

Article

Platform Growth Model: The Four Stages of Growth Model

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Abstract: As the platform business becomes more important, it is crucial to make adequate decisions and choices for strategies, considering influence factors in relation to the platform for each growth model. This study researched how to build a platform business in the IT industry from the perspective of a dynamic approach to understand how the platform growth model successfully enables business entities to enter the market and to continue expansion. Through 21 case studies, this research formulated the four stages of platform growth model: entry, growth, expansion and maturity, providing a conceptual framework to build a platform growth model ecosystem.

Keywords: platform; growth model; two-sided market; four stages; life cycle; dynamic approach

1. Introduction

Platform businesses are used widely in both academia and industry, and it is clear that platform businesses and strategies have become significant research subjects. Many academic researchers have investigated platform business from academic perspectives [1–18]. Recently, there have been efforts to complement these independent investigations and undertake interdisciplinary research studies [13,19,20]. Fuelling the growing interest in platform businesses is that they build market momentum [21] and enable adaption to unanticipated changes in the external environment [19]. Indeed, it is hard to discuss innovation without mentioning platforms, which have become a core strategy for dominating a market [7,21,22]. Because platform businesses have complicated structures [5,17,23–26], being a successful platform provider requires an accurate understanding of platform businesses. Discussions of platform strategy need to be invigorated, platforms need to be leveraged through companies' internal and external analyses, and strategy establishments need to be seriously considered [22].

However, the majority of platform studies have tended to assume that the platform model has already been located in the market, and thus, how platforms emerge, grow, expand and mature in the market is not well analysed [10,27]. Existing strategies have focused on static rather than dynamic approaches that enable firms to create superior, longer-term business performance [28]. Without a precise analysis of the strategic elements of the platform business, platform-serviced companies face difficulties in the market [22]. Therefore, this study analysed different core elements and strategies for each growth stage to match business's environmental imperative. Existing studies do not provide clear dynamic strategic guidance for platform providers, under the assumption that the platform is already integrated into the market. To address this gap, another contribution of this research is its presentation of platform business strategy using a dynamic approach.

To achieve this purpose, this research determined how to build a step-by-step business strategy using a dynamic approach that allows an understanding of how a platform business successfully enables business entities to enter a market and continue expansion. This research identified four significant stages of platform business: entry, growth, expansion and maturity. Different core elements and

strategies exist for each stage and must be examined to understand the lifecycle of a platform business. Together, they form a conceptual framework on which to build a platform business. An accurate understanding of the elements and business strategies of each stage of the growth model is essential for business entities that aspire to become platform providers. Through 21 case studies, this research formulated the four stages of platform growth model: entry, growth, expansion and maturity, providing a conceptual framework to build a platform growth model ecosystem. In its discussion of the model, this article demonstrates to platform providers how to settle successfully into their respective markets and achieve sustainable growth and innovation while reducing their rate of failure.

2. The Systematic Nature of the Platform Business

The platform has emerged as a new, potent organisational strategy for innovation and business transactions in many industries [13]. A platform business is a business model which creates value by facilitating exchanges between two or more participants, usually suppliers and demanders. The role of the platform business is to provide a space and a set of standards and protocols that facilitate interactions across a large number of participants. It exploits networks that can be accessed on demand [5,8,13]. From a business economics standpoint, a platform business comprises three theoretical concepts—a two-sided market [7,17,29], the network effect and a business ecosystem—that are key to its systematic nature [3,6,7,19,30–32]. A two-sided market enables many industries, especially information and communication technologies (ICT), to share product and service offerings in a specific place or space. In a two-sided market, both direct and indirect network effects emerge through transactions, meaning that one product or service user has an impact on the value of products or services to other users. With the network effect, the value of a product or service is dependent on the number of users, creating enormous value and removing barriers to entry in businesses as self-organising, independence and co-evolution occur on the platform [22,32–35]. These conditions create the business ecosystem that nourishes the platform business, enabling it to grow spontaneously [34,35].

2.1. Two-Sided Market Theory and Open Innovation

A two-sided market, otherwise called a two-sided network, is an economic platform with various distinct actors or stakeholders that provide each other with system benefits [23]. It is a meeting place for two or more sets of agents interacting through an intermediary or a platform [36,37]. 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 [38]. The term “market” in the phrase refers to products or services that provide a physical or virtual platform in which different user groups interact [7].

The theoretical study of two-sided markets began gaining attention in the early 2000s [5,17,24,26,39–41]. Many theses on such general theories as the optimum cost (price level and price structure) and externalities of a two-sided market have been proposed since the studies of Caillaud and Jullien [4], Armstrong [1] and Rochet and Tirole [42] were published. There has also been work on the economic effects of two-sided markets, including studies by Evans [43] and Armstrong et al. [23]. In a two-sided market, the 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, and the optimum cost may be even lower than the marginal cost. The criteria for market definition, market power assessment, unfair practice judgment and other concepts differ in a two-sided market.

Based on this two-sided market theory, the platform has the tendency of open innovation [44–47]. Open innovation is the creation of new products or services by procuring the technology and ideas the company needs from outside while sharing internal resources with the outside [48–50]. If the focus on R&D activities inside a company was “closed innovation”, and outsourcing is shifting capabilities in one direction, open innovation will allow technology or ideas to cross the boundaries of the company and lead to innovation [51–53]. Thus, open innovation on the platform means that the company’s innovation is not the platform provider alone, but the collaboration of various participants on

the platform [54,55]. As a two-sided market, the platform creates open innovation by creating value from internal and external innovation [56]. With open innovation on the two-sided markets, platform business provides business sustainability.

2.2. Network Effects and Business Ecosystem

Network effects can also refer to network externalities, the demand-side economies of scale and the impact one stakeholder has on the value to other people of a particular product. In simpler terms, this refers to a demand economy of scale and implies at least some level of interaction, with the value of a product or service dependent on the number of users [33]. Network effects were studied in the context of the use of long-distance telephony in the 1970s and have been widely recognised as a critical aspect of industrial organisation in IT industries, although they are widespread in other fields, including mobiles, microchips, telecommunication, PCs, semiconductors, e-commerce and electronic marketplaces. Empirical evidence on network effects has been found in product categories as diverse as spreadsheets [57], databases [58] and DVD players [59]. In a two-sided market, in which a particular type of network externality is present [26], the externalities 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, users affect not only the same side of a platform, direct network externality, but also other sides [26,60]. This is referred to as “indirect network externality” or “cross-network externality” [61].

Beer [62] compared business systems to biological systems, emphasising that an industrial organisation appears to be an organism that responds to its business environment. This ecological perspective does not view the economy as a machine; on the contrary, it contends that the market economy is best comprehended as a living, evolving ecosystem [63]. The notion of the ecosystem, emerging from biology, began to be adopted in business and social science in the 1980s [64,65], and it was soon embraced as a critical business concept by start-ups and venture companies in particular. The essential logic of the business ecosystem is the study of the reciprocal relationships among companies and the surrounding business environment, as in biological environments. Platform businesses are currently in the spotlight because of their rapidly expanding use as a tool of business strategy. Thus, platforms are emerging as an essential element of competitiveness in a business ecosystem. As Iansiti and Levien [32] explained, a platform is a collection of solutions through access channels or interfaces that relate to the issues of 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 [21].

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 [66,67]. Thus, a platform business strategy with the dynamic approach is needed [68–70]. An accurate understanding of the business model and 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 [10,22,27]. The literature review shows 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 choose a platform business model as their key strategy for accessing new markets and assuming a leading position in those markets. Thus, this study aimed 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.

3. Research Design and Data Collection

This study was conducted using a three-step procedure with a literature review, multiple case studies and interviews [71,72]. The first step analysed the properties of platform growth models and

the characteristics of each stage by referring to case studies in previous research literature. The second step created a conceptual framework based on the theories derived from the literature review and established a strategy and model for each stage. In the last step, this study analysed the results collected from the case studies and developed propositions from an inductive perspective (Figure 1). The multiple case studies examined 21 companies. The final analysis step also involved conducting interviews and collecting publicly available data and internal materials. The collected data were decoded, based on the contents of the interview minutes and documents.

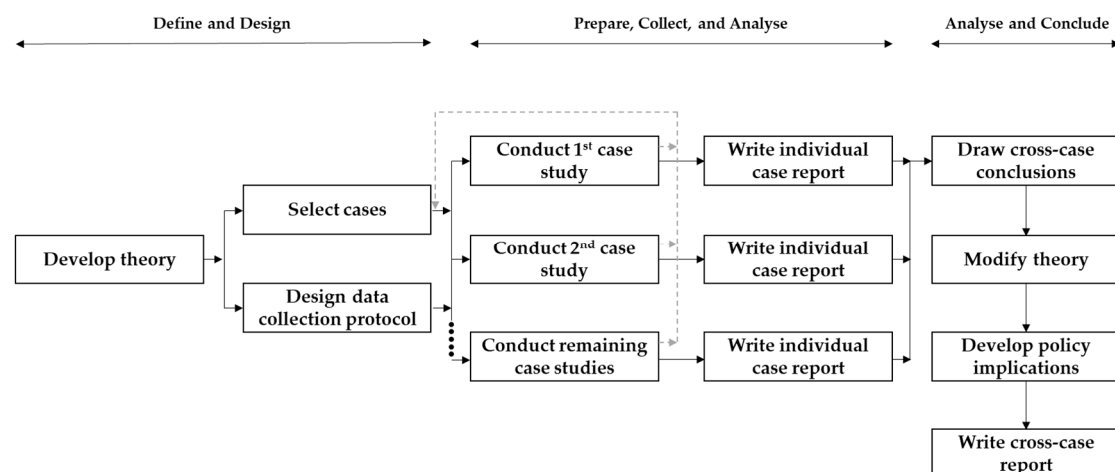


Figure 1. Multiple-case study analysis process. [72].

Data collection from the 21 robust case studies (See Appendix A) included conducting focus groups and in-depth interviews. The interviews were semi-structured to obtain the various thoughts and opinions of interviewees. First, this research classified representative platform services in the market into four different platform types: exchanges, advertiser-supported media, transaction systems and software platform [7]. Second, to analyse and understand general and common platform issues, platforms from numerous fields were selected. Lastly, to establish public confidence, this study chose a range of platform companies from rapidly growing start-ups to big enterprises [36]. Interviewees were placed in Phase 1 or Phase 2, with 15 interviewees in each phase. A focus group interview was conducted when each phase ended, and the data were analysed in the intervals. Further, the participants of the focus group interview were asked to evaluate the interview and share their opinions to complement the interview data. The purposes were to minimise bias, prevent data loss and analyse the data more elaborately through triangulation. For the first focus group interview, a total of 12 participants were subdivided into the following four groups with three participants each: MNE, SME, research centre and venture capital. The second focus group interview aimed to review the primary data analysis based on the secondary data, the results from the 30 interviewees and the first focus group interviews. The participants were subdivided into industry and academia. This second focus group interview was conducted based on the outcomes of the first focus group interview. Importantly, four participants in the second focus group (two from industry and two from academia) interview held doctorates to make the outcomes of this study more robust.

4. Data Analysis

A conceptual framework based on a logic model is useful for research related to evaluation [73]. A conceptual framework is a heuristic frame for assessing cause-and-effect relationships, which describes the logical relationship of concepts used and identifies the conditions, objects and the idea itself. It creates a complicated connection of cases that tend to repeat the pattern “cause–result–cause–result” and can cause variables that are dependent on the initial phase to become independent in the next stage [74–76]. 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 a 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 than with simple pattern-matching [77].

This study used a conceptual framework (Figure 2) based on the literature review to analyse whether the logical propositions were consistent with the patterns in the data and to derive the results. It examined explicitly whether consecutive cases with the same cause–result–effect were connected and repeatable, as well as whether they applied in other cases. The strategy is increasingly dynamic [78], and there are many different strategic issues for each growth stage. Therefore, adequate core elements and strategies for each stage are crucial in today’s business world. According to a “cyclical model of technological change” by Anderson and Tushman [69] and a “stages of growth model” by Gibson and Nolan [67], growth models can be divided into four stages: entry, growth, expansion and stage. Depending on the nature of the platform, each stage consists of economics and business theories, two-sided markets, network effects and business ecosystems, which are the main theories relating to platform businesses. Each stage has a different set of tasks, and each task has a different set of decision items and influence factors to be considered.

- Entry stage: Internal and external analysis for selecting the platform business;
- Growth stage: Solutions to the chicken-or-the-egg problem endemic to constructing a two-sided market;
- Expansion stage: Way to reach critical mass for accelerating the network effect;
- Maturity stage: Platform quality management and revenue structure construction measure for establishing the business ecosystem.

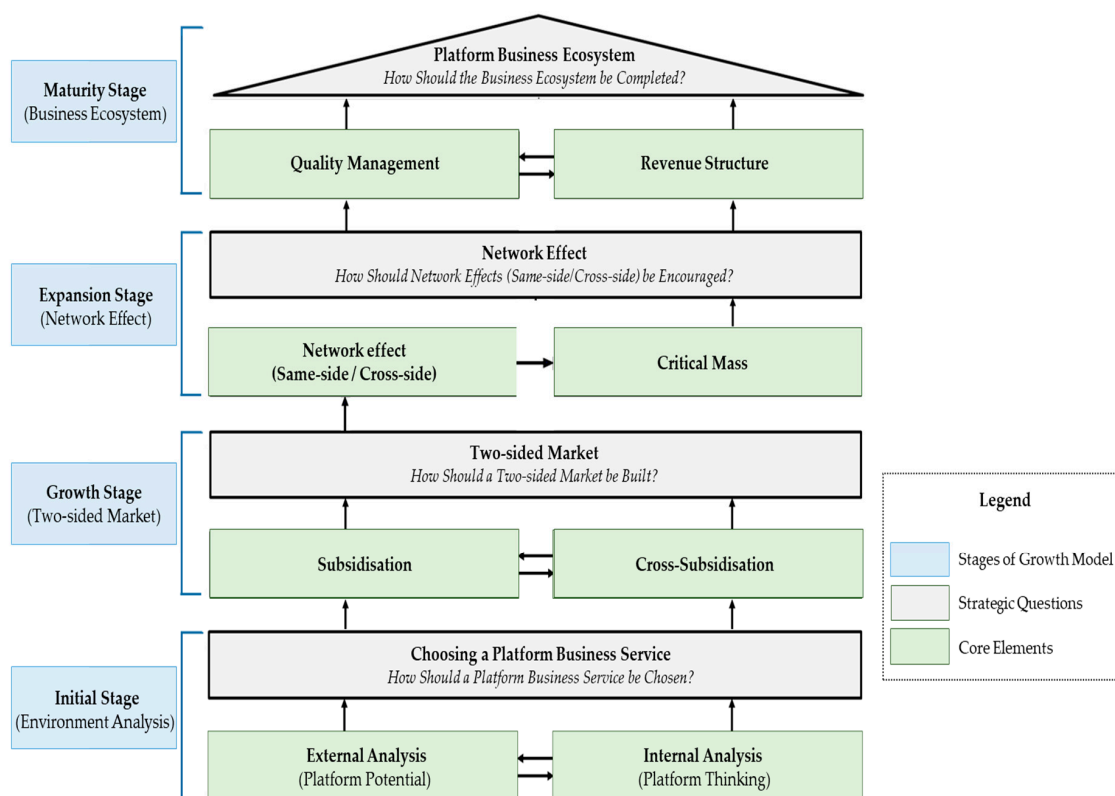


Figure 2. House of platform: platform growth model conceptual framework.

The dynamic model of platform business presented herein is based on the four-stage conceptual framework. The propositions were deduced through matching and comparing the encoded contents with the conceptual framework. The results of the second-step case study were classified into four

chronological stages, and then, they were summarised and presented for each stage. The strategic questions and core elements of each chronological stage are shown in Figure 2.

5. Findings

5.1. Initial Stage: Environment Analysis

It is imperative to conduct an environment analysis before planning a new platform business. For one thing, the platform's potential [21] is needed for the external analysis to identify new technologies, deregulations, market needs and so on. SK Telecom's T-phone is a good example. SK Telecom is South Korea's largest mobile telecommunication carrier. Once the market reached its saturation point, SK Telecom strengthened its platform business by providing its subscribers with more competitive services. For example, it identified the inconveniences of transferring phone numbers to a new mobile phone and of searching for the business phone numbers such as those for restaurants or cafés again and again. Based on this, SK Telecom introduced a new platform service called the "T-phone", which provided a new concept in mobile address books, transforming the old-style mobile phone book that simply stored phone numbers into a personal assistant. This was an advancement in Google's cloud service, which allows users to save contact information and share it with various devices. T-phone was designed to provide customised service for each user by leveraging network technology—for example, by automatically displaying contact information in the order of most frequent use. Able to save up to 1 million business numbers in South Korea, it can also block spam, phishing and smashing calls and text messages. In an in-depth interview of this study, Ms Lee, the head of product the planning division at SK Telecom, said, "Mobile phone contact information can play a role of unlimited platform." She 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 third parties through open API, and this would provide users essential functions and benefits".

In addition to the external analysis, what people need the most for internal analysis is platform thinking [79]. Platform thinking is "the strategic process of identifying and exploiting the shared logic and structure in a firm's activities and offerings to achieve leveraged growth and variety" [79]. This concept can be applied to a variety of products, services, brands and development processes to obtain a successful strategy by efficiently using resources [14,16,80]. Good examples of platform thinking are the Windows/Intel computer platform, the Amazon e-commerce platform [81], the Cisco platform [8], the Sony platform [82], the Hyundai home shopping platform and, most recently, the platform of Apple's iPhone. The Hyundai home shopping network platform was created by the Hyundai department store group, one of the largest department stores in South Korea. The company expanded its offline-centric business into an online platform business by finding a few common structures present in the process of product development and sales and leveraging them for an online platform. Thus, the company was able to expand rapidly into the market to become a leader and, at the same time, provide a more extensive range of products. They were able to grow quickly in the market by focusing on the core logic of the department store and by strengthening it at the level of its online sales service. The Hyundai home shopping network went public on KOSPI eight years after the launch of its service, and its market capitalisation is currently approximately USD 1.5 billion.

5.2. Growth Stage: Two-Sided Markets

Building a two-sided market is a crucial role for platform growth. Platforms, however, are a two-sided market, with two different properties, unlike the conventional one-sided market of economic theory [4]. Therefore, it is not easy to create an optimised structure, and consequently, the chicken-or-the-egg problem is one of the many challenges faced by a platform company [83]. 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 [17]. In order to solve

the problem, platform providers provide subsidisation and cross-subsidisation in accordance with the attributes of their platform business model.

Firstly, subsidisation is a grant from the platform provider to early participants. In particular, depending on the characteristics of each platform, subsidisation is provided for initial recruitment. For instance, the AppStore or Kindle provides subsidisation on the supply side and the ad platform on the demand side. The reason providing initial subsidisation is vital for platform providers can be found in penguin effects [84]. A group of penguins must jump into the ocean to catch fish. However, there might be enemies in the water. The penguins wait until one courageous penguin jumps into the water. The remaining members make their decision on how harmless the water is by watching what happens to the first penguin. In the platform network effect, a similar phenomenon occurs [85]. Even if the two sides are already established, the economic efficiency might not be high in the beginning, when there are not many users. In addition, if there are users avoiding or waiting to use the platform, economic loss is more significant than economic efficiency. Therefore, the first group of platform users in each of the participant groups has the most critical role in the platform's success. None of the groups knows if a platform they are using will become a major player in the market, so they may take a high risk until critical mass is reached. This penguin effect subsidisation and cross-subsidisation occurs in the growth stage.

The first participant in each platform plays the most critical role in operating a corresponding platform. Further, none of the early participants knows whether the platform used will become a major platform, so their participation comes with a high degree of risk. On that account, platform users are reluctant to use the initial platform before it has enough users. Thus, to overcome this situation, platform providers must provide subsidisation to gather enough users initially. According to Mr Koo, Senior Manager of KT, Olleh Market is an open app market that allows users to download a variety of apps to their smartphones. It was essential for KT to secure the applications (the supply side) in the early phase, so a producer-centred approach was appropriate. Therefore, KT's Olleh Market offered such marketing tools as ad banners, coupons and cash to application providers for free (subsidisation) to secure as many application providers as possible. 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 phone billing services for free. In this way, KT attracted a large number of both content providers and users.

Cross-subsidisation refers to the process of distributing the costs associated with the production of goods or services arbitrarily for a specific purpose, rather than spreading them in accordance with the incurred expenses. It often refers to covering deficits in one area of an industry with profits generated in other areas [5]. 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 financially with the profits from more profitable businesses. Cross-subsidisation is a strategy for attracting participants to one side using another, and a two-sided market could be completed if the platforms were cross-subsidised effectively [17]. Thus, cross-subsidisation should be implemented together with subsidisation as a means of allowing participants on one side to accrue new benefits. For example, KT's Olleh Market provided marketing tools to application providers for free but made them pay for benefits. Through cross-subsidisation, customers on the demand side can acquire new benefits. In the end, there will be a virtuous cycle resulting in a broader two-sided market. Subsidisation and cross-subsidisation are not one-time, but ongoing from platform providers to enable platform activation and ecosystem building.

5.3. Expansion Stage: Network Effects

Network effects occur when a two-sided market is constructed, and two groups are attracted to each other [5]. Network effects facilitate the rapid growth of a platform company [86]. Both same-side and cross-side network effects are prerequisites of the two-sided market [5]. The growth rate increases if network effects can be encouraged among users of the two-sided market. In two-sided market theory,

core economic efficiency results not from the platform provider and not from any of the participant groups alone, but 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 [87]. Once this critical mass point is reached, the network in which participants prefer to maintain a closer relationship with is formed either directly or indirectly, as a driving force of growth. Therefore, it is imperative to reach a critical mass for the network effect. Platform providers must secure enough participants on both sides to provide sufficient value and allow for sustainable growth.

Network effects are one of the essential determinants of the success of platform businesses. According to Evans [85], a significant network effect might not occur 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 (See Figure 3). 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. One interesting result is that the focusing side is different depending on the platform's characteristics. For example, the Kindle platform focused initially on acquiring e-book content (supply side) while collecting readers (demand side). When critical mass was reached, the network effects increased suddenly, making it feasible to grow the platform explosively. Google AdWords (now Google Ads) focused on the acquisition of websites (demand side) that could display advertisements by indexing pages while operating its search engines for free and without advertisements. This was done to collect advertisers (supply side) and reach critical mass, at which point the network effects suddenly increased, and it grew explosively. Blogger, a blog-publishing service allowing multiuser blogs, provided free usage and made it possible for individual bloggers to earn profits from the advertisements in their blogs in hopes of acquiring users as producers and consumers. This allowed Blogger to collect the users rapidly until it reached critical mass.

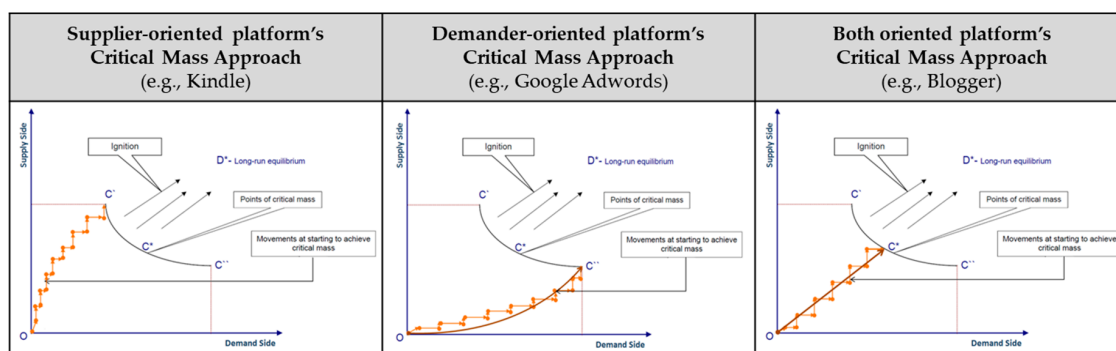


Figure 3. Catalytic ignition and critical mass. (Source: Author's Elaboration from [56,85]).

5.4. Maturity Stage: Business Ecosystem

After choosing a platform business, building the two-sided market and encouraging network effects, the business should complete its ecosystem. A platform will fail if its participants do not continuously support it, even if it has already been established in the market. Thus, the maturity stage involves completing the business ecosystem by analysing the quality management and revenue structures (Figure 4), which are core elements in a platform business with distinct users on both sides [27]. Platform providers should manage platform quality, considering how to improve participants' loyalty and how to deal with profit and revenue structures for both participants and the platform so that they can grow in tandem. This stage supports platform companies in completing a business ecosystem. For example, with respect to platform quality management, YouTube has two core

functions, self-filtering and filtering by users. For self-filtering, YouTube developed Content ID, a copyright-protection program to detect illegal or violated-copyright video content. Its operating principles identify unique video fingerprints to protect the platform from distributing content that violates copyright laws. For filtering by users, YouTube developed the Flag button to allow users to report inappropriate contents. Reported video contents are reviewed and, if deemed inappropriate, subsequently blocked. Solicitous platform quality management engenders trust among platform participants and helped YouTube to become the world's biggest media platform.

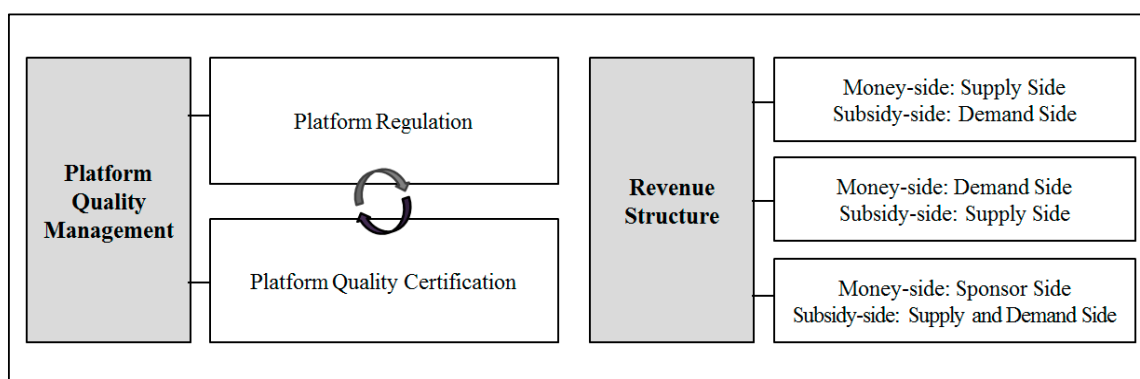


Figure 4. Platform quality management and revenue structure [27].

Platform business holders first need to determine the money and subsidy sides of the business [5]. 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. Regarding revenue structure, therefore, platform companies design what is imposed on members, making the entire business ecosystem continuously grow while producing their own profits. For example, with eBay, the demand side cannot generate profits, and the price sensitivity from the supply side is different. Therefore, the money side is the supply side—sellers on eBay—and the subsidy side is the demand side—buyers on eBay. The goal of any for-profit business is to produce revenue, and platform businesses are no exception. Even once a platform has developed and grown, business cannot be maintained if profits are not stably produced. Therefore, platform leaders must create “economic incentives for ecosystem members” [21]. This requires that platform business holders determine the money and subsidy sides of the business [5]. That is, they need to consider each group's price sensitivity. The money side refers to platform participants who pay for the service; this group has relatively low price elasticity. The subsidy side refers to users who benefit from the platform; 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.

The money side can be subdivided into three categories. The first is the supply side. Nintendo or eBay or exemplify this side. For eBay or Nintendo, the demand side cannot produce profits, and the price sensitivity from the supply side differs, 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. The second is the demand side. Microsoft Windows, a PC operating system, is an example. Windows created profits on the demand side through PC purchasers. If the number of programs was small, then PC purchasers would doubt the value of using Windows, and the entire platform would be degraded. Therefore, it was important to acquire various programs and software to secure the dominant position in the market from the beginning. The third category 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 [88]. 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 comprise mostly individuals. Examples are the free applications of KT Olleh Appstore and Facebook, for which application developers (supply side) and end users (demand side) are the subsidy side, and advertisers are the money side, paying for advertisements in exchange for using the platforms and services.

6. Conclusions

Corporates need to have the right strategies and perform an appropriate analysis for each stage to grow in a market successfully [78]. In particular, corporates must analyse core factors and strategies for each stage in accordance with the growth in markets with the foundation and business development. A platform business operates on a complicated two-sided market, unlike most companies, which are one-sided [22,36]. For this reason, it is essential to make adequate decisions by taking into consideration those platform-related influencing factors for each stage of the business model based on the platform [22,36]. The platform is essential for establishing and operating a virtuous cycle-based business ecosystem. For successful platform formation, each stage of the growth model has a different set of tasks that must be addressed and three business theoretical concepts to build on at each stage: two-sided market, network effect and a business ecosystem. Thus, a platform business strategy with a dynamic approach is needed. The distinct dynamic platform strategy guidance for platform companies described in this paper focuses on each factor separately. The research proposition was as follows: “platform businesses have four major growth stages, and different core elements and strategies exist for each stage.” This study analysed the proposition using a conceptual framework (See Figure 5) based on a logic model with a theoretical basis, and its dynamic nature derives from analysis of the repeating causality within the conceptual framework of each stage, as outlined by the literature review and logical propositions [89–91].

First, the description of the entry stage provided the strategic question, “How should a platform business service be chosen?”; this was answered 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 the capabilities of a company and should be used for cultivating the platform. In addition, it is necessary to know which platform business can be analysed before applying it to the cultivated platforms. It is crucial to find the intersection of enablers, customer problems and capabilities to identify a platform business through external and internal analysis. The discussion of the growth stage posed the strategic question, “How should a two-sided market be built?”; this was answered with the ways to acquire a two-sided market. It is essential to address the so-called chicken-and-egg problem, which is the chronic problem of the two-sided market, in order to allow the platform to build and grow into a two-sided market. For this, subsidisation and cross-subsidisation were the most important elements, and a two-sided market was required in different parts of the world, depending on the platform of business model.

The section on the expansion stage asked the strategic question, “How should network effects be encouraged?”; this was answered with strategies for maximising the network effects and establishing a dominant platform in the industry, including increasing the number of platform participants reaching out to achieve critical mass to drive the growth engine. In addition, it listed various methods that should be consistently applied to improve the network effect to promote the platform. This study confirmed that two-sided markets grow in a zigzag form [85]. However, it also showed different forms, depending on the platform type, for reaching critical mass. As the number of platform participants and users increases, the position of the platform strengthens in the industry, especially if the relevant platform is difficult to replace. The explanation of the maturity stage included the strategic question, “How should the business ecosystem be completed?”; this was answered with the ways to enable the platform to grow continuously and to promote the business. According to the features of a platform, various participants use it concurrently. Therefore, platform quality management is critical to prevent quality degradation, a reduction in participation or trading and deterioration in competitiveness. For this,

platform regulation and platform quality certification were suggested. The interviews confirmed the importance of platform quality management for internalised growth. An additional strategy for establishing a business ecosystem was provided—a method for acquiring the profit models of the platform. 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, low price elasticity becomes the money side, and high price elasticity becomes the subsidy side. Therefore, platform providers tend to employ strategies that specify whether to have the money side as their supply side or the demand side.

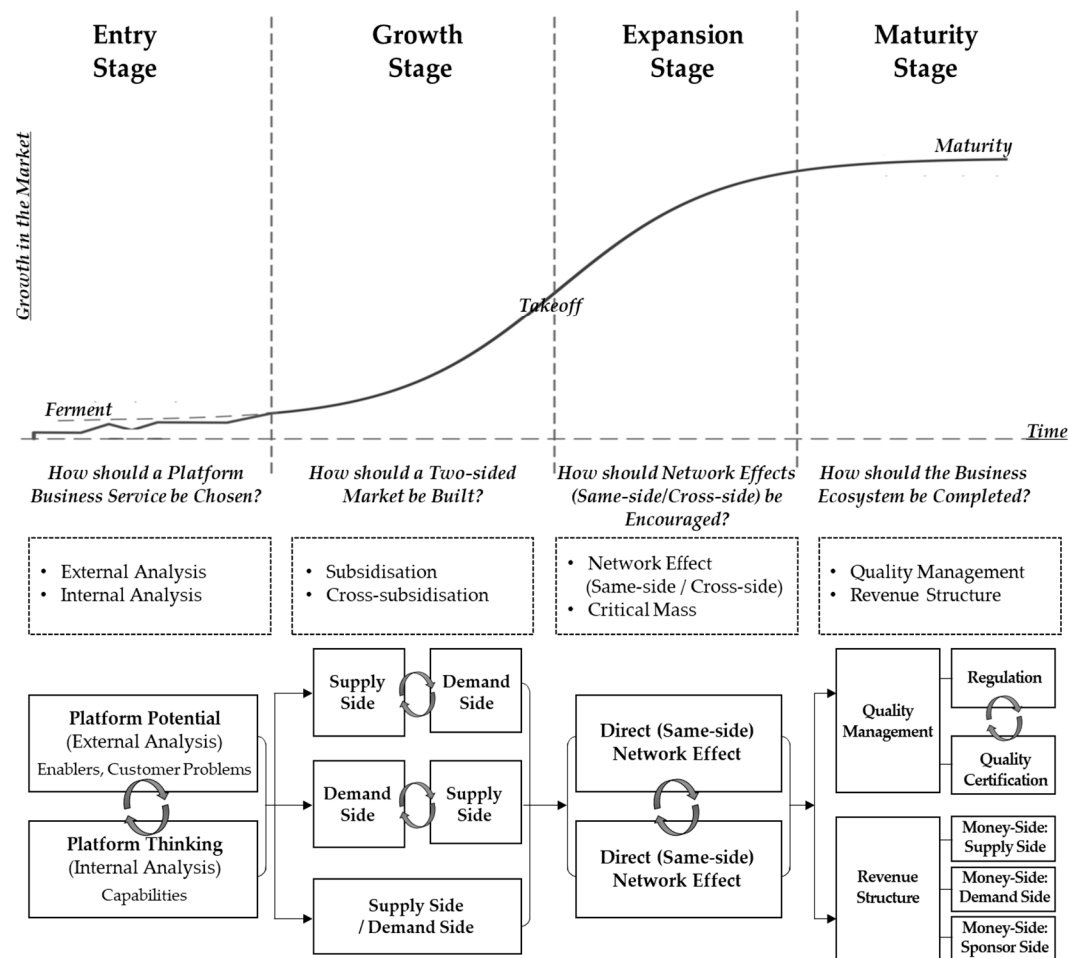


Figure 5. The four stages of platform growth model.

7. Discussion: Implications for Theory and Practices

The aforementioned platform growth model is not a passing fad. Rather, it is a strategy that must be considered for sustainable growth and profits. Technologies improve at a fast pace, and customer requirements expand in response. More people are demanding industry convergence, and this place growing importance on the role of platform services built by participants. The key implication of this study is the lack of a strategic guide for sustainable growth, which leads to problems with processes of managing and conducting a platform business. Platforms have different attributes from simple products or services. They require totally different rules of competition than those widely accepted in the other industries. Therefore, platform providers should have a strategy that can likewise be differentiated from the previous competition strategies. How should we use platforms strategically in an era of seemingly infinite competition? Further, how should we build platform businesses? This study provided the answer: the four-stage growth model. Its main proposition was that platform

businesses follow four major growth stages, with different core elements and strategies for each stage. This study analysed this proposition by using a conceptual framework based on a logic model and theoretical basis and, most important, conducted dynamic analysis. That is, it analysed the repeating pattern of “cause–result–cause–result” within the conceptual framework at each of the four stages, which were created based on a literature review and logical prepositions [70,74,90].

The platform is essential for establishing and operating a virtuous cycle-based business ecosystem. Therefore, it is essential 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. This study presents the vital factors and strategies for each of the four major growth stages (entry stage, growth stage, expansion stage and maturity stage) to construct a successful platform business ecosystem. Specifically, this research used a conceptual framework based on the literature review to analyse how a step-by-step business strategy could be constructed. Using the platform growth model conceptual framework (see Figure 2) as an analytical method means that observed cases can be matched based on experience with theoretically predictable situations. 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 decide ‘platform service’, 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 critical strategic model for building a successful platform business.

This study aimed to present an effective guide for those enterprises that had not started platform business or that were preparing to start one. The guide’s purpose is to reduce the failure rate of platform businesses. Moreover, this study confirmed that business performance can be substantially improved through following a platform strategy beyond the obvious imperative of having a lot of participants. It would be difficult for a platform business to succeed without its creators possessing a clear vision and strong leadership. This study can contribute by having provided the characteristics of successful platform service from participants’ perspectives and also from providers’ own perspectives. Because platform providers must understand the growth potential, this paper has provided advice to enable continuous growth and expansion. Considerable research has explained the concept and importance of platforms, and many have discussed status and platform success strategies for various industries. Nonetheless, there has not been sufficient discussion on the strategies of integrating, developing and reorganising internal and external resources in accordance with time and environmental changes. Therefore, it is hoped that this study’s guide for platform providers will lead to continuous innovation and sustainable growth. Of course, platform businesses are complex, but while success cannot be guaranteed even if the aforementioned conditions are satisfied, not satisfying these conditions will almost certainly guarantee mediocrity or even failure.

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Appendix A 21 Multiple Cases

Table A1. Case selection from four different categories.

Exchange: Six Cases	Advertiser-Supported Media: Two Cases
Dell PC Samsung Wallet Instagram RecordFarm YouTube Blogger	Samsung Adhub Google Adwords
Transaction System: Six Cases	Software Platform: Seven Cases
eBay Kakao Mobile Store Korea Telecom (KT) App Store Hyundai Home Shopping LG U+ App Store Amazon Kindle	Daum Map Nintendo Game Console SK Telecom (SKT) T-phone Microsoft (Windows and MS Office) Naver Webtoon Yahoo Answers Kickstarter

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