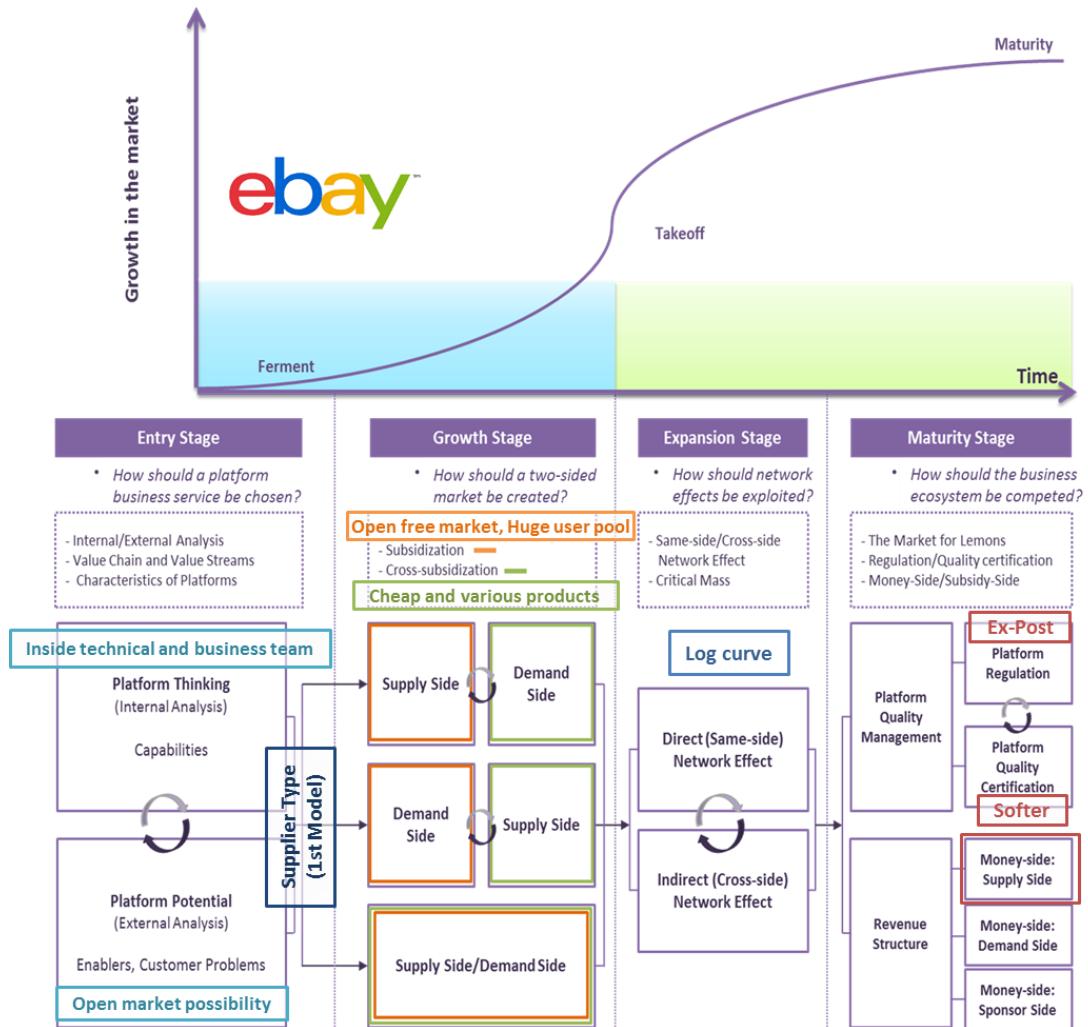
Platform Type	Tailor Type (2nd Model) Supply Side: Advertiser / Demand Side: Service Users
Entry Stage	Platform Thinking (Internal): Smart device ad inventories Platform Potential(External): Revenue source
Growth Stage	Subsidisation: Huge user pool Cross-Subsidisation: Advertisements
Expansion Stage	Exponential curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side

8) Google Adwords



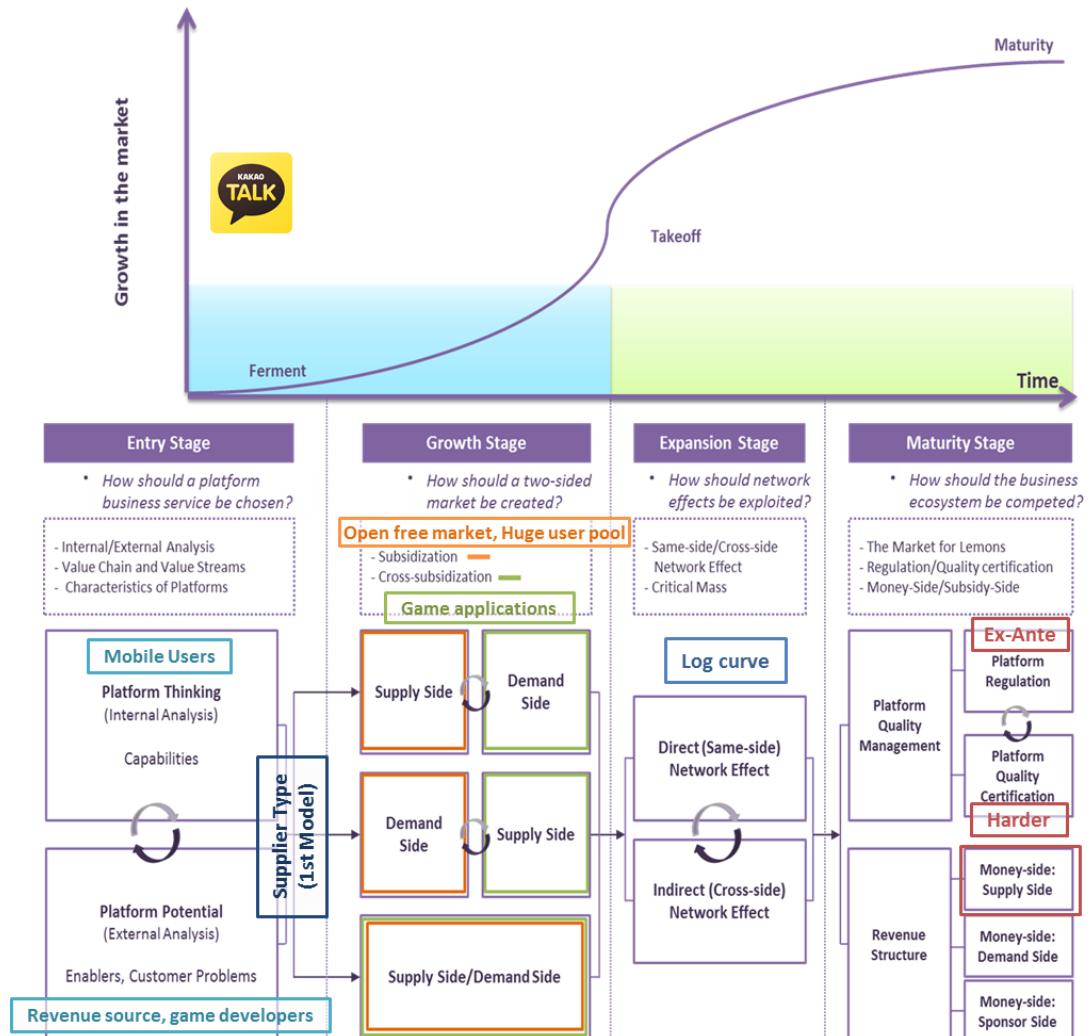
Platform Type	Tailor Type (2nd Model) Supply Side: Advertiser / Demand Side: Service Users
Entry Stage	Platform Thinking (Internal): Mobile OS based ad inventory Platform Potential(External): Revenue source
Growth Stage	Subsidisation: Huge user pool Cross-Subsidisation: Advertisements
Expansion Stage	Exponential curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side

9) eBay



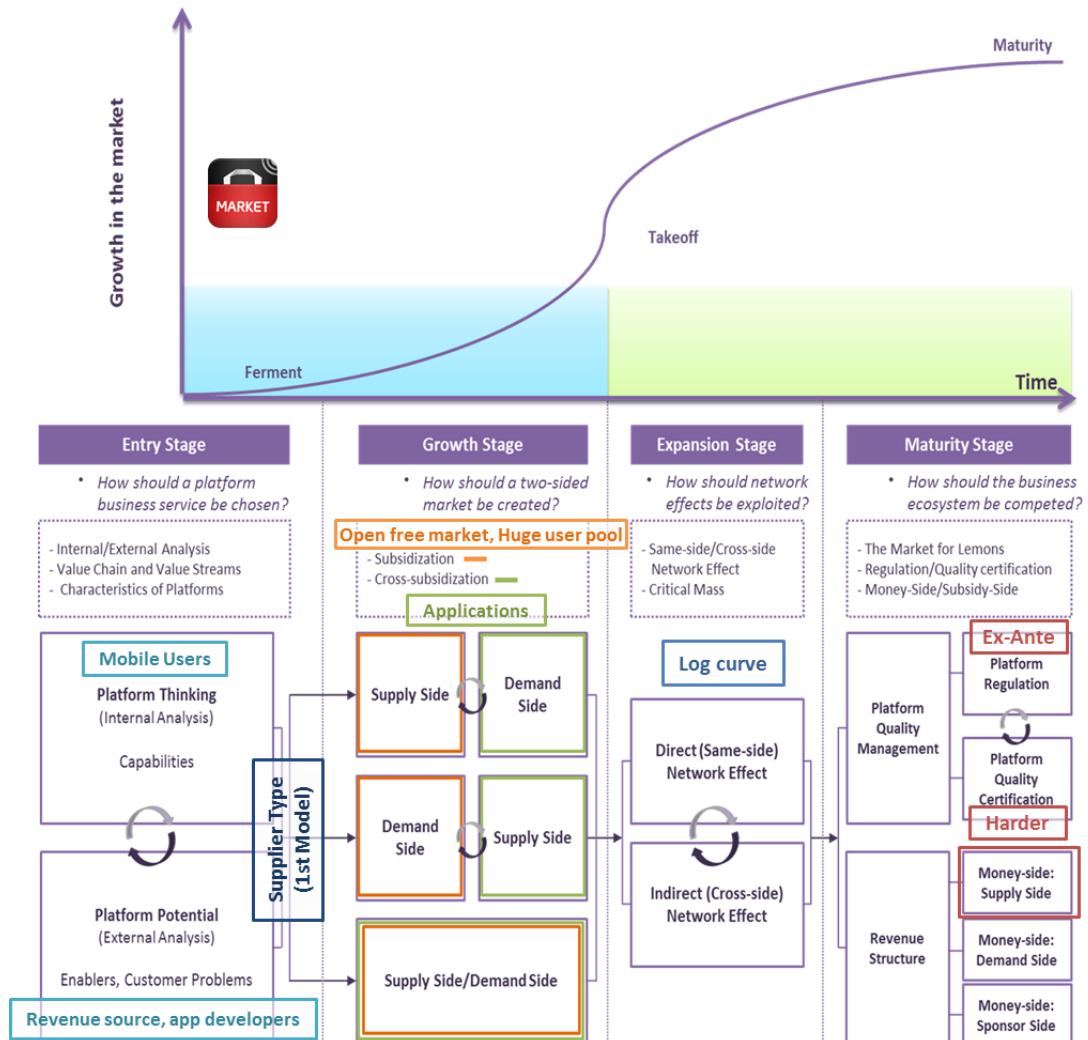
Platform Type	Supplier Type (1st Model) Supply Side: Sellers / Demand Side: Buyers
Entry Stage	Platform Thinking (Internal): Inside technical and business team Platform Potential(External): Open market possibility
Growth Stage	Subsidisation: Open free market, Huge user pool Cross-Subsidisation: Cheap and various products
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Softer certification/ Ex-Post Money Side: Supply Side / Subsidy Side: Demand Side

10) Kako Mobile Store



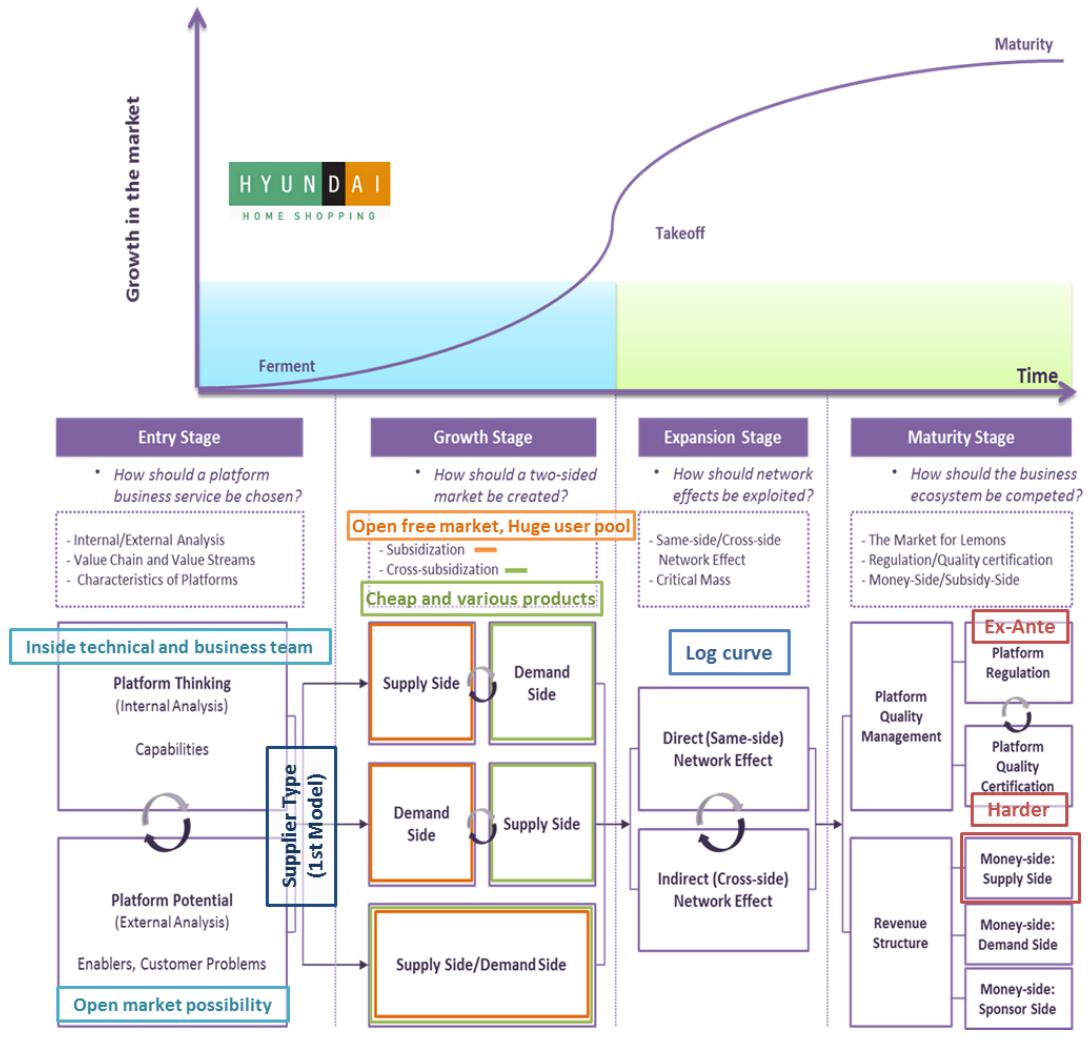
Platform Type	Supplier Type (1st Model) Supply Side: Game developers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): Mobile Users Platform Potential(External): Revenue source, contents developers
Growth Stage	Subsidisation: Open free market, Huge user pool Cross-Subsidisation: Game applications
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side

11) Korea Telecom Olleh App Store



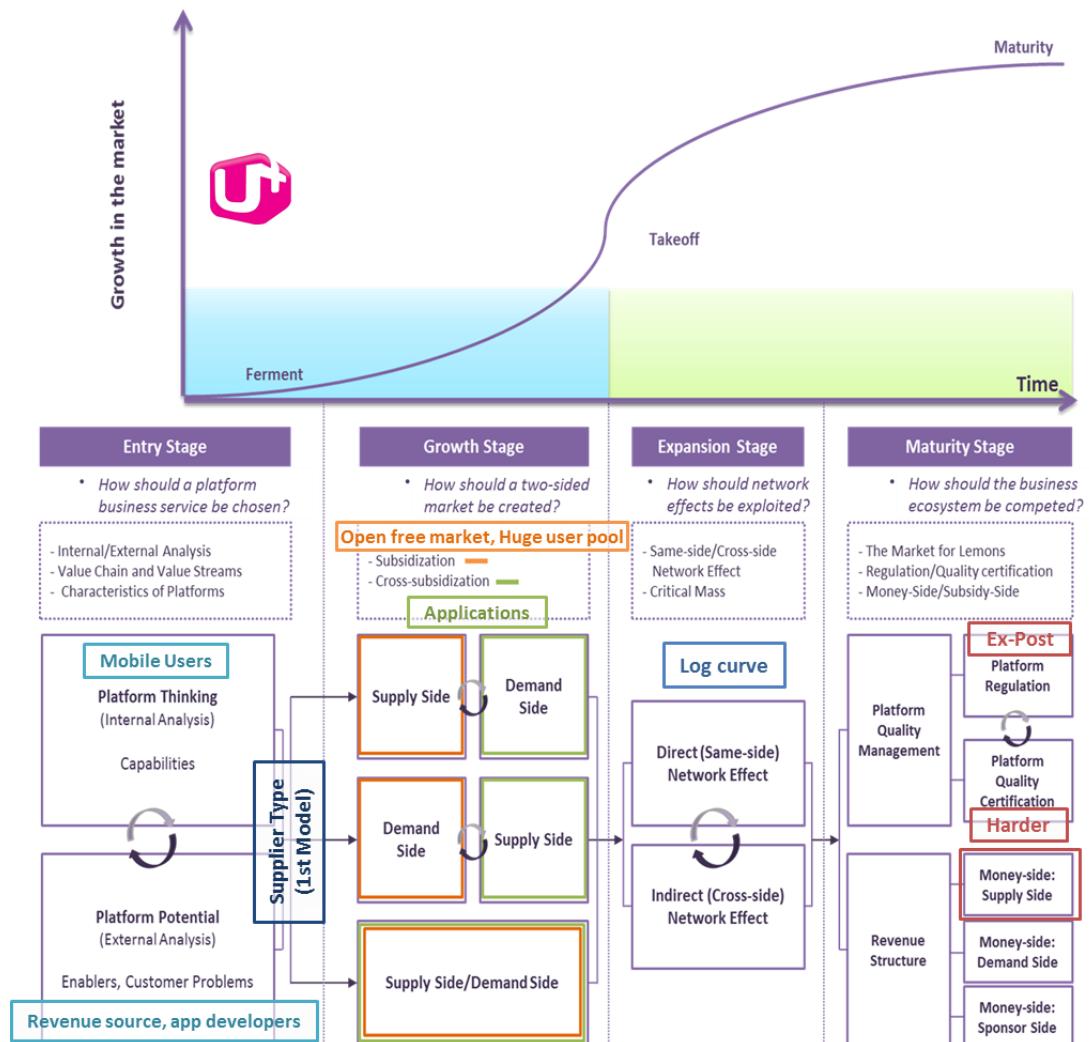
Platform Type	Supplier Type (1st Model) Supply Side: App developers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): Mobile Users Platform Potential(External): Revenue source, app developers
Growth Stage	Subsidisation: Open free market, Huge user pool Cross-Subsidisation: Applications
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side

12) Hyundai Home Shopping



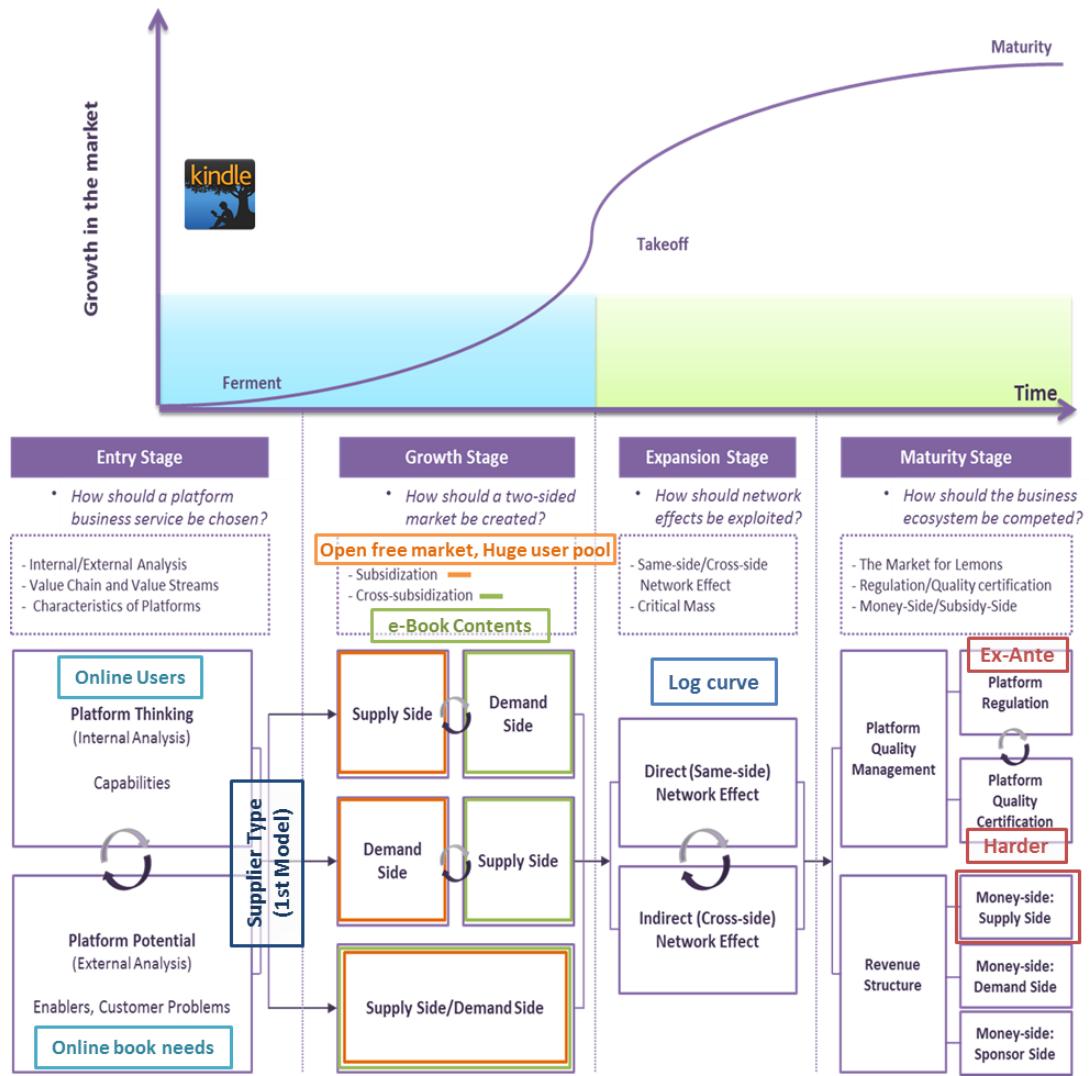
Platform Type	Supplier Type (1st Model) Supply Side: Sellers / Demand Side: Buyers
Entry Stage	Platform Thinking (Internal): Inside technical and business team Platform Potential(External): Open market possibility
Growth Stage	Subsidisation: Open free market, Huge user pool Cross-Subsidisation: Cheap and various products
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side

13) LG U+ App Store



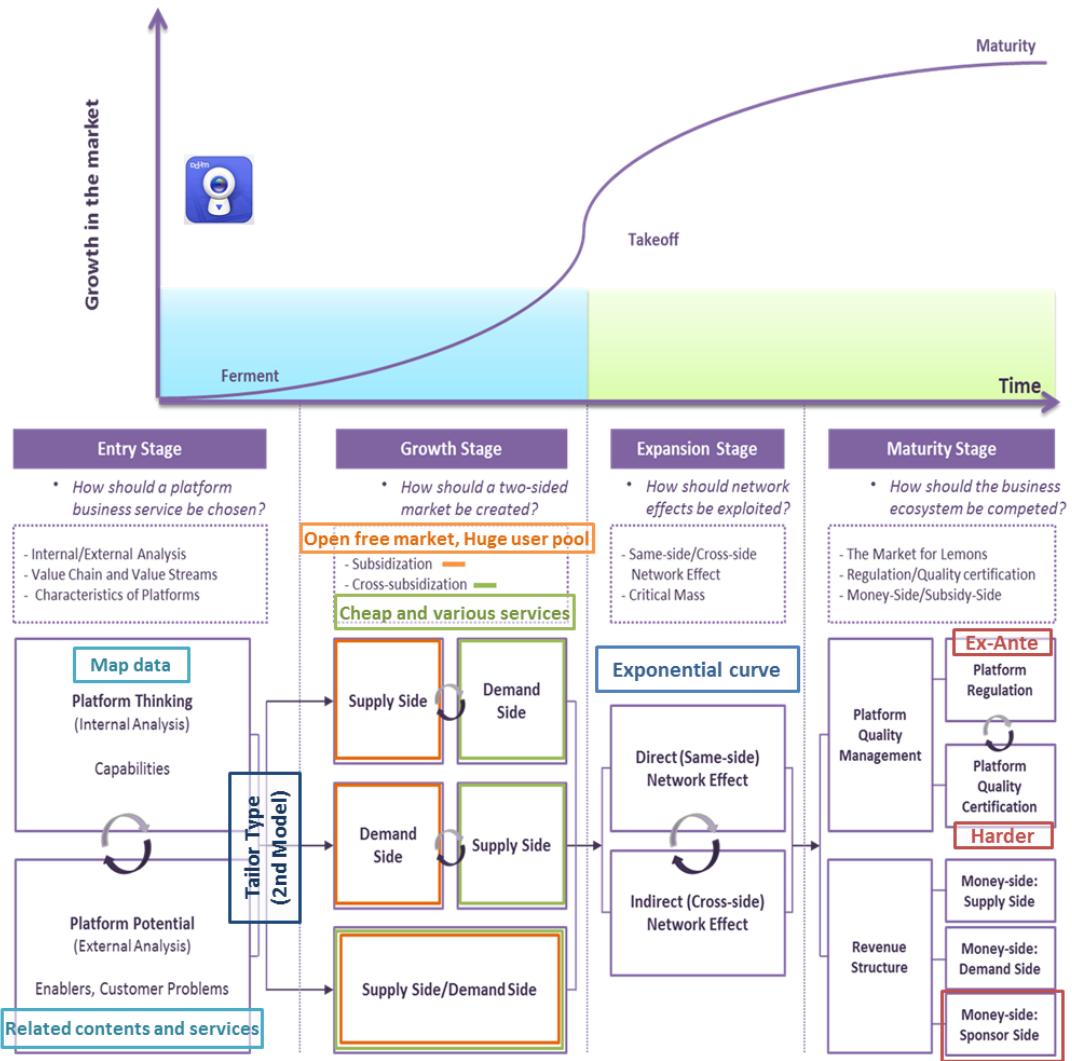
Platform Type	Supplier Type (1st Model) Supply Side: App developers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): Mobile Users Platform Potential(External): Revenue source, app developers
Growth Stage	Subsidisation: Open free market, Huge user pool Cross-Subsidisation: Applications
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Post Money Side: Supply Side / Subsidy Side: Demand Side

14) Amazon Kindle



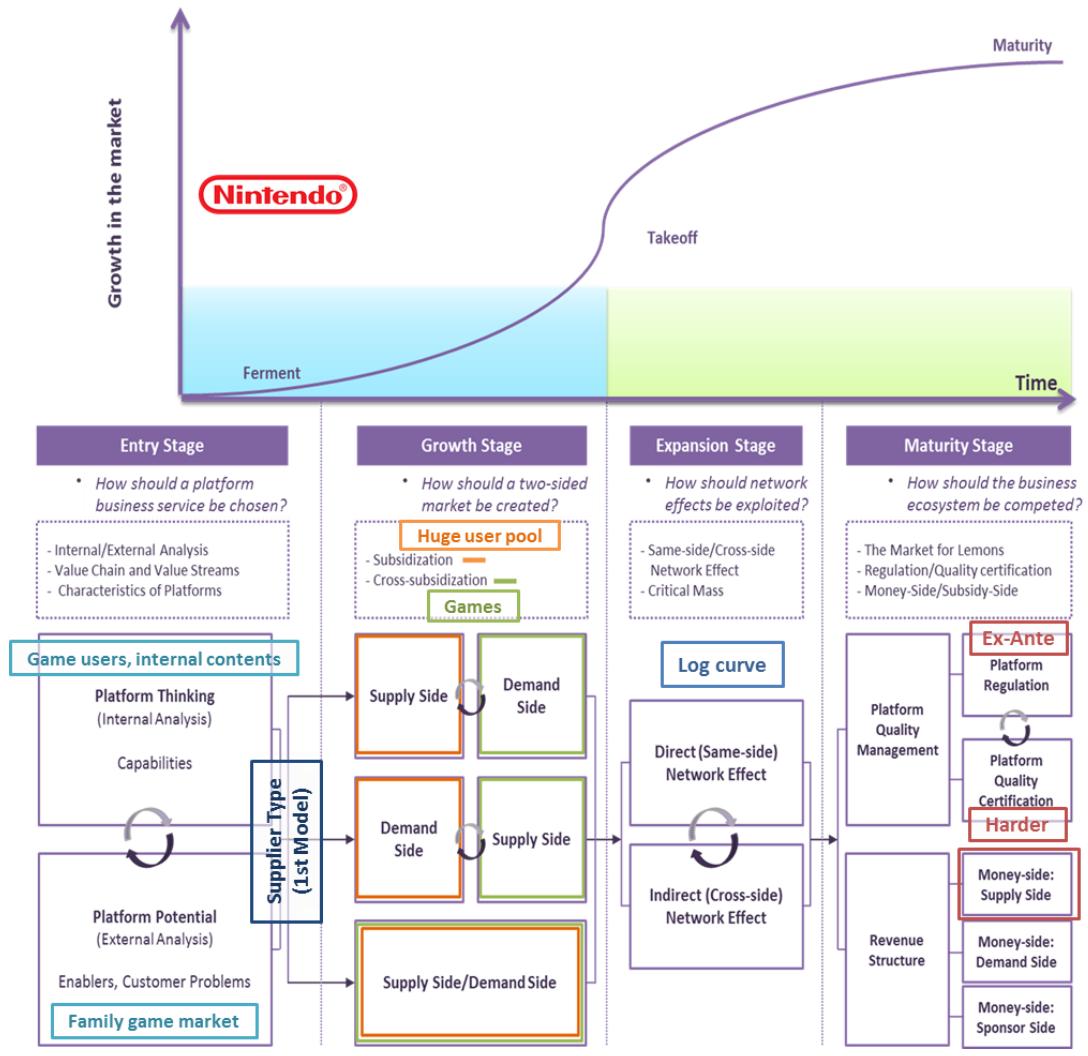
Platform Type	Supplier Type (1st Model) Supply Side: e-Book providers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): Online users Platform Potential(External): Online book needs
Growth Stage	Subsidisation: Open free market, Huge user pool Cross-Subsidisation: e-Book Contents
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side

15) Daum Map



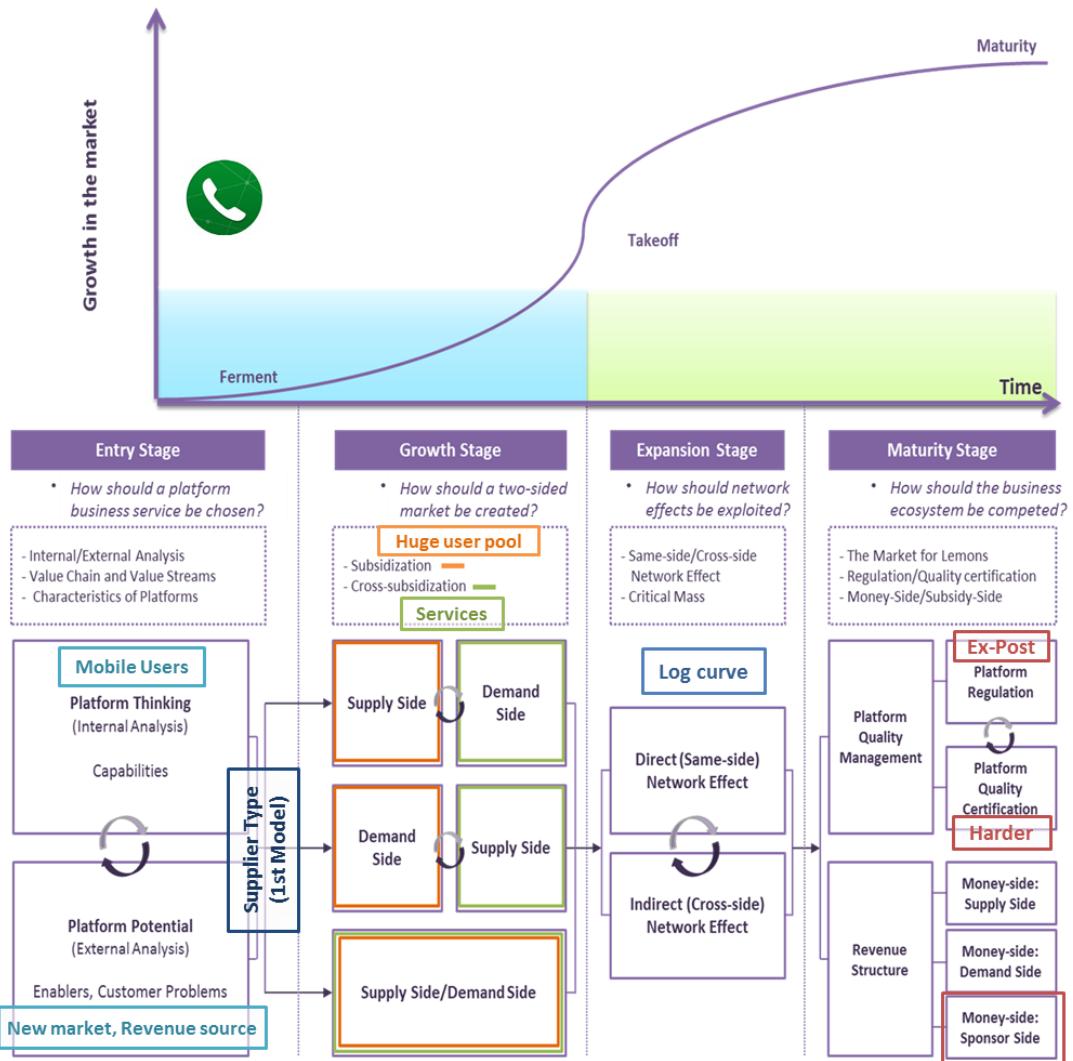
Platform Type	Tailor Type (2nd Model) Supply Side:Service developers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): Map data Platform Potential(External): Related contents and services
Growth Stage	Subsidisation: Open free market, Huge user pool Cross-Subsidisation: Cheap and various services
Expansion Stage	Exponential curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: External Side / Subsidy Side: Supply and Demand Side

16) Nintendo game console



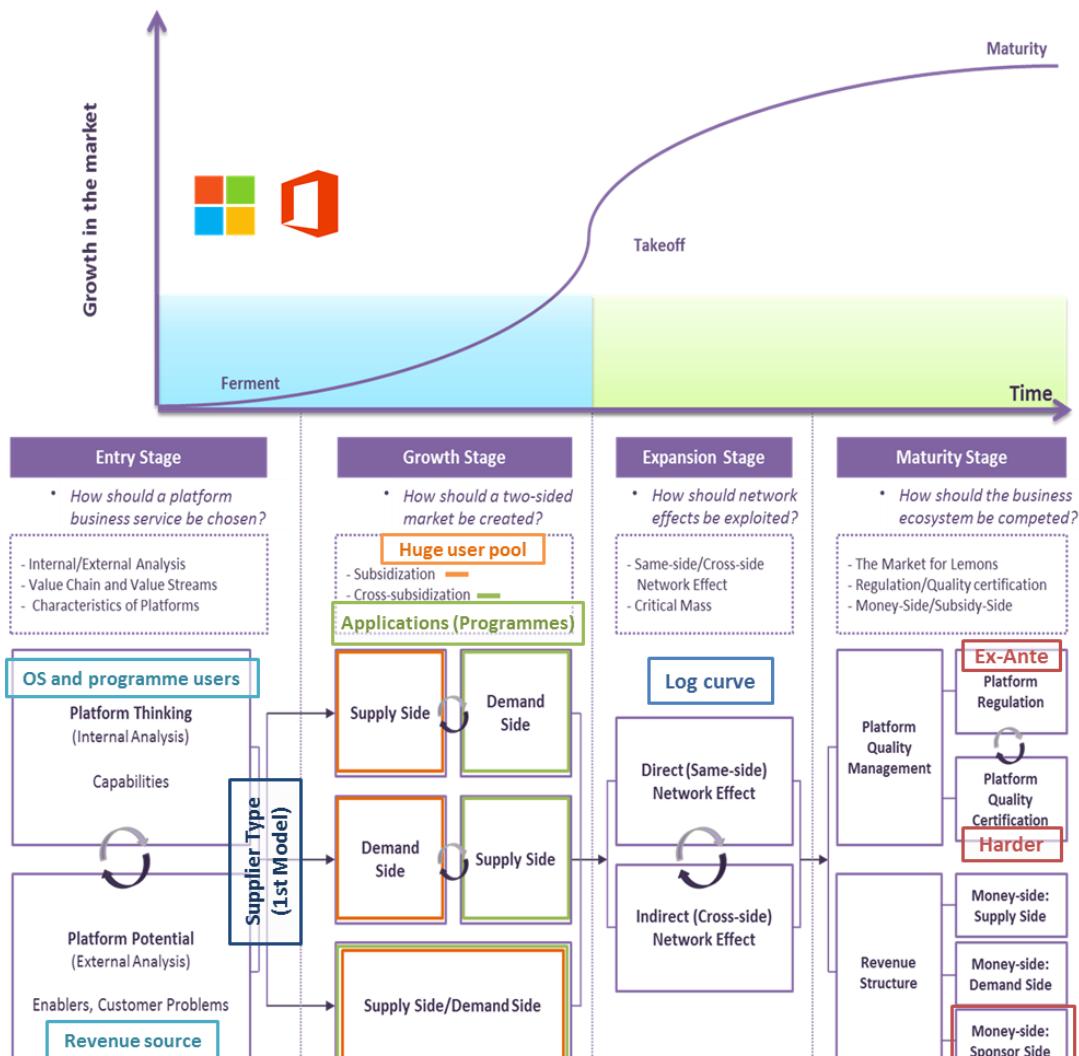
Platform Type	Supplier Type (1st Model) Supply Side: Game developers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): Game users, internal contents Platform Potential(External): Family game market
Growth Stage	Subsidisation: Huge user pool Cross-Subsidisation: Games
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side

17) SK Telecom T-phone



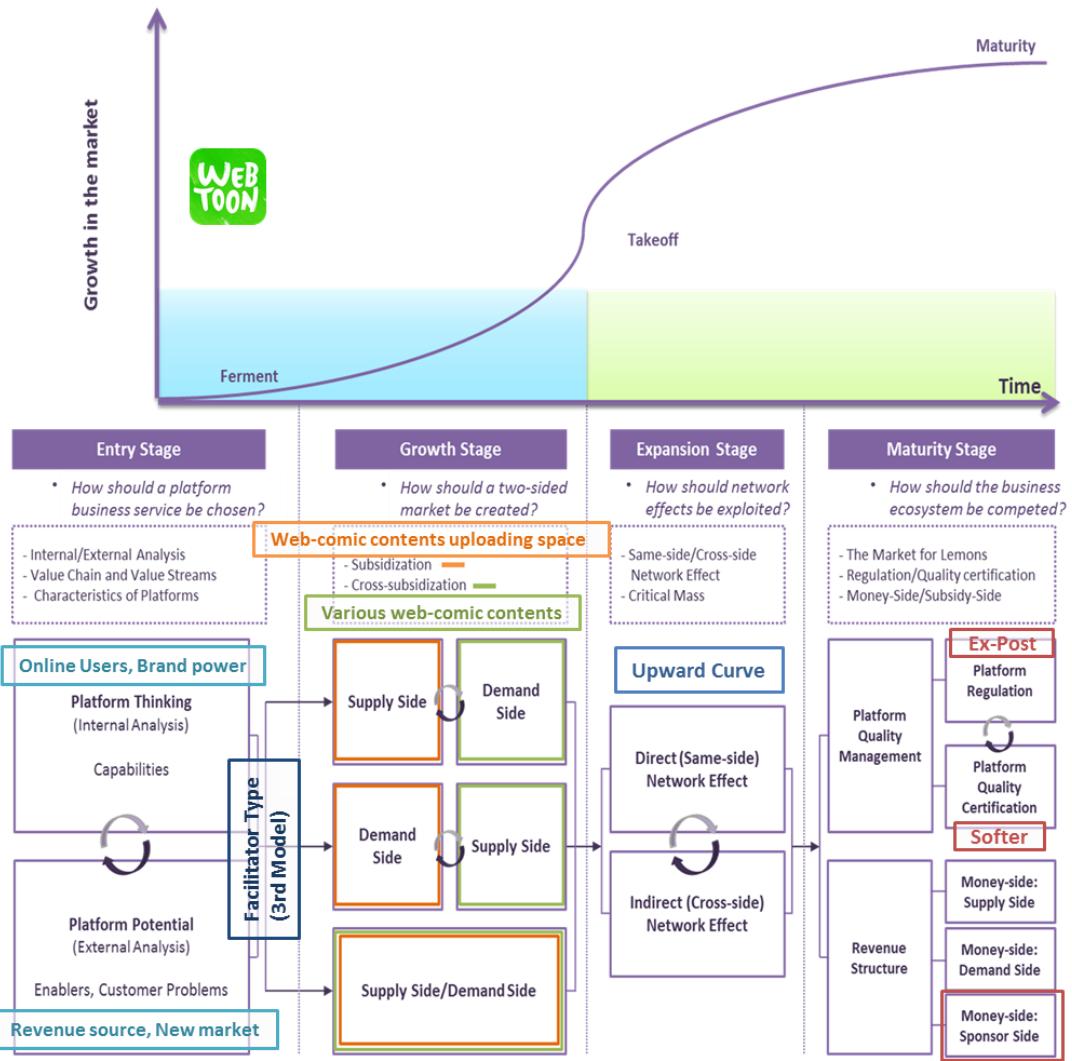
Platform Type	Supplier Type (1st Model) Supply Side: Service developers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): Mobile Users Platform Potential(External): New market, Revenue source
Growth Stage	Subsidisation: Huge user pool Cross-Subsidisation: Services
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Post Money Side: External Side / Subsidy Side: Supply and Demand Side

18) Microsoft (Windows and MS Office)



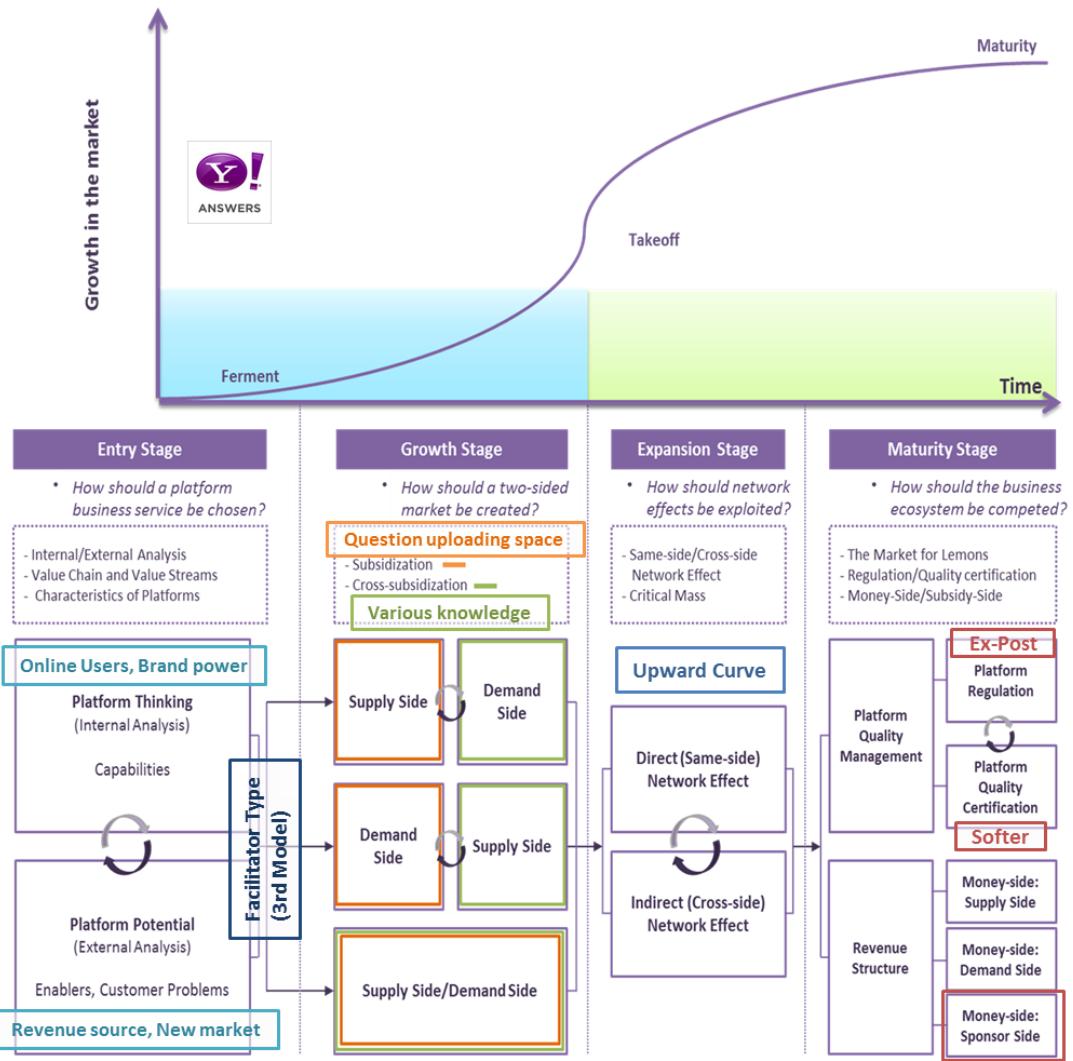
Platform Type	Supplier Type (1st Model) Supply Side: App developers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): OS and programme users Platform Potential(External): Revenue source
Growth Stage	Subsidisation: Huge user pool Cross-Subsidisation: Applications (programmes)
Expansion Stage	Log curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: External Side / Subsidy Side: Supply and Demand Side

19) Naver Challenge Webtoon



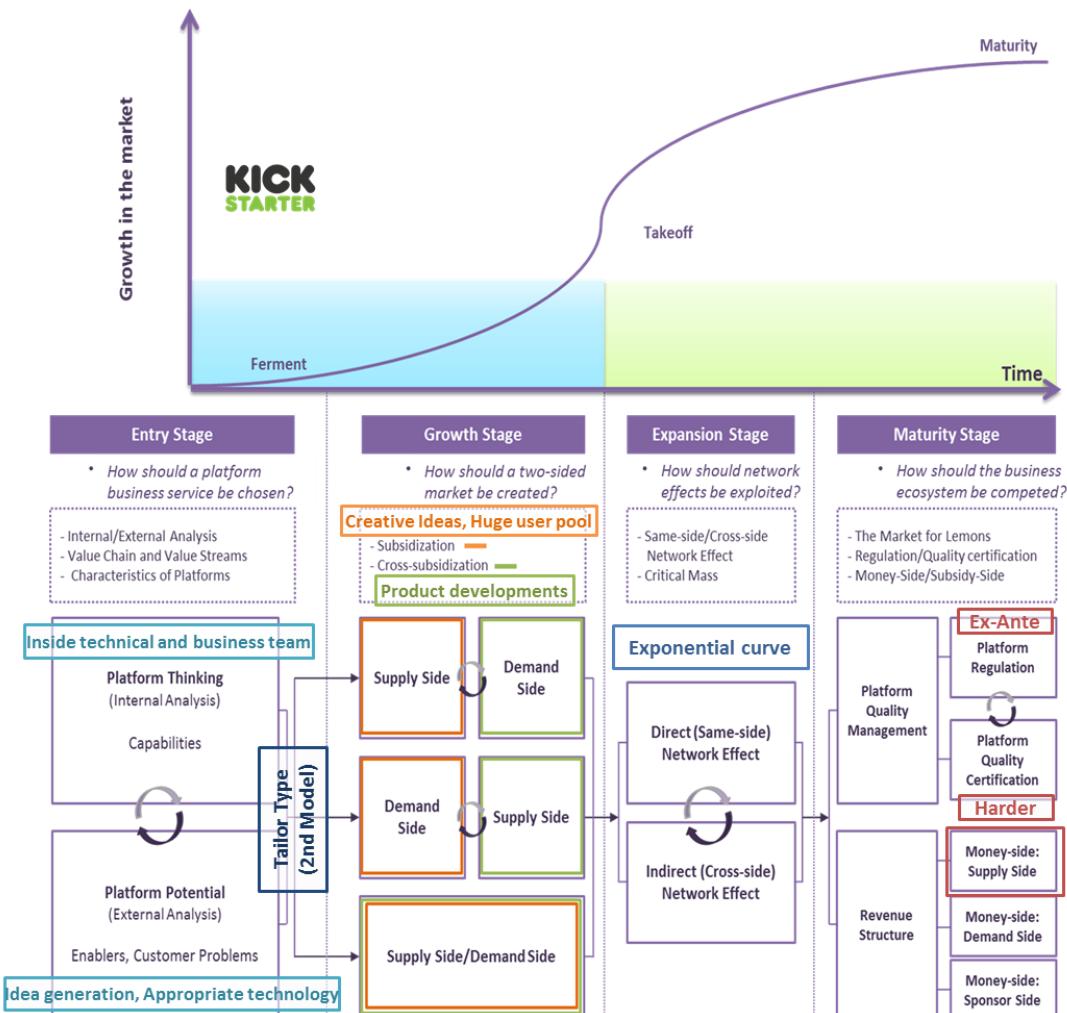
Platform Type	Facilitator Type (3rd Model) Supply Side: Web-comic uploaders / Demand Side: Viewers
Entry Stage	Platform Thinking (Internal): Online Users, Brand power Platform Potential(External): Revenue source, New market
Growth Stage	Subsidisation: Web-comic contents uploading space Cross-Subsidisation: Various web-comic contents
Expansion Stage	Upward line Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Softer certification/ Ex-Post Money Side: External Side / Subsidy Side: Supply and Demand Side

20) Yahoo Answers



Platform Type	Facilitator Type (3rd Model) Supply Side: Answerers / Demand Side: Questioners
Entry Stage	Platform Thinking (Internal): Online Users, Brand power Platform Potential(External): Revenue source, New market
Growth Stage	Subsidisation: Question uploading space Cross-Subsidisation: Various knowledge
Expansion Stage	Upward line Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Softer certification/ Ex-Post Money Side: External Side / Subsidy Side: Supply and Demand Side

21) Kickstarter



Platform Type	Tailor Type (2nd Model) Supply Side: Manufacturers / Demand Side: Users
Entry Stage	Platform Thinking (Internal): Inside technical and business team Platform Potential(External): Idea generation, Appropriate technology
Growth Stage	Subsidisation: Creative Ideas, Huge user pool Cross-Subsidisation: Product developments
Expansion Stage	Exponential curve Direct(same-side) and Indirect (cross-side) network effect
Maturity Stage	Quality management: Harder certification/ Ex-Ante Money Side: Supply Side / Subsidy Side: Demand Side