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**Platform Rules: A Case Study of Samsung's Failure in the Smartphone
Platform Industry**

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Dedication

To my family, friends, and God.

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Abstract

Platform Rules: A Case Study of Samsung's Failure in the Smartphone Platform Industry

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By investigating Samsung's platform strategies, organizational culture and control mechanisms in the Android ecosystem, this research provides a balanced view on the global smartphone platform industry. In addition, this dissertation provides both empirical evidence and critical explanations by exploring the challenges of global leading manufacturer Samsung, especially Samsung's Media Solution Center (hereinafter, MSC) which was in charge of software and platform services of the company.

In the literature review and methodology chapter, this study reviews 1) how successful platform providers actually control other platform participants, 2) how they develop platform ecosystems and extend their businesses, 3) how a fast follower strategy which is considered a typical strategy of Samsung Electronics affects business performance, and 4) how cultural elements of organizations affect the performance of a company, especially an ICT firm.

This research poses three research questions: RQ 1: How did Samsung's platform strategies such as the fast follower strategy affect MSC's platform services? RQ 2: How did the platform governance and control mechanisms in the global smartphone industry

influence Samsung's platform services? And RQ 3: How did the organizational culture of Samsung and MSC influence Samsung's platform businesses? The research relies on interviews with 25 platform experts who once designed and worked on platform services such as Samsung Apps or Bada in Samsung's MSC.

This study basically explores business experiences of Samsung's MSC whose challenges were not successful. Since Samsung's attempts to control a platform failed, this research is in part a study of failure. In this it deviates from the typical study that pays much attention to the winner's position or experience rather than that of a loser.

Based on the interview data, this research provides significant findings. First, Samsung's strategy of being the fastest follower generated positive network effects for the Google Play Store instead of Samsung's platforms. Second, Google tightly controlled its competitors' platform services in diverse (somewhat unfair) ways in order to maintain its dominance. Lastly, Samsung's hierarchical and micromanaging organizational culture exerted negative influence on MSC's platform services.

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Chapter 1: Introduction

The contemporary world is often defined as an information society. According to Mosco (2009), the information society is characterized as a time and place where the economic value of information and communication exceeds that of manufacturing, which had been the dominant and the most profitable industry endeavor since the Industrial Revolution. The technological development of communications and transportation enabled this information-oriented society. From an industrial standpoint, maximized temporal, spatial and structural *flexibility* conferred by the recent information and communications technology is regarded as a major factor which has led to the current contours of the information society (Mosco, 2009). Since the qualities of flexibility contributed to transnational IT conglomerates' abilities to overcome various resource and locational limitations, new media conglomerates could control the global ICT industry more easily, transcending the limits of national boundaries (Pellow & Park, 2002; Schiller, 2000). This trend also resulted in the flexible accumulation which allows transnational conglomerates to more easily increase profits in the global ICT environments (Baltruschat, 2008; Harvey, 2007; Wayne, 2003).

This dissertation pays attention to the issues of power relations in the global smartphone industry. Industrial flexibility enabled actors such as device makers, operating system providers or software developers to work separately but more efficiently. For example, the hardware of an Android phone is commodified through the cooperation of Samsung Electronics, based in South Korea, whose manufacturing facility is located in Vietnam, the third-party developers who create software applications in everywhere, and Google that provides the operating system and app market in Silicon Valley. This study investigates how these successful global alliances among diverse actors have been

established, how there exist power and control issues, who gains benefits from these flexible alliances, and which internal, external or organizational issues of each actor affect in achieving the current shape of the global smartphone industry.

Traditionally, the ICT conglomerates had to initiate mergers and acquisitions (M&A) in order to achieve vertical or horizontal integration and thus enhance their global control. However, M&As could require investment risks, or sometimes they simply were not feasible. The growth of network hierarchies caused by global strategic alliances among the ICT companies allowed a few companies with more power to control other companies without direct ownership. These dominant companies easily used cheaper foreign labor from their allies for enhanced efficiency (Mosco, 2009). In the information society, companies can control the whole circuit of production and the ecosystem of the ICT industry just by occupying superior positions within the industry (Fuchs, 2007). For example, Google dominates the global smartphone industry without owning hardware manufacturers, while Amazon dominates the global commerce industry without retail or wholesale stores. Since Google and Amazon play the role of mediating between sellers and customers, they exert a huge influence throughout the industries. Such superior positions may involve controlling a platform or necessary software. These are the aspects of power that this dissertation will address in the context of global ICTs.

The increased flexibility in the ICT industry dramatically accelerated the division between software and hardware businesses within the industry. It was the software companies which seized the initiative in the global ICT industry because software is more flexible in changing forms and thus easily adjusts to the frequent environmental changes in the industry (Manovich, 2013). According to Manovich (2013), software has become the engine on which the world is running and it defines our contemporary society and culture. For example, while the worldwide software spending was expected to grow

consistently (e.g., 6 percent in 2016 and 7.2 percent in 2017), hardware spending was predicted to decrease by 7.5 percent in 2016 and increase only 0.4 percent in 2017 (Gartner, 2016). As the software business emerged, software companies have become the dominant players, and the dependency of others such as hardware manufacturers on the software companies has increased dramatically. According to Oh and Larson (2011), the smartphone industry depends more and more on software such as operating systems rather than hardware such as physical handsets. For example, industry analysts pointed out that even the largest smartphone manufacturer, Samsung Electronics, confronted fundamental issues of its reliance on Android (Hamblen, 2014).

Discrepancies in power between software and hardware have a long history. By the beginning of the 1990s, the transnational companies which produce materials or process physical products were the most powerful and successful (Manovich, 2013). However, since the early 1990s, the power of at least the PC industry, for instance, shifted from the makers (e.g., IBM) to the software providers (e.g., Microsoft) that provided the operating system and other compatible software products (Schiller, 2000). IBM had to depend on Microsoft when it recognized that it could not sell its computers without Microsoft's Windows operating system. Until the second decade of this century, this hierarchical relationship remains, and it is the software companies, such as Google, Facebook or Microsoft, that have occupied the dominant or directing positions within the global ICT industry, not the hardware companies.

Even in the same ICT industry, workers in the hardware manufacturing areas generally take a lower or subordinate position in power than other positions such as software programming (Pellow & Park, 2002; Smith, Sonnenfeld, & Pellow, 2006). This occupational classification is clearly reflected in the wages of ICT workers. In the US ICT industry, for example, the average wage of software developers was the highest while the

wage of assemblers was the lowest (Mälkki & Staffa, 2018). What might be more problematic is that this hierarchical separation between hardware (or manufacturing) and software within the ICT industry is happening based on regions. In other words, since the ICT technologies with maximized flexibility enabled transnational conglomerates to transcend the temporal and spatial limits, the manufacturing (or assembling) businesses have moved to Asian countries in pursuit of their low wages (Mosco, 2009; Oh & Larson, 2011).

Since the 1990s the US corporations have shifted their major businesses from traditional manufacturing to the information industries, and they focus on how software can be used: according to a report on the international software market of 2009, the US companies commanded almost 40 percent share of the global software markets (Abes, 2009). In 2014, nine out of global top 10 software companies were the US conglomerates and these ten companies commanded 45 percent share of the global software markets (Chitkara & McCaffrey, 2016). In addition, while the market share of North American software companies grew 11.8 percent from 2012 to 2014, the share of Asian Pacific companies was downsized by 19.8% (Chitkara & McCaffrey, 2016). Meanwhile, in the electronics production industry, the US and Japan produced 45% and 24% of the global electronic goods respectively as of 1985. However, after 20 years, nine Asian developing countries including China and South Korea have become the most influential manufacturers, producing 43% of electronic products by 2005 (Oh & Larson, 2011). This trend still remains; for instance, while the total value of US shipments of electronic products kept decreasing in 2010s, it imported the largest portion of electronic products (74%) from Asian countries (Mälkki & Staffa, 2018).

Some scholars insist that this regional separation in the global ICT industry resulted in more balanced relations between the Western and the Third World because the global

shift of manufacturing from the US to Asian countries weakens the dominance of the US and strengthens the power of Asian countries (Boyd-Barrett, 2006; Firebaugh & Goesling, 2004). For example, as the dominance in the PC manufacturing moved from the US manufacturers such as IBM to Chinese makers such as Lenovo, the US lost a substantial number of manufacturing jobs while China has strengthened its competitiveness (Boyd-Barrett, 2006). Also, according to a research, the number of employees in the US electronics manufacturing is still decreasing slightly but consistently (Mälkki & Staffa, 2018). However, this argument needs to be investigated from different points of view. While the US companies have shifted to the software industry successfully depending on partnerships or OEM contracts with Asian manufacturing workforce, the challenges of Asian manufacturing companies to the software industry have generally failed. Therefore, as the chances for manufacturing have increased, the dependency of Asian manufacturing companies on the Western software companies also has increased.

Simply put, while higher value-added software businesses continue to remain in the Western developed countries, higher cost hardware businesses keep shifting to the lower cost countries among which high-tech manufacturing systems are well established (e.g., from Japan to South Korea, and then to China). For instance, in the early stage of smartphone industry, it was Japan who manufactured the first handset products; e.g., when IBM or AT&T produced their first smartphones in the 1990s, both of them depended on the Japanese manufacturers such as Matsushita Electric Industrial for manufacturing (Jin, 2017; Johnson & Fitzgerald, 1994). However, when South Korean makers such as Samsung and LG developed their hardware manufacturing capacity, the spatial extension of smartphone manufacturing occurred and the center also moved to Korean corporations that could provide cheaper labor than Japanese companies. The core of hardware manufacturing is shifting to China (Qui, 2012). Though the global smartphone shipments

by Samsung Electronics were still the highest (318.1 million units) in 2017, total shipments by Chinese companies such as Huawei, OPPO, vivo, ZTE, Xiaomi, and Lenovo (565.5 million units) were much higher than those by Korean companies such as Samsung and LG (373 million units) (Statista, 2018). The changes in market share over time clearly indicate this trend (see Figure 1). Though the center for device manufacturing has constantly shifted, that of software has not changed for decades, which brings enormous profits to a couple of dominant transnational conglomerates in the developed countries (Shi, 2011).

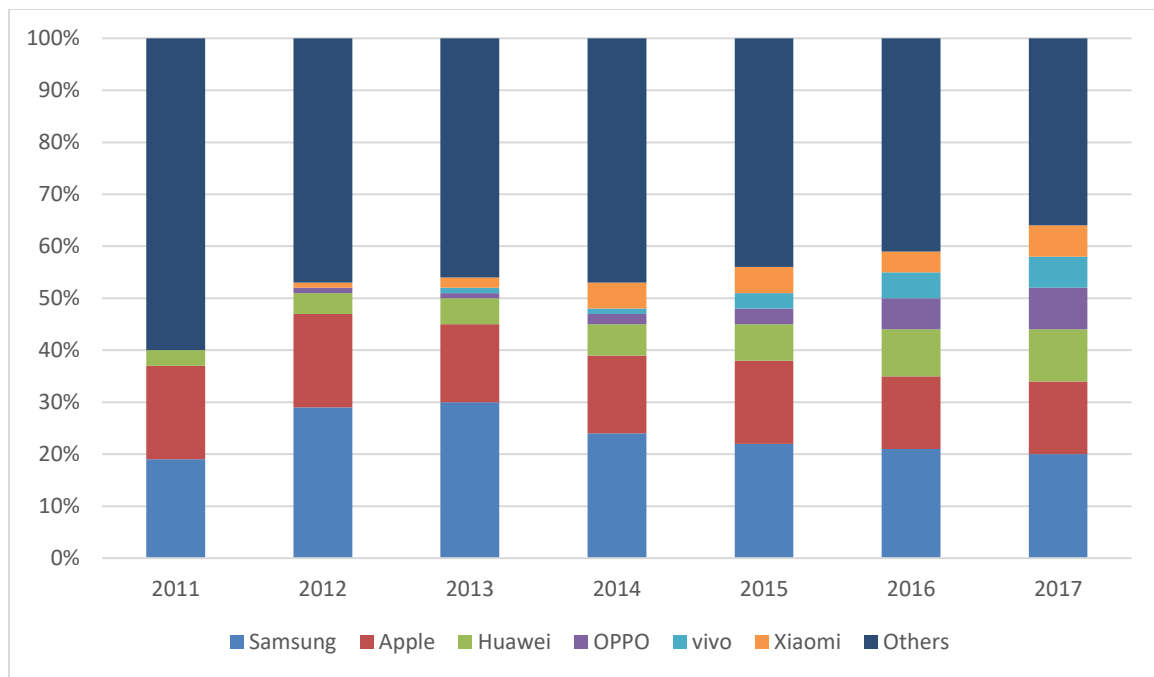


Figure 1: Global Smartphone Market Share by Vendor (Source: Statista, 2018)

Why is this the case? It is undeniable that many Asian countries achieved substantial economic growth via their success in ICT manufacturing. Nevertheless, under the global environment which emphasizes the roles of software, it is problematic that the global software businesses are occupied by a few countries or a small number of

companies. For example, on the basis of foreign investments and governmental long-term plans, South Korean companies promoted electronics manufacturing in 1980s, and established advanced broadband infrastructure in 1990s (Larson, 2017), which fostered Korea to be an ICT leader. However, this hardware-driven or infrastructure-based development seems to reach the limit. Korean hardware devices and broadband networks are playing the role of distributing software and contents; while this software industry is already taken by a few Western companies, Korean or other Asian companies are struggling in this area.

BACKGROUND

This dissertation argues that the emergence of platform businesses is one of the most prominent characteristics within the contemporary ICT industry (Gawer, 2011; Jin, 2017; Manovich, 2013). Scholars rarely disagree that success in the ICT industry relies on how to build and operate platforms. Therefore, before we discuss a platform-centered ICT industry, we need to define this term *platform* first. Many scholars define platforms from their own perspectives. Law scholar Jonathan Zittrain (2009) emphasizes that platforms should be generative. He insists that if something limits or controls the generative features, it is not a true platform. Andreessen (2009) defines a platform as a system which is reprogrammable and customizable by outside developers and adapts to diverse needs which might not be considered by the original platform developers. Therefore, according to Zittrain and Andreessen, one of the characteristics of a true platform is enhancing the active participation of other participants in order to make the platform generative. These definitions are somewhat idealistic because platforms, especially smartphone platforms such as operating systems or application markets, often control the complete processes or every participant around platforms thoroughly, and though the participants may contribute,

they can rarely customize or reprogram the core system. Unlike Linux or many open source software programs, third-party developers cannot customize smartphone operating systems. Meanwhile, communication scholar Gillespie (2010) stresses the political and cultural aspects of platforms. He defines a platform as a raised level surface designed to facilitate some activity that will subsequently take place. According to him, though this term, platform, contains democratic connotations such as open, neutral, egalitarian, and supportive in the ICT industry, platforms in reality are more political or commercial rather than neutral or egalitarian.

On the other hand, scholars in management or information studies pay more attention to the architectural, functional, and computational elements of platforms. For example, Baldwin and Woodard (2011) define a platform as ‘a set of stable components that supports variety and evolvability in a system by constraining the linkages among the other components’ (p. 19). According to them, the fundamental architecture of platforms consists of a set of ‘core’ components with low variety and a set of ‘peripheral’ components with high variety. According to Suarez and Cusumano (2011), scholars in management tend to define platforms as the ‘foundation technologies that become the center of ‘ecosystems’ driven by complementary products and services produced by a variety of firms, often with strong network effects tying the platforms to the complements’ (p. 78). Gawer (2011) describes platforms as ‘the building blocks that act as engines of innovation and redefine industrial architectures (p. 1).’

At the earlier stage of exploring platforms, as mentioned above, the platform was considered a fundamental architecture for the development of products with standard components (Suarez & Cusumano, 2011). Recently, in addition to the technological elements, diverse business behaviors and the relationships between actors in an ecosystem are added to the definition of a platform (Kenney & Pon, 2011); this ecosystem allows high

levels of interdependence among actors and the potential innovations by actors (Gawer, 2011). Though these definitions by management and information scholars imply power discrepancies or one-sided dependency among players, only a few studies (e.g., Kenney & Zysman, 2016) have discussed these issues so far.

This term, platform, has been used very extensively because it encompasses a variety of devices, services, or technologies, such as search engines, social networking sites, operating systems, video consoles, or even payment cards (Gawer, 2011). The current research narrows down the focus and pays attention to the political aspects of platforms defined by Gillespie in order to provide more critical perspectives while also referring to the functional characteristics defined by information studies as it explores the architectural characteristics of platforms. For instance, while this study accepts information scholars' structural division of platforms into 'core' components with low variety and 'peripheral' components with high variety, the current study assumes that this structural division involves the political discussion of power discrepancies between the core and the peripheral. In addition to the characteristics mentioned earlier, this study regards *expandability* as a political quality of dominant platforms; establishing platform ecosystems does not simply mean that platforms achieve a virtuous and healthy circle between platform participants (e.g., app developers) and platform users; it also means that the ecosystems expand inevitably throughout the interactions within the ecosystems because platforms induce every actor around platforms to attract others in order to raise the platform value. This is the basic principle of network effects that will be discussed in the following chapter. This tendency results in market oligopoly dominated by a few platforms with high expandability.

Meanwhile, studies reveal that the players who establish the best strategies for platforms and the ecosystems embracing the entire architecture win the fierce competitions

among companies (Cusumano, 2010). For instance, there have been platform competitions in the PC industry between PC and Mac, in the search engine market between Google and Yahoo, and in the social media areas between Facebook and Myspace (Gillespie, 2010); as we all now recognize, only one or a couple of the players with better platform strategies survived in the given domain. Likewise, in the smartphone industry on which this research is focusing, the dominant companies such as Apple and Google share two qualities in common; they successfully launched platforms such as operating systems or application markets and they created an organic ecosystem around their platforms (Kenny & Pon, 2011; Lin & Ye, 2009). This is the reason that we need to explore platform management or strategies in addition to the relational issues within the platform ecosystem in order to understand the platform industry.

Among a wide range of platforms from PC operating systems to social media, or to artificial intelligence platforms, the current study focuses on smartphone platforms such as mobile operating systems and application markets because these are the most prevalent platforms which have the strongest socio-economic influence. Before the launch of the Apple's iPhone which popularized smartphones, telecom carriers were the most influential players in the entire mobile phone market. In the US, for example, carriers such as AT&T or Verizon used to control the domestic mobile phone industry by operating the communications networks and also selling handsets to the customers (Jacobides, Knudsen, & Augier, 2006; Kenny & Pon, 2011). These were branded to the carriers whether or not they actually manufactured them (in general, they did not). Therefore, handset makers had to depend on the carriers in order to sell more products; in general, more handset subsidies that were provided by carriers to decrease customer expenses resulted in more sales of specific phones. The dominance of telecom carriers which usually possess the carriage infrastructure and the sales channels was actually a global trend; for instance, in South

Korea, the carriers such as SK Telecom or Korea Telecom used to play a critical role in the mobile phone industry and manufacturers such as Samsung and LG had to ingratiate themselves with the carriers. Therefore, carriers such as SK Telecom or Korea Telecom could exercise strong leverage in deciding pre-embedded applications and the default software programs.

However, platform providers such as Apple and Google have changed the whole power relations since the beginning of the smartphone era. For instance, when Apple signed an exclusive sales contract with AT&T at the early stage of iPhone, there was a specific agreement designed to prevent AT&T from interfering in Apple's services (Goggin 2009; Kenny & Pon, 2011). This experience shifted the momentum and the platform providers, such as the operating systems and the application markets, grabbed the hegemonic power over the entire smartphone industry. Users rarely have loyalties to telecom carriers, which enables them to easily shift to rival carriers offering better plans (O'Rourke, 2018). However, they usually have stronger preference for the platforms; Android users tend to be locked in Android ecosystem; so do the Apple's iOS users (Friedman, 2018).

Nevertheless, not all the early platform providers became dominant players in the smartphone market. Those who could not establish successful platform strategies perished (Lin & Ye, 2009); platform businesses in the smartphone industry, just as in other software industries, only allowed a couple of players to enjoy global oligopoly. Nokia and Microsoft provide clear examples of failed platform strategies. Nokia had been the dominant mobile handset producer in the world with its advanced manufacturing capability and close alliances with globally influential carriers. This mobile phone giant developed its own smartphone operating system, Symbian, and let other manufacturers freely use the system. However, Nokia focused more on selling feature phones and easily abandoned its own operating system when it had difficulty spreading it (Kenny & Pon, 2011). Unfortunately,

its power in the smartphone manufacturing area weakened due to the emergence of Korean manufacturers such as Samsung and LG.

The case of Microsoft is slightly different. Microsoft heavily invested in the software and platform services and knew that it had to increase the market share of its Windows operating system. Initially, its operating system was adopted by many Asian manufacturers such as Samsung, LG or HCT who did not possess their own OSs and did not have alternative options. However, what turned out to be a failed strategy by Microsoft was that it charged the manufacturers in adopting its operating system rather than using the system to increase its power. Charging the manufacturers even before building its market share made its business vulnerable. Since the manufacturers had to pay for the use of the Windows OS, they eventually moved to Google's Android which was free. Simply put, Microsoft could not dominate the early smartphone industry because it tried to take direct profits for the operating system even before it created a sizable market and a stable ecosystem.

Apple and Google provide good examples of successful platform services in the smartphone industry. When Apple created its marketplaces such as iTunes and its App Store based on its own operating system, iOS, these platform services attracted numerous application providers and then the applications produced by the app developers attracted the users, which created network effects and resulted in a successful ecosystem (Martinez-Salazar, 2010). Actually, when Apple launched App Store in 2008, it did not draw much attention from the public (Goggin, 2011). However, since Apple released its software development kit (SDK) and application programming interfaces (APIs) to the public and opened the store to the independent developers in 2009, it successfully attracted both the developers and the users (Goggin, 2011). Opening platforms to the independent developers was an innovative way of operating platforms. Unlike Nokia, Apple, as an influential

handset manufacturer, did not open its platforms (e.g., operating system) to its direct competitors (e.g., handset manufacturers), which was another major factor of success.

Google's case is the opposite. Google, who had no manufacturing capability, entered the smartphone industry by acquiring the smartphone OS, Android. Unlike Microsoft's paid operating system, Google offered its operating system to its allies complimentary. Since the Asian handset makers who were weak at software used to have only three options - Microsoft's Windows Mobile, Nokia's Symbian, and Google's Android - they preferred adopting Google's system because Microsoft charged for using its operating system and Nokia was their direct competitor in the field of handset manufacturing. Google's platform strategy of collaborating with handset manufacturers was successful and it could establish its ecosystem without manufacturing capability (Kenny & Pon, 2011). While Apple attracted developers first in order to increase users, Google achieved sizable user groups first by encouraging diverse manufacturers to adopt its operating system, which then attracted third-party developers.

Based on these outcomes of different platforms, scholars exploring information systems or management have tried to look for key determinants of successful platform services from the perspective of platform openness. For instance, scholars used to debate whether open platform architectures are superior to closed (or proprietary) platform architectures or vice versa (Kenny & Pon, 2011). However, each type has its own strengths and weaknesses. Open platforms demonstrate some superiority in terms of increasing the market share and the number of users. Since open platforms can be adapted to diverse device manufacturers through free licensing contracts, it is easy to encourage widespread adoption of platform participants. For example, Google's Android could become the leading smartphone OS in a short period of time because of its platform openness (Kenny & Pon, 2011). However, open platforms have limits in providing a constant user experience

or a stable quality because they cannot fully control the hardware manufacturing capability or hardware-level features such as handset designs.

Meanwhile, if a platform business is vertically integrated and closed, it can provide a more effective and cohesive user experience though it cannot be expected to expand its user base dramatically. In this case, users tend to be easily and more strongly locked in the ecosystem. Apple's iOS is a typical example. Apple is famous for offering a consistent user experience throughout a wide range of its devices (e.g., iPod, iPhone, iPad, and Apple Watch) (Kenny & Pon, 2011). It is possible because Apple controls the whole integrated architecture from manufacturing to software and platform services. Therefore, debates on platform openness do not provide decisive answers for a platform success. A company can provide an open platform for a service but closed one for another; unlike closed iOS, Apple's App Store is an open platform accessible to numerous third-party developers.

In addition to the strategies of platform providers, we also need to pay attention to a bigger picture around the global platform businesses. As mentioned earlier, flexibility led to the division between software and hardware and it resulted in new hierarchical and power relations between these two. Therefore, in order to understand recent platform businesses, we should explore the hierarchical relations in platform ecosystems because smartphone platforms also are a type of software that requires the support of hardware devices. In particular, we can raise questions such as: How did maximized flexibility divide platform architectures and what are the characteristics of the platform structures? Are the most profitable platform businesses open to everyone in the smartphone industry? If a company has competitive platform strategies, can it enter the platform businesses and compete to build successful ecosystems? For instance, can device makers or telecom carriers enter the platform market if they follow the ideal platform strategies? In addition

to platform strategies, what other internal or external factors influence the success of platform businesses?

We have witnessed the rise and the fall of the Western manufacturers such as Nokia, RIM and Motorola. We also have witnessed the struggle of the Japanese manufacturers such as Sony. Fierce competition is continuing between South Korean manufacturers such as Samsung or LG and Chinese handset makers such as Huawei (Jin, 2017; Lev-Ram, 2013). Though South Korea has been leading, China is on a dramatic upward trajectory (Oh & Larson, 2011). For instance, Huawei surpassed Apple's smartphone shipments in the second quarter of 2018 for the first time and the gap between Samsung and Huawei is also decreasing (Richter, 2018).

The unstable situation of hardware manufacturing forces device makers to join the more stable and also profitable software businesses, especially platform businesses. However, though smartphone manufacturers have sizable user bases, it is not easy to find successful cases. In the smartphone industry where the importance of platforms is increasing, this oligopolistic environment constraining new competitors bears potential problems. Therefore, in order to have a comprehensive understanding of the platform businesses, we should investigate diverse internal and external elements affecting platform businesses. For this reason, this dissertation explores device manufacturer, Samsung's failed experiences of launching smartphone platforms such as an operating system and an application market.

PROBLEM STATEMENT

Just as the increased flexibility of the ICT resulted in the locational divisions between software and hardware industries, the flexibility of the platform architecture has shifted production facilities for finished devices from developed countries to developing

countries in the global smartphone industry. However, the dominant platform businesses still remain in the developed countries (Tatsumoto, Ogawa, & Fujimoto, 2010). Some scholars from the information or management studies and many IT experts argue that the shift of manufacturing to Asian countries such as South Korea in the ICT industry resolves the asymmetrical power relations between the Western countries and the Third World because this shift gave birth to local manufacturing businesses (Tatsumoto, Ogawa, & Fujimoto, 2010). For instance, they insist that Asian electronics industries such as those of Korea or Taiwan could make technological progress and could enter the global market for the finished products via Western-driven original equipment manufacturer (OEM) systems (Oh & Larson, 2011; Tatsumoto, Ogawa, & Fujimoto, 2010). On the other hand, this study agrees with the political economists who generally insist that the power discrepancies between platform businesses in the developed countries and manufacturing businesses in the developing countries are actually increasing and the oligopolistic industry environment is even solidifying (Qui, 2012).

Manufacturing products migrates quickly into developing countries while the platform technology in the developed countries rarely moves to developing countries; therefore, only the manufacturing domains become the battlefield among the firms in developing countries (Tatsumoto, Ogawa, & Fujimoto, 2010). For instance, the OEM system forces lower profit margins in the developing countries and disincentivizes them from developing their own brands (Oh & Larson, 2011).

Also, platforms based in the US such as iOS and Android have developed their hegemonic power in the smartphone industry and continue to solidify their power (Jin, 2017). The locational division of platforms and manufacturing forced the local States to be engaged in the US-led world system, and the dependency of the local states on the US platform corporations has increased (Jin, 2015; Lee 2008). The increasing dominance of

the US prevents non-Western companies from creating appropriate values in the platform economy (Jin, 2017). Political economist Jin (2015) defines this asymmetrical power relation caused by the emergence of dominant US platforms as *platform imperialism*. This trend, therefore, raises the question of whether and how the global expansion of dominant platforms represents the imperialistic invasion of the Western, mostly US, companies (Jin, 2017), or whether something else is going on.

Imperialistic perspectives, such as world systems, dependency, or imperialism per se, generally have a dichotomous way of dividing global geography: the core (e.g., the United States) and the periphery (e.g., the Third World) (Hardt & Negri, 2001). However, this dichotomy is not sufficient to explain what has happened so far in the platform-driven ICT industry. There are smartphone manufacturers such as Nokia, Motorola, and RIM which have their bases in North America or Europe. Though these firms once led the global handset manufacturing industry, they had to yield their positions to Asian manufacturers. In the shift to platform businesses, these western companies were beaten by other western challengers such as Google. Also, the US software giant, Microsoft, which has dominated the PC industry with its platform and software services, could not exercise its influence on the smartphone industry. These examples show that the asymmetrical power relations do not necessarily occur based on global geography. Therefore, this study insists that the imperialistic perspective focusing on regional division between platform providers and device manufacturers is based on the superficial appearance of the current smartphone industry. In essence, platform providers manipulate all other participants such as independent developers in Europe as well as Asian hardware makers. This study assumes that smartphone platforms in reality tend to expand their scale until they achieve market oligopoly and they try to restrict their competitors by using their authority as a dominant company in order to maintain oligopoly situation. Recently, Microsoft's Bill Gates also

admitted that its operating system Windows Phone could not win Android because Android gained momentum first and platform businesses are winner-take-all markets (Warren, 2019).

Deviating from imperialistic narratives, this asymmetrical relationship between platforms and other participants does not always occur on a regional basis. If smartphone manufacturers do not dominate the industry, they have to obey a handful of rulers regardless of their origins. The maximized flexibility of the platform industry expanded the capitalistic market to the global level, and ICT conglomerates can achieve market oligopoly which surpasses national or regional boundaries. The global conglomerates occupying core businesses keep relocating relatively peripheral businesses such as manufacturing to more cost-efficient places among those who have business competence. This argument can also be supported by the fact that recent factory automation tends to bring smart manufacturing facilities back to the Western countries. For this reason, this research investigates the failed cases of Samsung Electronics through the lens of market oligopoly and power discrepancies rather than that of imperialism.

Successful platforms share two common features: *modularization* and *standardization*. Based on findings from previous studies, this study assumes that these two characteristics of platforms maximize the flexibility of the smartphone industry, which may contribute to platform oligopoly and power discrepancies in the global smartphone industry. The platform providers generally design modularized architecture composed of the core component (platforms) and the complementary (hardware and application software, for example) components (Tatsumoto, Ogawa, & Fujimoto, 2010). For instance, in the smartphone industry, while Android is a core component, devices such as Samsung's Galaxy series or Sony's Xperia series and smartphone applications might be complementary components. Through this modularization, platform providers can increase

the architectural flexibility, control the entire ecosystem, and nudge the platform participants such as device manufacturers or application developers to bring about more innovative and creative goods or services. Then, the innovations created by the complementary parts enhance the value of the platforms. By modularizing the architecture, the platforms become the core part which is not replaceable, while the complementary parts still have high mobility; for instance, even Apple, which is famous for its closed OS architecture, easily expanded its outsourcing companies from Foxconn to another Taiwanese manufacturing company Pegatron when Foxconn became too large to control and was involved in some labor exploitation issues (Jin, 2017). Because of the high mobility of the manufacturers, Foxconn can be supplanted, but Apple itself cannot. Android is not replaceable, but Galaxy phones can be replaced by Xperia phones.

Because of this high mobility (or replaceability) of complementary components achieved by modularization, platforms achieve an architectural advantage that allows them to select the participants and also decide the industry/technology standards (Jacobides et al., 2006). For example, Google only allows Google Play Store to function as an application distribution channel while it prohibits other application stores (Jin, 2017). That is the standard or the norm of Android—and Apple as well. Since the platform firms standardize every single component or specification within the ecosystem except for the platforms, the entry barriers to peripheral areas become very low while the center is not accessible (Tatsumoto, Ogawa, & Fujimoto, 2010). The entry barrier to complementary components is lowered through standardization, and platform providers induce more actors to participate, which again strengthens the authority of platform providers. Though Gawer and Cusumano (2002) delineate that true platforms cannot be fully controlled even by the platform owners, in fact platforms they can even control their outside components via modularization and standardization.

To sum up, the platform providers can modularize and standardize the architecture; and the modularization and the standardization make platforms less mobile and other components more mobile and flexible. This causes power discrepancies between platform providers and other participants. Due to the power discrepancies, platforms possess the ability to control complementary components by making standards and decisions, and platform participants compete against one another, which results in frequent innovations; finally, innovative and creative goods or services by platform participants attract users who again attract more complementary participants. Platforms thus establish an organic ecosystem which increases their own value; the increased value, then, empowers the platforms. While existing information or management studies reveal these findings, they usually do not mention the critical implications of the lopsided control and power issue among platform actors. As well, political economists generally do not provide empirical evidence for their arguments.

Platform flexibility maximized by modularization and standardization leads to platform monopoly or oligopoly in the global smartphone industry. For example, in the smartphone industry, there are only two dominant operating systems, Android and iOS, which control the whole industry (Jin, 2017). In the South Korean app economy, for instance, Google Play Store and Apple's App Store command 80% of the mobile content market, and the share is continuously increasing. This dominance is seen also in the smartphone operating system business (Dyer-Witthford, 2014). In the global environment, iOS and Android were taking approximately 88 percent of the OS market share as of 2012, though they just took 5 percent by 2004 (Schiller, 2014). According to a research, Android and iOS commanded almost 100 percent of global smartphone sales in 2017 (Statista, 2018). Fingas (2013) calls this situation a *duopoly*. Some scholars insist that the network effects of dominant platforms tend to attract more participants and users, which finally

results in monopoly (Srnicek, 2017; Vaidhyathan, 2012). The current research assumes the quality to achieve monopoly or oligopoly as the expandability of platforms which is a unique quality of successful platforms.

Moreover, the fact that there are only one or two dominant players at the platform level results in the asymmetrical power relations between platform providers and complementary participants. Since there are only two platform providers in the global smartphone market, other participants cannot but rely on these companies. Although Samsung is a leading manufacturer of smartphones, its reliance on Android has been its Achilles' heel (Lev-Ram 2013). In addition to the manufacturers, another participant group, the application developers, are also fully controlled by the platform providers. For instance, with its enormous authority, Apple's App Store can encourage or restrict every aspect of developers' behaviors (Jenkins et al., 2013; Zittrain, 2009). What is more problematic is the distribution of value generated by the participants. Though the manufacturers and the developers create substantial value by providing innovative products or services, it is mostly recouped by the private platform providers (Jin, 2015; Jin, 2017) because of the oligopoly system and the asymmetrical power relations of the global smartphone economy. In other words, platform providers can enjoy the effects of horizontal integration from the oligopoly market and those of vertical integration from the uneven power relations with the power of platforms without any direct financial integration. Therefore, this study assumes that the dominant platform providers might also use the asymmetrical power relations in order to prevent other players from entering the oligopoly market of the global platform business.

However, these two concepts cannot explain every aspect of the complicated platform business in the global smartphone industry. Though the concepts modularization and standardization show how a single platform ecosystem secures structural flexibility

around the platform provider, they have limitations in explaining how a platform provider defeats its competitors or how it dominates the global market and controls other platform participants. For example, these concepts cannot explain competition between two platforms both of which achieved modularization and standardization. In reality, understanding the competition among plural platforms requires a more multidimensional approach that also acknowledges organizational factors such as the corporate culture of each platform provider. Since many failed platforms also used to modularize and standardize their platform architectures, modularizing and standardizing cannot be a sufficient condition though they might be a necessary condition. In addition, though these concepts explain how they gain the architectural authority to control the entire structure, they do not account for how successful platforms actually control other players. Finally, these concepts fail to explain how platforms achieve market oligopoly because they do not pay attention to the quality of expandability which allows platform ecosystems to grow throughout platform interactions.

Therefore, we need to investigate which specific strategies are needed to achieve modularization and standardization successfully, how platform owners try to build ecosystems and control other participants, how they try to raise the entry barriers into platform businesses and establish market oligopoly, or even how cultural aspects of platform owners or platform ecosystems influence the performance of platforms. This research adopts additional concepts from previous studies, including *platform governance*, *control mechanisms*, *platform ecosystems*, *cross-side network effects* and *organizational culture* in order to develop a more holistic and balanced perspective encompassing internal and external, or practical and critical aspects of platform businesses.

NEW PERSPECTIVES ON PLATFORM COMPETITION

The emergence of platforms has led to increased research investigating the technological characteristics or the political economic implications of the platform industry (Gillespie, 2010; boyd, 2011). In the field of social science, platforms have been explored mainly by political economists and the scholars in information or managements studies. Existing literature on global platform businesses from the political economist perspective successfully describes the general flows of the global ICT industry from the macroscopic viewpoint. However, since they usually conduct studies based on the outcomes of the interactions of global players, they sometimes overlook the more important processes which provide different explanations of the outcomes. For example, some scholars insist that Asian manufacturers cannot make platform services yet due to their technological incapacity and that they have to jump into the platform (or software) businesses more aggressively in order not to lag behind; however, those same scholars have ignored the fact that some Asian manufacturers such as Samsung or Huawei already launched their smartphone platforms (e.g., operating systems or application markets) but are struggling (Jin, 2015; Jin, 2017; Oh & Larson, 2011).

In order to analyze this global phenomenon more thoroughly and accurately, we need to pay more attention to the detailed processes hidden inside would-be competitors. This study will focus on how the Asian manufacturers tried to expand their businesses to the platform industry and how the dominant platform providers reacted to block their entrance. In particular, as briefly mentioned earlier, this dissertation investigates how Samsung Electronics launched and operated smartphone platforms such as Samsung Apps (app market) and Bada (OS) and how these experiences ended up as a failure. It is less focused on eventual outcomes than on the industrial processes and dependencies that can

lead to success or failure. Specifically, matters of platform governance, network effects, and organizational culture will be assessed.

While some political economists interpret the emergence of platform businesses from the somewhat one-sided perspective of imperialism, recent trends in platform services need to be explored from the perspectives of the general move toward global oligopoly and the asymmetrical relations caused by the increasing flexibility of the ICT industry. The more platform participants such as app developers and users join, the more platform values increase; the more platform values increase, the more platform participants join. With this successful or “virtuous” cycle, developers and users participate in specific platforms, which keeps increasing the size of platforms until it results in platform oligopoly. In the global smartphone OS market, there are only two survivors, Android and iOS. Though both of them are ICT conglomerates that have their headquarters in the US, it is risky to interpret the present condition from the imperialistic viewpoint. This dissertation rather insists that the global oligopoly is a more suitable concept which explains the essential issues in the global smartphone industry. Though information or management studies analyze the technological or architectural features of successful platforms in detail, the socio-economic implications within the industry are generally out of their research interests. These studies focus on the architectural advantages of platform services and the strategies of successful platform ecosystems; however, they do not pay close attention to the problematic issues of the platform industry such as market oligopoly or asymmetrical power relations. For instance, these studies tend to argue that the dependency of the manufacturers on platform providers is unavoidable and this structure strengthens the competitiveness of the manufacturers because platforms create new market opportunities for these companies (Berger, 2005; Sturgeon, 2002; Tatsumoto et al., 2010). However, since they are interested

in figuring out the ways of making more profitable platforms, they fail to delineate the structural unevenness of the global platform industry.

The current research explores the relatively overlooked areas of existing studies. First of all, this study investigates the detailed processes of how the contemporary global geography of the smartphone industry has been shaped. This analysis can reveal what is happening among global participants by looking closely into the hidden or more latent issues that do not come to the front. For example, though a smartphone manufacturer may try to embed a specific application in a specific device, the plan could be cancelled if specific platform provider rejected it. Such examples show the power and control issues among platform participants, issues that are difficult to discover if we do not look more closely into the actual behaviors of diverse actors.

Second, this study investigates why and how platform operations are linked to the problems of asymmetrical power relations. The management and information studies basically figure out successful platform strategies which enable the platform owners to control the whole architecture efficiently. Therefore, these strategies inevitably affirm and even assume the issues of power discrepancies. If we approach platform dominance from the opposite side of platform participants, the findings of these studies might provide more critical implications. This is one of the reasons that this dissertation pays attention to the unsuccessful cases of Samsung's platform businesses. Existing studies tend to overlook these critical perspectives.

Lastly, this study also investigates how organizational culture is associated with a corporate approach to platform businesses and the performance in the platform industry. Existing studies find that specific cultural aspects of organizations (e.g., a flexible culture) result in innovations or creativity for the ICT firms (Boland & Tenkasi, 1996; Galbraith, 1994; Keyton, 2010; Klijin & Tomic, 2010). However, while existing studies on the

platform industry have explored the technological characteristics of platforms or the relations among global participants, they rarely mention the cultural aspects which might influence the platform industry. Since there can be cultural differences between platform companies and manufacturing companies, studying organizational culture will allow this research to understand the organizational factors affecting each player.

In summary, by investigating the areas of control mechanisms of platform ecosystem, cross-side network effects and organizational culture of platform companies altogether, this research will provide a more balanced and holistic view on the platform industry. In addition, this dissertation provides both empirical evidence and critical explanations by exploring challenges of global leading manufacturer, Samsung, especially Samsung's Media Solution Center (hereinafter, MSC) which was in charge of software and platform services of the company. In the literature review chapter, this study reviews 1) how successful platform providers actually control other platform participants, 2) how they develop platform ecosystems and extend their businesses, 3) how a fast follower strategy which is considered a typical strategy of Samsung Electronics affects business performance, and 4) how cultural elements of organizations affect the performance of a company, especially an ICT firm.

Chapter 2: Literature Review, Research Questions & Methods

LITERATURE REVIEW

In this chapter, I review four domains of previous studies on platforms including 1) platform governance and control mechanisms, 2) platform ecosystem and network effects, 3) the fast follower strategy, and 4) organizational culture and performance. The first section, *Platform Governance: Mechanisms for Control*, reviews previous studies that examined how platform providers control the entire architecture which is intertwined with various players of different roles and goals. In the second section, *Cross-side Network Effects*, this research reviews existing studies on how platform providers grow their ecosystem. This part is expected to provide clues to how platforms expand their businesses to achieve market oligopoly. The third section, *The Fast Follower Strategy*, examines research on the fast follower strategy which is regarded as Samsung's representative business strategy. The last part of this section, *Organizational Culture: Hierarchy, Control, and Performance*, reviews previous studies exploring how specific cultural aspects such as hierarchical structure or tight control influence organizational performance, especially that of ICT companies.

Platform Governance: Mechanisms for Control

This research mainly explores the interactions and the relations among some global players within the platform industry, reviewing previous literature on platform governance to show the control mechanisms used among relevant players. Scholars have defined platform governance in diverse ways. Simply put, platform governance can be defined as the authority of platform providers to organize and control collective action and the mechanisms that encourage the exchange of resources (De Reuver and Bouwman, 2012). According to Brousseau and Penard (2007), the governance structures of platforms are

designed to manage conflicts, reach consensus, and reduce risks. Ghazawneh and Henfridsson (2010) define platform governance as control and coordination of platform participants via the common resources of platforms. According to Tiwana and her colleagues (2010), platform governance comprises all policies and mechanisms through which platform providers exert influence on the participants to enhance operations in the ecosystem; platform governance therefore refers to decision-making processes around platforms. In common, these definitions insist that the ability of controlling the entire architecture and the ecosystem is the core element of platform governance. By controlling the system, platform providers can decide who can participate (Tiwana et al., 2010), align the interests of the participants (Eaton et al., 2011; Lerner et al., 2006; West, 2003), and force the participants to compete or coordinate with one another.

Therefore, platform governance is generally designed to maximize the company's ability to control the whole architecture. Control theory usually explores how a powerful player manages relationships with other players (Mukhopadhyay et al., 2016). In control theory, *control* means creating specific conditions to motivate organizations to achieve desirable outcomes (Fisher, 1995). This study shares this definition when we refer to the term control. Control mechanisms allow the platform providers to exercise the power over the platform (Ballon, 2009). According to Manner and colleagues (2012), control mechanisms are the means to monitor the ecosystem, respond to the changes in the ecosystem, and also maintain the dominance of the platform providers. For instance, Google Play Store monitors and restricts the uploads of inappropriate applications, or updates the popular app list on the main page based on customer needs in order to control the ecosystem and maintain its dominance. By controlling the ecosystem, platform providers expect to minimize relational risks such as opportunistic behaviors of participants (Das & Teng, 2001), attract ideal partners with competitive assets, and safeguard position

as the leader of the ecosystem (Mukhopadhyay et al., 2016). Based on this definition, the current study explores control mechanisms in the smartphone platform ecosystem by investigating how platform providers interact with diverse platform participants to increase platform performance and value.

Previous studies found that there are three essential dimensions of control: *input*, *outcome*, and *behavioral control* (Johnson, 2011; Kirsch et al., 2002; Ouchi, 1979; Snell, 1992). First, platform providers can control the ecosystem by controlling the input of complementary actors. Input control is adopted in order to gain specific skills or experiences (Cardinal, 2001; Snell, 1992). Platform owners select participants when they have desirable skills or resources (Mukhopadhyay et al., 2016). For instance, in the early smartphone era, device manufacturers only allowed small number of qualified companies to develop software programs for their devices. However, in the recent smartphone industry where openness is closely related to the success of ecosystem, controlling the access to platforms has become a less pervasive way of control mechanisms.

Second, platform owners can control the outcomes by evaluating or monitoring the results. Based on the outcomes, platform participants acquire incentives or punishments (Merchant, 1985). In the smartphone ecosystem, application review process by platform owners might be an example. For instance, when third-party developers upload applications to App Store, Apple checks if the applications meet the requirements. If it fails, Apple asks the developers to revise the applications and re-upload them. For the developers, this can be a punishment because the revision process is time-consuming and the developers should invest extra resources. If outcome control is too strict, it is not easy to increase the quantity of complements. On the other hand, if it is too loose, the quality of the platform might be damaged.

Lastly, if there are desirable behaviors for the platform ecosystem, controlling behaviors is recommended (Govindarajan & Fisher, 1990). Though tight behavioral controls are reported to impede creative and innovative ideas (Adler & Borys, 1996), this type of control enables the whole platform ecosystem to be run more efficiently. Behavioral controls also are normally adopted in the smartphone ecosystem. For instance, smartphone platform providers usually provide design guidelines, application programming interfaces (APIs) or software development kits (SDKs), and platform participants have to abide by these guides or rules when they develop services or products. Though these control mechanisms hugely affect the performance or value of platform ecosystems, empirical studies on this topic are still scarce.

These characteristics of platform governance and control mechanisms provide a useful framework for analyzing platform businesses. Since this research tries to explore a failed case of a specific platform, the concept of platform governance which delineates the factors establishing successful platforms and shows the hierarchical relations among platform participants offers criteria for comparison. The three dimensions of control mechanisms mentioned above will provide frameworks for this research to explore 1) how platform providers regulate or encourage platform participants and 2) how they control the whole industry without direct ownership.

Nevertheless, this concept cannot solely explain the complex processes and relations of global platform businesses. The concept *platform governance* provides a somewhat fragmented understanding of governance mechanisms (Kohlborn et al., 2009; Tiwana et al., 2010) and lacks an integrated perspective taking account of the platform's operations in a broader context of international or technology-based services and the broad range of competitions (Haaker et al., 2006). For example, though this concept of platform governance efficiently shows how platform providers manipulate power discrepancies

between platform owners and platform participants in order to control the vertical architecture within a platform ecosystem, it does not explain how platform ecosystems expand horizontally and compete against other platforms, which might be further associated with market oligopoly. It also does not explain how a specific platform strategy of a company (e.g., Samsung's fast follower strategy) affects platform businesses. In addition, this concept does not consider how organizational contexts influence platform providers on controlling their businesses. The following parts of this section discuss these areas such as network effects, fast follower strategy and organizational culture to supplement the shortages of this concept, platform governance.

Cross-side Network Effects

With the networks enabled by the development of information and communications technologies, innovative business models emerge in the process of cooperation and competition among various organizational actors, rather than within a specific firm (Basole & Karla, 2011). In the ICT industry, especially in the smartphone or mobile service industries, building ecosystems encompassing a wide range of partners has become an essential task for business success (Basole & Karla, 2011; Yonatany, 2013). Platforms were regarded as the foundation for establishing the ecosystems (Iansiti & Levien, 2004). In addition, platforms were reported to be the base for innovation ecosystems (Adner, 2006).

In the mobile internet businesses, a platform-based ecosystem consists of diverse actors such as platform providers, application developers, device manufacturers or telecom carriers (Basole & Karla, 2011; De Reuver, 2011; Peppard & Rylander, 2006). In the platform ecosystem, platform owners play the role as an ecosystem leader and raise the value of platforms by giving directions and incentives to the participants and making platform participants create innovations (Anderson, Potočnik, & Zhou, 2014; Gawer and

Cusumano 2002). Unlike traditional business leaders, the leaders of platform ecosystems do not possess formal authority over application developers or other ecosystem partners (Tiwana et al., 2010). Nevertheless, the power of platform leaders is much stronger than that of other platform participants (Basole, 2009), and with this comparative advantage, platform providers try to improve platform performance and also maintain the healthy ecosystem (Mukhopadhyay et al., 2016). Platform owners also provide a basis for the participants to interact with one another in order to establish an ecosystem. Thus, researchers have explored what platform ecosystems are, how they are established, or how they influence diverse actors such as platform providers, complementary participants, or users (Adomavicius et al., 2008; Gawer & Henderson 2007; Lee & Mendelson 2008; Mantena et al., 2007).

Researchers and industry experts have used the ecosystem metaphors since the early stage of mobile software development. Since then, many scholars have defined the concept of ecosystem in their own languages. For instance, Moore (1993) referred to the business ecosystem as a complex network of organizations cooperating or competing around a specific technology. In this ecosystem, actors play various roles to contribute, to achieve symbiotic relations, and to evolve together (Basole & Karla, 2011; Iansiti and Levien, 2004; Iyer et al., 2006; Moore, 1993). In the ICT industry, value creation, innovation and performance are determined at the level of ecosystem (Kapoor & Agarwal, 2017). Scholars point out multilevel actors, interdependency, interconnectedness and co-evolution as common elements of business ecosystem (Zhong & Nieminen, 2015). In addition, they regard platforms as the key element for business ecosystem (Basole & Karla, 2011; Ceccagnoli et al., 2012; Cusumano, 2010), because ecosystems are formed around platforms.

Based on these definitions, existing studies on platforms have defined platform ecosystems. According to Gawer and Cusumano (2002), a platform ecosystem is an innovative network producing complementary components that make platforms more valuable. In addition, scholars define the platform ecosystem as a network made up of the core—platform providers—and the periphery—complementary participants—cooperating and competing around platforms (De Reuver, Sørensen, & Basole, 2017; Wareham, Fox, & Cano Giner, 2014). Meanwhile, some scholars classified the platform participants into components (e.g., device manufacturers or telecom carriers) who are bundled with platforms and complements (e.g., application developers) who are developed on the basis of platforms (Adner & Kapoor, 2010). Since complementary actors create value directly for the end-users, recent studies on platform ecosystem tend to emphasize the importance of complements (Adner & Kapoor, 2010; Tiwana, 2013). Since the performance and value of platforms are determined by the interactions among these actors around platforms, approaching them from the platform ecosystem perspective is essential to understand complex platform environments (Adner & Kapoor, 2010; Bauer, 2014; Mukhopadhyay, de Reuver, & Bouwman, 2016).

Previous studies tried to figure out the key determinants for the success of platform ecosystems. Among various factors, the diversity and availability of complementary products or services provided by external players are most commonly considered (Gawer, 2014). Platform providers are eager to encourage outside actors to join and bring about platform innovation or the growth of users (Cennamo & Santalo, 2013; McIntyre & Srinivasan, 2017). Studies also found the factors related to inducing outside actors to join the platform ecosystem, such as the size of platform networks, openness, entry barriers or the quality of toolkits for development (Koch & Kerschbaum, 2014). In addition, tight

control of development is revealed to influence complementary actors in participating in platform ecosystems (Maurer & Tiwana, 2012).

These findings led scholars to explore how cross-side network effects are generated around platform ecosystems. Recently, most platforms, especially smartphone platforms, assume a two-sided market of developers and end-users which is expected to generate cross-side network effects for the ecosystems (Ceccagnoli et al. 2012; Garcia-Swartz & Garcia-Vicente, 2015; Song et al., 2018). Previous studies on platform ecosystem have paid attention to the theory of network effects. Since platform value and performance are determined by maximizing the interactions between the actors of each side (Choi, Nam & Kim, 2018; Song, Xue, Rai, & Zhang, 2018), platform owners try to generate indirect network effects by encouraging third party participants to produce more complementary products and services, which might result in attracting more end-users (Ceccagnoli et al., 2012; Cennamo & Santalo, 2013; Linder et al. 2003; McIntyre & Srinivasan, 2017).

In the platform ecosystem, *cross-side network effects* mean that the size and the growth of one side (e.g., end-users or independent developers) affect those of the other side (Boudreau, 2012; Yonatany, 2013). While traditional network effects occur at the same side, cross-side network effects are generated by the actors of the two sides interacting around platforms (Gawer & Cusumano, 2014). Facebook, where the size of users makes the platform more valuable for other users, is an example of traditional direct network effects while Apple's App Store, where the size of developers and users increase the attractiveness of the platform for the other side or the same side, can be an example of cross-side network effects.

Several previous studies examined which aspects of platform ecosystem generate cross-side network effects. Basically, according to this theory, the superiority in the number of complementary products or services (e.g., third-party applications) leads to the

dominance at the user-side, which again results in the increase in the other side (Zhou & Song, 2018). Supporting the user-side to establish the user base first to attract complementary participants is also possible (Hagiu 2006; Parker & Van Alstyne 2005; Weyl 2010). Since many third-party developers have limited resources, they are reluctant to participate in platform ecosystems with small user size (Song et al., 2018); hence, increasing the number of end-users becomes a critical factor in establishing successful ecosystem.

However, quantitative growth is not enough to wholly explain this concept. For instance, according to Song and colleagues (2018), while the growth in platform usage influenced the number and the variety of applications in the long term, the increase in the number and the variety of applications only caused a short term effect in the increase in platform usage; in addition, the longer the app review by the platform owners took, the weaker the long term cross-side network effects on the developer side became, because the gap between value creation and value capture made the developers reluctant to join. However, long app review time is revealed to be an advantage in terms of the quality of applications (Song et al., 2018). Meanwhile, if there are too many platform updates, the effect of applications on the users is revealed to be weaker. In addition, frequent platform updates increased the uncertainty of third-party developers because each update required developers to spend extra resources (Song et al., 2018). This can be the competitive disadvantage of a platform when the developers have multihoming options (i.e., participating in more than one platform ecosystem) (Hyrnsalmi et al. 2016). Meanwhile, Boudreau (2010; 2012) found platform openness to lower the entry barriers of platform ecosystems and then attract outside participants, which intensifies indirect network effects; in addition, platform openness directly influences app developers' participation decision, and this results in the increasing number of users, which leads to a positive feedback loop.

While studies on platform ecosystem emerge, many of these studies used to focus on a specific platform; even when they explored multiple platforms, they studied the strategies of each platform rather than the interactions among platforms. However, since new platforms always jump into the market and they compete against one another in reality (Zhou & Song, 2018), recent studies began to pay attention to how these platforms compete or interact with one another. The emergence of new platforms is reported to weaken the cross-side network effects of incumbent platforms (Zhou & Song, 2018) and even potentially threaten the survival of existing platforms (Fok & Franses, 2004; Zhu & Iansiti, 2012). Therefore, researchers such as Zhou and Song (2018) explored which elements in the platform ecosystem affect platform performance before and after the appearance of competitive platforms. The growing quantity of third-party applications affect platform performance more when there is no competitive platform, while the quantity of applications influences the performance more after the entrance of competitive platforms. In addition, the entrance of a competitive platform is revealed to affect both user and developer sides; the appearance of a new platform weakens users' attachment to the existing platform and causes a multihoming behavior using multiple platforms simultaneously (Chintagunta, 1999; Mukhopadhyay et al., 2016). A new platform also allows third-party developers to have multihoming options, which decreases their dedication to a specific platform (Zhou & Song, 2018).

Though recent studies began to pay attention to competing platforms, most of these studies are premised on a free, competitive market. However, many platform markets in reality are in monopoly, duopoly or oligopoly situations. Studies tend to ignore which factors of the platform ecosystem are related to these market situations or how some platforms fail to generate cross-side network effects. In addition, while platforms exist at multi-levels in a single industry (e.g., there are multiple platforms such as operating

systems or application markets in the smartphone industry), most extant studies tend to explore platforms at a specific level. However, platforms at a specific level affect other platforms at a different level (e.g., Android will affect the operation of Samsung Apps). In order to understand the platform ecosystem in the smartphone industry, we need to examine how these competitive platforms (e.g., two competitive app markets) exchange influence at multiple levels (e.g., OS and app market levels). In addition, based on the existing findings revealing the negative influences of the entry of competitive platforms on incumbent platforms, we can assume that incumbent platforms might raise entry barriers to platform businesses with various strategical behaviors. However, previous studies rarely paid attention to this issue.

The Fast Follower Strategy

Samsung and other companies have been evaluated as strong in imitating other products but not in creating something innovative (Min, 2018). In addition, ‘speed’ has always been one of the major characteristics that defines Samsung (Chang, 2011; Lee, 2019). For instance, in the field of household electrical appliances, Samsung followed Japanese manufacturers at the beginning; after accumulating know-how, Samsung overtook these Japanese companies in diverse areas (Chang, 2011). In addition, Samsung grabbed the leadership in the mobile phone industry by chasing and competing against the global leading feature phone maker, Nokia (Wunker, 2012). Because of these characteristics, Samsung has been defined as a fast follower rather than a first mover.

Fast followers build on the accomplishments of first movers. A first mover is a company or an organization which enters a specific market or industry for the first time and gains competitive advantages (Hyundai Research Institute, 2015). These first movers dominate the market in advance and prevent competitors from entering the market in order

to maintain their market leadership. According to Lieberman and Montgomery (1988), first movers gain advantages of entering markets first from three sources; 1) technological leadership, 2) the preemption of assets, and 3) switching costs.

The learning curve of first movers can allow technological advantages. According to Spence (1981), a learning curve tends to build an entry barrier against late comers. In addition, these technological advantages can lead to patents or licenses that strengthen the competitiveness of first movers. Secondly, first movers have the advantage of preemptively seizing on valuable assets; these assets include tangible resources such as real estate, skilled employees or vendors, and intangible resources such as geographical locations or product positioning (Lieberman and Montgomery, 1988). For example, Apple could preempt third-party developers because it was the first mover in the mass market of smartphones, and the applications provided by these developers allowed Apple competitive advantages in making the ecosystem of the iPhone much more valuable. Third, the consumer's switching costs become a competitive advantage for the first movers (Lieberman and Montgomery, 1998). According to Wernerfelt (1985), since customers become acclimatized to using the products of the first movers and tend to stick to their first experiences, attracting these customers costs money for late comers. For example, Apple's products are famous for their strong customer loyalty. Since Apple users are accustomed to the coherent user experiences throughout a range of Apple's products and services, replacing Apple's devices or services becomes a hard task for many competitors.

However, the first movers do not always enjoy these advantages in the long term. In reality, many first movers cannot maintain their market leadership for a long time (Wunker, 2012). For example, in the mobile industry, the first movers such as Nokia, Ericsson, or Motorola had lost their leadership and made way for late comers such as Samsung and LG (Wunker, 2012). There are diverse disadvantages and potential risks that

the first movers might encounter. First movers' disadvantages can become the advantages for the fast followers or late entrants. According to Lieberman and Montgomery (1988), these advantages for the followers include 1) free-rider effects, 2) taking advantage of technological or market uncertainty, 3) preparing for shifts of technology or customer needs, and 4) exploiting the inertia of first movers.

Late comers can have a free ride in many ways such as technical development or user education. In most industries, imitation costs are lower than innovation costs (Lieberman & Montgomery, 1988). Secondly, late comers that possess cost-efficient manufacturing capabilities can catch up with the first movers in a short period of time if they join the market right after the first movers solve technical problems and begin to set up the technical and market standards. This advantage can be a strong point of Samsung as a fast follower because it is equipped with the facilities for mass production. Third, grasping technological discontinuities can provide an opportunity for new entrants. For example, in the mobile industry, Apple could succeed partly because it caught the market discontinuity when the market shifted from feature phones to smartphones. Apple, who was the first mover in the smartphone market, was also a late comer in the entire mobile industry. Lastly, the inertia of the first movers offers advantages to new entrants. For instance, since Nokia worried that its smartphones might potentially cannibalize its feature phone lines and thus hesitated to actively participate in the early smartphone market, the company experienced a hard time in the mobile industry (Hyundai Research Institute, 2015).

In particular, if a market or a technology is extremely new, first movers' chance of failure becomes much higher (Markides & Geroski, 2004). According to Markides and Geroski (2004), while not every late comer shares the opportunity to take its slice, the timing of entry decides the victory or defeat of late comers. The fast followers who join

the market at the right moment when a dominant design begins to emerge can beat the first movers and other late comers, and take the market leadership. Markides and Geroski (2004) define this strategic move as a “fast second strategy” and insist that this would be the best way especially for big and established firms to successfully enter the initial market. Following the first movers most rapidly is quite different from a second mover strategy (p. 122). While companies executing a second mover strategy usually produce me-too products following the standards established by the first movers after the dominant designs of the first movers are accepted by the market, the fastest followers jump into the market when a dominant design is still emerging, and they become deeply involved in the process of establishing market norms. Because they go deep into the process of deciding norms and standards, they can induce the norms and standards to be more friendly to their goals or interests. A fast second strategy has been considered Samsung’s major strategy, and the goal of Samsung allegedly has been to become the fastest chaser (Lee, 2017).

Nevertheless, this strategy is still controversial in the IT industry where the importance of platforms is emerging. A recent study, for example, refutes the fast second strategy and argues that the first movers who establish technical norms and standards first survive and dominate the platform businesses that have become the core of the recent IT industry (Hyundai Research Institute, 2015). In the platform market, who sets the norms and standards may be as important as who came first or who followed first. Therefore, this research pays attention to Samsung’s strategic moves of being the fastest follower and closely investigates how Samsung’s fast follower strategy influenced its smartphone and platform businesses in terms of creating norms and standards.

Organizational Culture: Hierarchy, Control and Performance

Since this research focuses on the case of an organization, Samsung's MSC, it is necessary to investigate internal characteristics of the organization. Samsung has a complex organizational structure (e.g., a division conducting software and platform businesses in a manufacturing company), and this dissertation assumes that these complicated organizational structure and culture might influence its platform businesses. In particular, since this study examines both platform providers and handset manufacturers, analyzing the organizational culture of Samsung's MSC is expected to provide meaningful implications. In order to understand an organization more thoroughly, one needs to explore the culture of the organization. In particular, creating an excellent culture is regarded as a critical factor for the success of ICT companies; for instance, Apple and Google are very famous for the successfully marketing their corporate culture (Keyton, 2013).

Existing literature on organizational culture has revealed that an organization itself is a cultural system (Keyton, 2010; Sackmann, 1991; Smircich, 1983), which increases the needs for studying organizational culture. In addition, though many studies on organizations overlook the importance of exploring the communication process (Keyton, 2010), scholars in organizational studies have warned that it is almost impossible to understand organizations and their culture without researching their communication systems because organizations are hugely influenced by the communication of the stakeholders, and their culture emerges from the interactions among organizational members (Keyton, 2010; Mills, Boylstein, & Lorean, 2001; Bantz & Pepper, 1993).

In terms of organizational culture, the management groups of organizations used to try to achieve a strong culture which means a culture driven by charismatic leadership (Keyton, 2010) that allows organizational members to have consistent interpretations of the organizational values and assumptions (Martin, 2001); management-level members try

to produce a strong culture by distributing organizational ideologies via specific rituals (Kunda, 2009). To create a strong culture, management groups try to control employees based on a hierarchical relationship.

Hierarchy is a critical element of organizing labor (Weber, 1968) and it defines the structural forms of organizations (Zammuto et al., 2007), which makes the understanding of hierarchy important in exploring organizations. Managerial members used to regard a hierarchical culture as a control device which improves organizational efficiencies (Keyton, 2010; Penman, 2000), and thus preferred top-down communication (Lewis, 1999, 2006; Lewis et al., 2003). In the traditional manufacturing industry, centralized control and top-down management were considered necessary (Langfred & Rockmann, 2016). More currently, while organizations feel pressures to grant autonomy to employees in sophisticated knowledge work, manufacturing organizations are relatively free from this pressure (Langfred & Rockmann, 2016). Since Samsung is popularly known as a company which seeks business success through a hierarchical and micromanaging culture, exploring how these elements (e.g., hierarchy and tight management) are intertwined with organizational performance in Samsung Electronics will show how these elements interact in a platform business and also in a manufacturing business.

Though the influences of organizational culture on its performance are comparative and can be different according to the industries or businesses (Kim et al., 2004), previous studies generally reveal that organizational culture considerably affects organizational performance either positively or negatively (Cameron & Quinn, 2006; Duke II & Edet, 2012; Fekete & Bocskei, 2011; Hofstede & Bond, 1988; Martins & Terblanche, 2003; Peters & Waterman, 1982; Saffold, 1988; Zheng et al., 2010). While these studies paid attention to a range of cultural characteristics of organizations, the influences of hierarchy

and control to which this research is paying attention have been one of the topics attracting the most scholarly interests.

In particular, the Competing Values Framework (CVF) created by Cameron and Quinn (2011) provides an effective theoretical framework with which scholars can examine how different types of organizational culture influence organizational performance differently, using *flexibility vs. hierarchy*, and *external orientation vs. internal orientation* as two analytical axes. According to the existing studies, adhocracy, which is a temporal organization that is formed with experts from diverse fields to execute a specific project, emphasizes values such as flexibility or change, and focuses on external factors such as market changes (Naranjo-Valencia, et. al., 2016). Adhocratic culture possesses similarities to the organizational culture of MSC which pursued flexible working environments and emphasizes external resources such as external professionals or third-party developers. This type of culture is connected to such key words as creativity or discretion.

Hierarchical culture is the opposite. Unlike adhocracy, hierarchical culture places emphasis on control. Samsung's two cultural cores of hierarchy and micromanaging are deeply related to each other in terms of organizational culture. In other words, organizations with hierarchical culture tend to control and manage the organizations, processes, or members more thoroughly. This type of organizational culture focuses on the internal elements of organizations rather than external elements, and considers such values as efficiency, rules, or regulations as more important (Sanz-Valle, Naranjo-Valencia, Jiménez-Jiménez, & Perez-Caballero, 2011).

Previous studies have insisted that flexible culture affects organizational innovation or creativity positively (Martins and Terblanche, 2003; Jiménez-Jiménez, Sanz-Valle, & Rodríguez-Espallardo, 2008; Tseng, 2010), while hierarchical culture stressing thorough control impedes the innovativeness or creativity of an organization (Naranjo-Valencia, et.

al., 2016). In addition, some studies argue that organizational culture focusing on external elements helps develop new ideas by encouraging employees to pay more attention to external users (Im, Nakata, Park, & Ha, 2003), while organizational culture with internal orientation prevents employees from understanding external environments accurately, which sacrifices organizational opportunities to develop creative or innovative ideas (Wolpert, 2002). In short, while adhocratic culture tends to contribute to the organizational innovation, hierarchical culture hampers organizational innovativeness.

In addition, many studies maintain that organizational flexibility allows organizations to adapt to the environmental changes, which affects the organizational performance positively (Chan, Shaffer, and Snape, 2004; Denison & Mishra, 1995; Deshpande et al., 1993; Fey & Denison, 2003; Gordon & DiTomaso, 1992; Tseng, 2010). Meanwhile, hierarchical organizations experience difficulties in adapting to external changes and thus exert negative influences on the performance of an organization (Denison & Mishra, 1995; Fekete & Bocskei, 2011; Naranjo-Valencia, et. al., 2016). One thing that should be considered is that creative or innovative ideas need to be executed in order to reap the rewards of flexible structures (Jamrog, Vickers, & Bear, 2006; McLean, 2005).

Samsung is a hardware manufacturer with a hierarchical culture, whereas MSC was in charge of Samsung's software and platform services that require creativity and innovativeness. Therefore, establishing a flexible organizational culture might be ideal for MSC rather than inheriting Samsung's hierarchical and micromanaging culture. Exploring how the cultural characteristics of Samsung and MSC conflicted with one another and affected the performance of Samsung's platform services will provide evidence of a relationship between organizational culture and platform performance.

THE RESEARCH SETTING: SAMSUNG ELECTRONICS

Since this dissertation explores the platform businesses and the organizational culture of global manufacturing conglomerate, Samsung Electronics, reviewing the historical outlines of this company will help understanding the contextual aspects of the research subject. The holding company of Samsung, Samsung C&T Corporation founded in 1938 began its business in the food and clothing industries. In 1969, Samsung Electronics was founded and it started to produce electronic products such as black-and-white televisions and electric fans. Since 1983, it expanded into the semiconductor business which served as a momentum to jump up to be a global leading company. Since the 2000s, Samsung Electronics has been leading the global electronics businesses such as smartphones, digital televisions, or flash memory (Naver Encyclopedia, 2018).

Samsung Group achieved a rapid growth in the 1960s and 1970s, supported by the government which proceeded long-term industrialization projects. With its 63 subsidiary affiliates, Samsung Group is running domestic and global businesses in diverse industries. Samsung Electronics is at the center of these companies. In the early 1980s, Samsung Electronics entered the semiconductor industry with its 64 kb DRAM. Since the mid of 1990s, Samsung has become one of the global leading companies in the semiconductor industry. In addition, Samsung started to develop mobile phones since the early 1990s and commercialized its first mobile phone in 1994. In the 2000s, Samsung kept leading the semiconductor industry and this company grew as the largest electronics manufacturer in terms of the total sales, based on its success in the semiconductor market. Meanwhile, Samsung has been manufacturing Galaxy smartphone series with Android OS since 2010, and leading the field of global smartphone manufacturing with Apple (Doopedia, 2018). These two areas such as semiconductor and mobile phones contributed to this company to be one of the leading manufacturers in the global ICT industry (see Table 1).

		2018				
		Q1	Q2	Q3	Q4	Total
Revenue	Total	60.56	58.48	65.46	59.27	243.77
	CE	9.74	10.40	10.18	11.79	42.11
	IM	28.48	24.00	24.91	23.32	100.68
	DS	28.35	27.70	34.76	27.76	118.57

Table 1: Samsung’s Quarterly Revenue per Unit (Trillions of Won; Source: Samsung Electronics, 2019)

Samsung Electronics declares this slogan, *Inspire the World, Create the Future*, as its organizational vision. This global leading manufacturer publicizes its mission statement: *Inspire the world with our innovative technologies, products and design that enrich people’s lives and contribute to social property by creating a new future*. The official goals of this company are to be a beloved brand, an innovative and admired company. For these goals, this company pursues its core values such as *creativity*, *partnership*, and *great people* (Samsung, 2018). These organizational vision, missions, and core values show that Samsung emphasizes ‘innovation’ and ‘creativity’ as its cultural essence.

However, sometimes the organizational values promoted by the company are not agreed to by employees or outsiders. For example, during an interview with a newspaper, one of Samsung’s employees anonymously pointed out the top-down communication and forced obedience as cultural risks of this company (Heo, 2016). In addition, many of Samsung employees insist that the top-down communication and the communication gap among departments impede developing and sharing creative ideas that are vital in the ICT industry; and that they need to establish a more flexible organizational culture (Heo, 2016). Though the hierarchical culture such as top-down communication enabled Samsung to imitate and follow the leading companies quickly and thus improve its competitiveness as

a manufacturer, this manufacturing culture is hampering Samsung's growth in the ICT industry (Heo, 2016). Many scholars and analysts suggest that though this organizational hierarchy improved Samsung's manufacturing businesses and caused the economic growth of South Korea, the culture should change for the future (Oh, 2016).

Though Samsung Electronics is leading the global electronics manufacturing businesses, except for the semiconductor sector, this company has been threatened by China in most other areas and did not yet establish the foundation for the future growth (Son, 2018). In the 2010s, Samsung began to concentrate on developing future ICT businesses such as artificial intelligence (AI) platforms, internet of things (IoT) and 5G, or self-driving and connected cars (Naver Encyclopedia, 2018). However, these potential future growth engines are the fiercest battlefields where global ICT giants are competing for the future leadership. In particular, while Samsung has a keen interest and invests aggressively in the field of AI (Choi, 2018), global conglomerates such as Google, Apple, or Amazon already pulled ahead in the global competition. Samsung's future businesses such as AI, IoT, or autonomous driving have a commonality; the role of platforms is important and the dominant platform providers will control the entire businesses. Therefore, this dissertation exploring Samsung's cases of platform businesses will provide clues about how the future ICT industry would be formed or how the global ICT conglomerates such as Samsung, Google, Apple, or Huawei would compete for the next platform leadership.

RESEARCH QUESTIONS

The platforms have been a formidable and decisive factor which endows business dominance in the smartphone industry. By forming and providing a sizable and stable platform ecosystem, global players have tried to strengthen their influence in the

smartphone industry. For instance, many corporations in the smartphone industry launched their own, or joint application markets and attracted application developers and smartphone users to their app market ecosystem. In the mid-2010s, Google and Apple dominate most of the market and the oligopoly of the global app economy is even intensifying. The status of global oligopoly is also valid in the OS market. As of 2017, Android and iOS command almost 100 percent share of the global smartphone OS market. However, before this terrain took shape, many influential players in the smartphone industry had competed for the leadership of these platform markets. Among them, there were global device manufacturers, such as Samsung and Nokia, or mobile carriers, such as AT&T, China Mobile, and SK Telecom.

This research mainly focuses on the failed challenges of Samsung Electronics in the app market and OS businesses. By thoroughly exploring the global environments of platform capitalism, Samsung's cooperation or competition with other players, and its platform strategies and culture, this research delineates how the recent landscape has been formed around the global smartphone industry. The current study pays attention to the specific projects of Samsung's Media Solution Center (hereinafter, MSC) which was established in order to provide platform (and software) services for Samsung's mobile devices but was dissolved after seven years of operation due to its repeated failures.

Expecting to build a seamless ecosystem around its smartphone devices, Samsung founded MSC which would be in charge of intangible services such as operating systems, the application market, content streaming services or smartphone applications optimized for its smart devices in 2008. This division had an interesting organizational structure: while a half of the members were from different divisions of Samsung Electronics (and thus, basically have manufacturing cultural bases), the other half were from diverse media or software companies with less hierarchical cultures. While Samsung's other divisions

used to be mostly composed of the *blue-blooded* that are the employees who spent their career only in Samsung, this division recruited a half from outside because Samsung was not experienced in software or platform businesses. In 2015, however, Samsung announced the closure of the division because it failed to launch a successful platform service (and other software businesses) in the smartphone market. Though Samsung launched a couple of operating systems for its smartphones and an application market named Samsung Apps, these challenges were not successful. By exploring the case of Samsung's MSC, this study expects to reveal the structural and corporate issues which might have affected the unsuccessful challenge of this company. In particular, this study focuses on MSC's launch and operation of the application market and operating systems to understand the reasons of its failure and find meaningful implications.

By examining Samsung's platform management, its relationships with other players, and the company's cultural characteristics, this study explores how and why a global device manufacturer, Samsung Electronics, had trouble in entering the smartphone platform market. In addition, the current study seeks after critical implications from these specific cases. First, this study pays attention to the influences of Samsung's platform strategies on its platform performance. When Apple released the iPhone series and achieved a phenomenal success in the late-2000s, Samsung decided to chase Apple to take a substantial share of the global smartphone market. As discussed in the literature review chapter, chasing market leaders as fast as possible has been Samsung's representative business strategy. Therefore, Samsung pushed MSC to develop its own operating system, Bada (which means *ocean* in Korean), for its digital devices, targeting rapidly growing global smartphone market. Since Samsung Electronics possesses a wide range of hardware lineup including smartphones, wearables, tablets, personal computers, smart televisions, or home appliances, launching a successful operating system might be a critical mission for

this company to be prepared for the upcoming IoT era which requires every hardware device to adopt specific operating systems. Therefore, at the earlier stage, MSC aimed at developing an extensive operating system which embraces the whole series of Samsung's devices.

However, when the company was confronted with the unprecedented hit of Apple's iPhones, it had to adopt Android OS immediately for its flagship models, worrying that the growing hardware market would be preoccupied by its competitors. Though this decision solidified Samsung's place as a smartphone manufacturer, it also sacrificed Samsung's initial opportunity to diffuse its own operating system. Nevertheless, Samsung did not give up its operating system so easily and released the first smartphone with Bada OS (Samsung Wave) in 2010. From then, Samsung released several smartphone models with Tizen OS, which is an upgraded version of Bada OS, mainly in Asian countries. However, as the dependency of its flagship models on Android kept increasing, Samsung has not been releasing any Tizen phones since it launched Samsung Z3 for the increasing Indian market in 2015. Though the Tizen OS is still applied to some wearable devices or home appliances, Samsung's project obviously failed in the smartphone industry.

In addition to the operating systems, Samsung's MSC also executed the launching project of its application market. In accordance with the dramatic growth of the global app economy, MSC undertook a project of releasing an app market and building an organic ecosystem around the store. For this project, MSC organized a professional team with mobile content experts, software programmers, and user interface designers. Then, they developed, launched and operated Samsung's app market, Samsung Apps, which was applied to Samsung's operating systems and Google's Android OS. In addition, they sourced must-have or most popular applications not to lag behind Apple's App Store. Samsung aimed to increase users with these so-called killer applications. However, while

Apple's or Google's app markets have become the dominant players in the global app market, Samsung Apps failed to establish a successful ecosystem which embraces both users and developers. Samsung Apps, which changed its name to Galaxy Apps, now exists only as a channel for downloads or updates of Samsung's own smartphone applications. According to previous studies (Hagiu 2006; Parker & Van Alstyne 2005; Weyl 2010), a large user base which draws more third-party developers is a precondition which generates cross-side network effects and enables a successful ecosystem. However, these findings by previous studies were not realized in Samsung's experience and Samsung's platforms could not generate network effects with a substantial user base of its Galaxy phones.

This research assumes that Samsung's platform strategies such as the fast follower strategy might be related to Samsung's failure in platform businesses. Therefore, this research poses the first research question and sub-questions as below:

RQ 1: How did Samsung's platform strategies such as the fast follower strategy affect MSC's platform services?

RQ 1-1: How did Samsung's MSC fail to generate network effects and establish a successful ecosystem for its operating systems with its wide range of devices and substantial user base?

RQ 1-2: How did Samsung's MSC fail to generate network effects and establish a successful ecosystem for its app market with its substantial user base?

Second, this research investigates how the platform governance or control mechanisms in the Android ecosystem affected Samsung's platform services. When Samsung's MSC developed its operating system Bada, Samsung expected its OS to attract platform participants and encourage their participation. However, Samsung's operating

systems, with their architectural advantages, failed to attract platform participants and push them to provide innovative services. In addition, as a platform owner of Samsung Apps, Samsung also tried to control application developers. For example, Samsung applied control mechanisms such as tightly reviewing new applications in order to govern the entire ecosystem of Samsung Apps. According to previous studies (Merchant, 1985), controlling the outcomes such as tightly reviewing applications is an efficient platform strategy. However, Samsung failed to achieve authority to control its ecosystem. Samsung's platform services were rather controlled by its competitors such as Google. While MSC developed and operated diverse platform services, other players including Google or telecom carriers intervened in Samsung's business and tried to control MSC's platform services. This study assumes that the relational issues among players including the OS provider, carriers, manufacturers, and individual developers might be related to the failure of Samsung's platform services. Thus, this study raises the second research questions as below:

RQ 2: How did the platform governance and control mechanisms in the global smartphone industry influence Samsung's platform services?

RQ 2-1: Why did Samsung MSC's control mechanisms fail to establish the authority to control its platform ecosystem?

RQ 2-2: What external factors such as hierarchy or power discrepancies in the smartphone industry affected the failure of Samsung in launching platform services including its app market and operating systems?

Third, this study attends to the relations between the organizational culture of Samsung and its platform businesses. In particular, this research focuses on two

characteristic cultural aspects of Samsung Electronics and MSC. Similar to most Korean manufacturers or conglomerates, Samsung has a hierarchical culture. What is noteworthy is that the relations between organizations within a company are also very hierarchical. For example, divisions taking charge of smartphone devices or semi-conductors are more influential in corporate decision-making processes because their businesses are more profitable. Therefore, divisions generating less profits usually have to abide by their decisions. According to previous studies (Anderson et al., 2014; Sorensen, 2002), a hierarchical culture exerts negative influence on the ICT firms that require creative innovations. This study assumes that the hierarchical relation between Mobile Division in charge of smartphone manufacturing and MSC in charge of platform businesses might influence Samsung's smartphone platform businesses. In addition, since there were a half of manufacturing-based members from Samsung's other divisions and the rest half of software-based members from outside in MSC, the different cultural backgrounds between these two groups within an organization might also affect Samsung's platform businesses.

Second, Samsung is very famous for its micromanagement. People often define this company as Samsung for *Gwanri* (*Gwanri* is a Korean word which means management and control). This culture of managing and controlling organizational members and the working processes in detail contributed to the higher level of completion in the area of device manufacturing. However, as existing studies often insist that a more flexible culture is needed for the ICT companies (Boland & Tenkasi, 1996; Galbraith, 1994), the relationship between Samsung's micromanaging style and its platform businesses is worth exploring. In addition, since information studies assume that efficient control mechanisms are closely related to the success of platform businesses (Ballon, 2009; Manner et al., 2012), the relationship between Samsung's culture of micromanagement and its platform

business needs to be investigated thoroughly. Based on these cultural characteristics of Samsung Electronics, this study sets the third research questions as below:

RQ 3: How did the organizational culture of Samsung and MSC influence Samsung's platform businesses?

RQ 3-1: How did Samsung's hierarchical culture affect MSC's platform businesses?

RQ 3-2: How did micromanagement and tight control within Samsung influence MSC's platform businesses? How did these cultural characteristics affect Samsung's hardware and platform businesses respectively?

The following section discusses how this research will find the answers for the three research questions and related mid-level questions. This study basically explores business experiences of Samsung's MSC whose challenges were not successful. Since it failed, there does not exist detailed and meaningful data; even when data exist, it might pay much attention to the winner's position or experience rather than that of a loser. Therefore, this research conducts in-depth interviews with platform experts who once designed and operated platform services such as Samsung Apps or Bada in Samsung's MSC.

METHODS

This research is a case study which investigates Samsung's platform businesses in the global smartphone industry. According to Yin (2018), a case study is ideal when the main research questions consist of *how* questions or the research explores a *contemporary* phenomenon instead of historical events. A case study also is relevant to an *in-depth description*. This research aims to explain *how* the *contemporary* landscape of the global

smartphone industry has established. In particular, this research provides an *in-depth description* of a specific company Samsung Electronics, which justifies why this study conducts a case study.

In order to provide answers to the research questions, this study investigates Samsung's Media Solution Center and its employees. Samsung's MSC is selected for four reasons; firstly, since Samsung's MSC launched and operated its own platforms, it can show how the dominant players strategically impede the entrance of competitors in order to maintain the global oligopoly. Secondly, since Samsung has a manufacturing basis, it can also show how the power discrepancies have been formed between platform providers and complementary participants. Thirdly, since Samsung's platforms have failed in the smartphone industry, it provides comparative points between successful and unsuccessful platforms. Lastly, since Samsung has a hierarchical culture while MSC pursues a flexible organizational culture, it can provide meaningful implications on organizational culture in the ICT industry.

This study raises three major research questions: RQ 1: How did Samsung's *fast follower strategy* affect MSC's platform services? RQ 2: How did the *platform governance* and *control mechanisms* in the global smartphone industry influence Samsung's platform services? And RQ 3: How did the *organizational culture* of Samsung and MSC influence Samsung's platform businesses? In order to provide answers to these questions, this research conducts in-depth interviews with platform experts who worked for Samsung's MSC. Interview questions were designed to be mapped to the core research concepts and the research questions (see Table 2).

RQ	Concepts	Interview Questions
RQ 1	<i>Cross-side network effects</i>	<ul style="list-style-type: none"> • How did you try to attract third-party developers? Or how did you try to attract end-users for Samsung Apps? • How did Samsung try to attract software or app developers to its operating systems?
	<i>Fast follower strategy</i>	<ul style="list-style-type: none"> • Did Samsung have specific strategies that are different from those of other platforms? • People say that Samsung usually chases the leaders rather than leads the market. How do you think this strategic move influenced Samsung's platform businesses?
RQ 2	<i>Platform governance / control mechanisms</i>	<ul style="list-style-type: none"> • How did you try to control or support other participants such as app developers? How did the control of Samsung Apps impede or enhance the participation of app developers? • How did Samsung try to control or support other participants such as telecom companies or app developers?
	<i>Power discrepancies</i>	<ul style="list-style-type: none"> • How did other influential players such as Google or SKT that were also running app markets respond to the launch of Samsung Apps? • How did other players such as Google or SKT respond to the development of Samsung's operating systems?
RQ 3	<i>Hierarchy / flexibility</i>	<ul style="list-style-type: none"> • How was the working atmosphere of MSC similar with or different from your former organization? Was it more hierarchical? How did this atmosphere affect Samsung's platform businesses? • How did you feel about the working atmosphere of MSC when you work with other divisions of Samsung such as the Mobile Division?
	<i>Micromanagement</i>	<ul style="list-style-type: none"> • Have you heard about the term Samsung for <i>Gwanri</i>? How do you think this organizational characteristic of micromanaging affected Samsung's platform businesses?

Table 2: Research Questions, Concepts & Interview Questions

The first research question is related to the theoretical concepts such as the *cross-side network effects* and the *fast follower strategy*. For this research question, this study explores how Samsung tried to generate cross-side network effects and build an ecosystem around its platforms. Interview questions related to this concept cross-side network effects include: 1) *How did you try to attract third-party developers? Or how did you try to attract*

end-users for Samsung Apps? Or 2) How did Samsung try to attract software or app developers to its operating systems? These interview questions were set to ask the interviewees to discuss how Samsung tried to increase the number of either app developers or users, which is the precondition for generating cross-side network effects.

In addition, this research question inquires how Samsung's fast follower strategy affected its platform businesses. By interviewing the participants who were in charge of Samsung's platform services, this study expects to reveal more comprehensive findings about platform management. Interview questions that are related to this concept of the fast follower strategy include: *Did Samsung have specific strategies that are different from those of other platforms?* With this interview question, this research expects the interviewees to discuss whether Samsung adopted the fast follower strategy for MSC's platform services and how Samsung's strategies affected its platform services.

The second research question is associated with the core concepts of this research including platform governance, control mechanisms, and power discrepancies. For this question, this study examines how Samsung designed its platform governance, and why it failed to control platform participants. It also explores how the relational issues or power discrepancies in the Android ecosystem influenced Samsung's platform services. By interviewing Samsung's former or present employees who designed, developed or operated its platform services, this study expects to find the internal and external reasons for Samsung's failure of successfully launching and operating its platform services. Interview questions linked to Samsung's platform governance and control mechanisms include: *How did you try to control or support other participants such as app developers? And how did the control of Samsung Apps (e.g., app review process) impede or enhance the participation of app developers?* With these questions, this research expects the interviewees to describe how Samsung could not achieve authority to control platform

participants or whether Samsung's control mechanisms were appropriate for controlling the platform ecosystem.

Interview questions that are related to the relational issues or power discrepancies in the Android ecosystem include: 1) *How did other influential players such as Google or SKT that were also running app markets respond to the launch of Samsung Apps?* And 2) *How did other players such as Google or SKT respond to the development of Samsung's operating systems?* With these interview questions, this study expects the interviewees to discuss how other players such as Google intervened in Samsung's platform business or how their interventions or control practices are problematic.

The third research question is related to the concepts of organizational culture including hierarchy, flexibility, or micromanagement and their effects on platform businesses. This study explores the organizational culture of Samsung's MSC by investigating two different groups of employees; one who came from Samsung's other divisions and the other from software companies. These interviews will reveal how Samsung's hierarchical culture as a manufacturer influenced its platform businesses and how it conflicted with a more flexible culture brought by employees from outside. Interview questions on the organizational hierarchy or flexibility include: *How did you feel about the working atmosphere of MSC when you work with other divisions of Samsung such as the Mobile Division?* And *How did this atmosphere affect MSC's businesses?* These questions are designed to encourage the interviewees to discuss how Samsung's hierarchical culture affected MSC's flexible culture and its platform business.

Moreover, these interviews will find how Samsung's emblematic cultural values such as micromanagement affected MSC's platform performance and related values such as creativity or innovativeness. Interview questions related to micromanagement include: *Have you heard about the term 'Samsung for Gwanri' (Samsung for management)? How*

do you think this organizational characteristic of micromanaging affected Samsung's platform businesses? This research inquires these questions to the interviewees in order to explore how Samsung's cultural aspects as a manufacturer (e.g., tightly controlling the work processes) influenced MSC's platform business which requires creativity or innovativeness that would be enhanced by a flexible culture.

In-depth Interviews

In order to answer the research questions, this research conducted in-depth interviews with 25 former or present employees of Samsung's MSC. The former or present employees of Samsung's MSC were chosen as research subjects for three reasons: they are platform experts who planned Samsung's platform strategies, or launched and operated Samsung's platform services; they had interacted directly with global platform providers such as Google as well as other platform participants such as telecom carriers or third-party developers to discuss how to cooperate for specific handset models; and they are well aware of the organizational culture and structure of Samsung and MSC. In other words, research subjects will provide meaningful insights of the insiders from three different research perspectives mentioned above.

In terms of the size of research sample, this research continued conducting interviews until data saturation was reached; that is to say, after 25 interviews, this research confirmed there was no significant new information that emerged. Interview participants were basically recruited by making the best use of the researcher's social network. Since the researcher had worked for Samsung's MSC for two years, the initial recruitment was conducted within the personal network of the researcher. Then, a snowball sampling was combined when someone in the interviewees' social networks was expected to provide meaningful data for this research. The interview sample was recruited based on 1) their

former roles in MSC, 2) career origins (e.g., employees from different divisions of Samsung or employees from outside the company), and 3) tenure in MSC.

In terms of roles, the sample is limited to the former or present employees who were expertized in the platform businesses and were directly involved in the development or operation of smartphone platform businesses such as operating systems, application markets or smartphone applications, which might help revealing more credible and meaningful findings. Though MSC covered a wide range of software areas such as online games or smart TV applications, this research focuses on platform businesses in the smartphone industry in order not to be distracted from the research topic. In terms of origins, those who spent their entire carrier in Samsung and those who came from the software industry were recruited in similar proportions. Since this research tries to find structural or cultural differences between hardware manufacturers and software providers, listening from both sides made this study more balanced. Lastly, in order to gather more credible data, this research interviewed the participants who had worked for Samsung's MSC for more than one year. It might be relatively difficult to expect insightful responses from employees with one year or less experience because it takes time to learn the business mechanisms or the organizational culture.

Among 25 interviewees, 13 employees were from software or media companies while 12 began their careers in Samsung Electronics. 15 interviewees were male and ten were female. At the point of the interviews, the average age of the interviewees was 38.7; the youngest interviewee was 31 and the oldest was 45. This means that they were in their early 30s on average when they worked for MSC. The interviewees worked in Samsung's MSC for 4.4 years on average. Their positions in MSC varied from rank-and-file employees to senior managers; 11 interviewees were managers while six were assistant managers. The roles of the interviewees in MSC include: service planning, UX designing,

software development, service operation, and marketing. In common, their roles were closely related to smartphone platforms or applications.

The fact that the researcher once was a coworker of the interviewees provides a couple of research constraints. First, interviewer's personal relationship with the interviewees might prevent them from revealing private issues. In addition, researcher's prior experiences in the company might create bias affecting the processes of interviewing the research participants or analyzing the interview data. Nevertheless, the benefits compensate for these limitations. In many cases, the access to the insiders of a specific company or industry is very limited because they are usually reluctant to reveal somewhat confidential corporate experiences. In addition, if a research investigates a failure of specific organizations, recruiting interviewees and collecting significant data will become even more demanding. In this research, however, the researcher's former job experience in the same organization helped utilizing the former relations as a coworker in recruiting the interview participants. Since Samsung's MSC is already dissolved, the interviewees could participate in the interviews with less emotional burdens. In addition, the shared experiences between the interviewer and the interviewees enabled the interviews to be more thoroughly conducted.

Individual interviews were conducted instead of focus group interviews since this research explores somewhat subtle and sensitive corporate issues. Individual interviews encouraged the interview participants to discuss sensitive topics (e.g., corporate strategies) with less pressure. For instance, the interviewees might feel more comfortable about delineating insiders' stories if they do not have to disclose their identities to their colleagues. Since the research author who conducted the interviews is a former colleague of the interviewees, the interviewees might easily share their ideas because they might assume that their ideas or experiences are shared by the interviewer.

This research used a semi-structured interview method which might allow the interview participants to be more at their pace. Since the interviewer knows the major roles of the interviewees in MSC, using a semi-structured interview questions helped the interviewer be more flexible and provide more appropriate questions for the interviewees. This research made a list of major questions which is important in order not to stray too far from the research subject. However, if the interviewees felt uncomfortable with specific questions or topics, the interviewer moved the conversation away from the topics. Also, when the interviewees provided unexpected, but meaningful ideas, the interviewer gladly listened to the interviewees, anticipating new insights to be discovered. For the protection and the privacy of the interview participants, the interviewer explained the rights of the interviewees or the duties of the interviewer before the interviews as the Institutional Review Board of the University of Texas at Austin required. For the protection of interviewees' anonymity, this research referred to the interview participants by alphabet symbols.

The interviews were conducted between the second half of 2018 and the first half of 2009 mainly in South Korea. After conducting 23 face-to-face interviews in Korea, the research author interviewed two more participants over Skype in order to confirm the findings. The interview location varied; in deciding interview places, the interviewee's preference was considered first since how they feel comfortable is directly related to the extent of eliciting authentic responses from them. If there were no preference from the interviewees, a coffee shop around the interviewee's living circle was selected. Since the interviews were semi-structured, the length of each interview relied on how much the interview participants were willing to offer. However, at the most, the interviews took less than two hours and the interviews lasted for approximately 60 minutes on average. The interviews were audio-recorded and transcribed line by line for the analysis. For

confidentiality, the audio files and the transcripts were stored only in a specific folder of the researcher's laptop which is locked with a password. When this research is completed, the audio files and the transcripts will be destroyed.

The interview questions (see the Appendix 1) consist of three major parts: 1) the failed challenge of launching Samsung Apps and building an ecosystem around it, 2) the failed challenge of expanding Samsung's operating systems, and 3) organizational culture of Samsung's MSC. The first two parts of the questions are designed to understand how the interviewees developed, launched and operated Samsung's platform services such as Samsung Apps or Bada and which internal or external factors influenced its platform performance. The third part of the questions inquire about how the cultural characteristics of Samsung's MSC influenced their work experiences and how the organization with a manufacturing basis tried to create innovative platform services. The findings from existing studies on organizational culture which have explored the effects of organizational culture on business performances were considered in order to interpret the interview data for this part.

The data of the interviews were analyzed over seven steps. First, the comments from each interview were classified into groups by relevant research concepts. For instance, when an interviewee mentioned that Samsung established MSC and began to develop Samsung Apps in order to follow Apple's iPhones, I classified this comment into the concept of the fast follower strategy. This data classification was conducted after each interview because I needed to decide whether I would conduct more interviews. If there appeared newly emerged information, more interviews were conducted. Second, these groups with comments were assigned to the relevant research questions. For example, the comment mentioned earlier was assigned to RQ 1 on Samsung's platform strategies, especially RQ 1-1 which asks about Samsung's fast follower strategy and the performance

of Samsung Apps. Third, the interview comments under each question were analyzed based on the appropriate theories or concepts. In this step, the interview data under each question were compared and analyzed with relevant concepts or theories in order to reveal what they mean. For example, the comments on Samsung's fast follower strategy were analyzed to explain how Samsung adopted this strategy for its platforms and how this strategy was related to the cross-side network effect which is one of the core platform strategies. Fourth, on the basis of the amount of repeated comments, this research identified the significance of the findings from each group. For instance, since most interviewees mentioned the relations between Samsung's fast follower strategy and its platform services, this information was identified as one of the major research findings. Fifth, based on the significance, the responses were organized for each research question and the arguments of this research were elaborated accordingly. Basically, this was the process of summarizing the findings and clarifying the arguments of this research. Sixth, the findings of this study were compared to the results of the previous studies (e.g., if Samsung's hierarchical culture really hampered MSC to create a more flexible atmosphere) in order to find if the findings support or reject the existing studies; or if there are any original findings. Lastly, the implications and the limitations of this research were identified.

The interview method of this research is significant for two reasons. Firstly, by interviewing industry experts who are rarely accessible, this research revealed the authentic processes of the interactions among actual players. These processes revealed somewhat veiled aspects within the industry or the organization, which could not be explored by the press or the studies which pay attention only to the overt outcomes or the statistical numbers from formal documents. In addition, by selecting the members of a failed organization as a research subject and listening to the voices of the failures, this research was able to approach the situation and the issues of the global platform industry not from

the angle of winners (e.g., dominant OS providers), but from a more critical viewpoint. Since this research interviewed the employees of one specific organization, the findings might not be easily generalizable. However, as a case study, the current study aims to reveal insightful socio-cultural implications rather than generalizing the findings.

CHAPTER OUTLINES

In the first chapter, this dissertation delineates how the global smartphone industry has been formed and discusses why the present formation is problematic. In particular, this chapter conceptualizes how power discrepancies between software and hardware makers were established in the global ICT industry or in the smartphone industry and how the smartphone platform businesses became an oligopoly market occupied by two ICT conglomerates such as Google and Apple. In addition, this chapter shares ideas of how this research contributes to previous studies on platforms, and provides research significance on the basis of this goal.

The second chapter reviews previous relevant and prominent literature on platform businesses and organizations. Literature review consists of four sections such as *Platform Governance: Mechanisms for Control*, *Cross-side Network Effects*, *The Fast Follower Strategy* and *Organizational Culture: Hierarchy, Control, and Performance*. Each section defines and explains related theories or concepts and provides major findings and relevant examples. Moreover, this chapter discusses the limits or less-developed areas of previous literature and sets research questions based on these limitations of existing studies. In this chapter, this research also describes the in-depth interview method and explains how this study progressed to answer the research questions. In addition, this chapter addresses how the interview participants were recruited, how the interviews were processed, how the interview data were analyzed and how the textual analysis supports the interview data.

The third chapter seeks to better understand how Samsung's platform strategies affected its platform performance. This chapter focuses on Samsung's strategy of fast following and investigates how this strategy failed to generate cross-side network effects that are considered a critical precondition to establish a successful platform ecosystem. In addition, this chapter discusses how Samsung's platform strategies resulted in the growth of Google's platforms and the Android ecosystem.

The fourth chapter turns attention to the control mechanisms in the Android ecosystem. In particular, this chapter examines how Samsung could not obtain the authority to control its platform ecosystem and how the OS provider Google controlled platform participants such as Samsung Electronics in diverse official and unofficial ways. This chapter also investigates how Google's control mechanisms were used to exacerbate the competitiveness of the competing platforms within the same ecosystem rather than encouraging their participant.

The fifth chapter reveals how the organizational culture of a manufacturing-based hardware company (e.g., Samsung Electronics) influences its entrance to the platform industry. While platform businesses are reported to require a more flexible organizational culture which enhances innovations or creativity, Korean manufacturing companies such as Samsung are famous for its hierarchical culture. Therefore, the current study investigates how the cultural features of an organization affect the organizational members and the company. Expanding into business areas that are unfamiliar offers a special case with its own qualities. In particular, Samsung's MSC provides an interesting case study because this specific organization was composed of a half of manufacturing-based employees and the other half of software- or media-based employees. This study figures out how two conflicting cultures of different subcultural groups affect each other and the whole organization. In addition, this study examines how Samsung's representative cultural

identities, such as micromanagement or tight control, are associated with its platform performance.

The discussion chapter tries to relate the findings of previous chapters to those of previous studies on platforms. As mentioned in the introduction chapter, the characteristics of platform businesses such as modularization or standardization are closely related to the flexibility which brings about the division between software and hardware and the hierarchical relationship between these two. This research assumes that the theoretical concepts such as control mechanisms or cross-side network effects might also provide good frameworks to analyze the platform businesses in the global smartphone industry from the political economist perspective. While previous studies from the political economy perspective provided more macroscopic views on the global platform industry, they did not offer enough evidence on the detailed experiences or the actual strategies in the platform businesses. By providing diverse and more detailed data and perspectives, this research adds a more critical view to information studies and empirical evidence to a political economy interpretation.

Chapter 3: Platform Management: Samsung's Fast Follower Strategy & Network Effects

The social and industrial influences of platforms are increasing dramatically all over the world. In the contemporary society where the use of smartphones has become a huge part of our everyday lives, smartphone platforms such as operating systems or app markets have heavily influenced the global IT industry at large. Nowadays, corporations rarely think about releasing their services or products without launching smartphone applications, and using these apps with smartphones has become one of people's daily routines. This study, therefore, explores how the recent landscape of global smartphone platform businesses has formed and how this is socially or economically meaningful. In particular, this research investigates how global smartphone manufacturer Samsung Electronics entered the smartphone platform businesses and how it performed in the global smartphone industry.

This research analyzed 1) Samsung's internal platform management (e.g., Samsung's hardware and platform strategies), 2) Samsung's external platform relations (e.g., Samsung's interactions with other players in the global smartphone industry), and 3) Samsung's organizational culture (e.g., organizational hierarchy and control). Based on analyzing 25 in-depth interviews, described in the *Methods* section of chapter 2, with Samsung's former or present employees who dealt with platform businesses, this chapter examines how Samsung's platform strategies affected its platform performance, focusing on the cases of Samsung's application market and operating systems, and how these management strategies are related to the contours of the global smartphone industry. In addition, this chapter provides answers to the first research questions: RQ 1: How did Samsung's fast follower strategy affect MSC's platform services? RQ 1-1: How did Samsung's MSC fail to generate network effects for its operating systems and establish a

successful ecosystem with its wide range of devices and substantial user base? And RQ 1-2: How did Samsung's MSC fail to generate network effects for its app market and establish a successful ecosystem with its substantial user base?

SAMSUNG'S FASTEST FOLLOWER STRATEGY AND SMARTPHONE PLATFORM BUSINESS

Samsung Electronics has been considered a global manufacturing conglomerate that executed a fast follower strategy very successfully for a long time (Lee, 2017; Min, 2018; Wunker, 2012). According to critics, Samsung always preferred being a rapid and efficient follower to being an innovative and creative market leader (Chang, 2011). This point was affirmed in my interviews, and most of the interview participants of this research mentioned that Samsung's strategic moves as a fast follower hugely influenced its smartphone platform businesses either directly or indirectly. This is the reason that we need to understand what a fast follower strategy means in order to understand Samsung's smartphone platform strategies.

The strategy of being a fast follower was considered a core factor that helped Samsung maintain its global leadership as a hardware manufacturing company (Chang, 2011; Lee, 2017; Wunker, 2012). In fact, many Asian or Korean companies have achieved success with this strategic move. For instance, Korean automobile company, Hyundai Motor Company used to follow Japanese makers and has become a global conglomerate (Jo, Jeong, & Kim, 2016). However, among these companies, Samsung is mentioned most frequently as a classic example of the success of a fast follower strategy. While the interviewees agreed with the positive influence of this strategy on Samsung's manufacturing businesses, the so-called *blue-blooded* interviewees had more positive perceptions associated with being a fast follower.

By interviewing Samsung's former or present employees who were in charge of the establishment of Samsung's platform and software management strategies in Media Solution Center (MSC), this research confirms that Samsung's fast follower strategy was entirely applied to its smartphone businesses, and this strategy had great effect on its smartphone platform management. In a sense, this study found that Samsung's fast follower strategy actually resulted in the birth of the Media Solution Center.

In 2007, Apple released its first iPhone and this iconic phone soon came into the global spotlight (Silver, 2018). According to interviewee S, when Samsung witnessed the increasing popularity of iPhones and Apple's outstanding landing on Korean market in 2009, Samsung realized that it might lose its opportunity in the growing smartphone market and so tried to establish strategies for chasing Apple faster than any other competitors. As the second largest feature phone maker, Samsung actively responded to the emerging smartphone market even though the global leading manufacturer, Nokia, believed that it would maintain its global leadership for a long time with its substantial feature phone market and did not hurry to prepare for the age of smartphones (Wunker, 2011).

Samsung did not hesitate. Observing Apple's success and expecting its landing on the Korean market, Samsung saw the need to be prepared and thus founded Media Solution Center in 2008 in order to develop software and platform services for its smart devices. MSC was a stand-alone division that did not belong to a specific division such as the Mobile Communications or Visual Display (see Figure 2). Though it was structurally categorized as a part of the business unit, IT & Mobile Communications, MSC was in charge of software or content services for all of Samsung's hardware devices including smartphones, smart television, wearables and home appliances (Cho, 2009). According to the seven interview participants who worked for MSC from the beginning of its operation,

the main goal of MSC at that time was to prevent Apple’s iPhone from occupying the entire global smartphone industry and to share as much market as possible as the second runner.

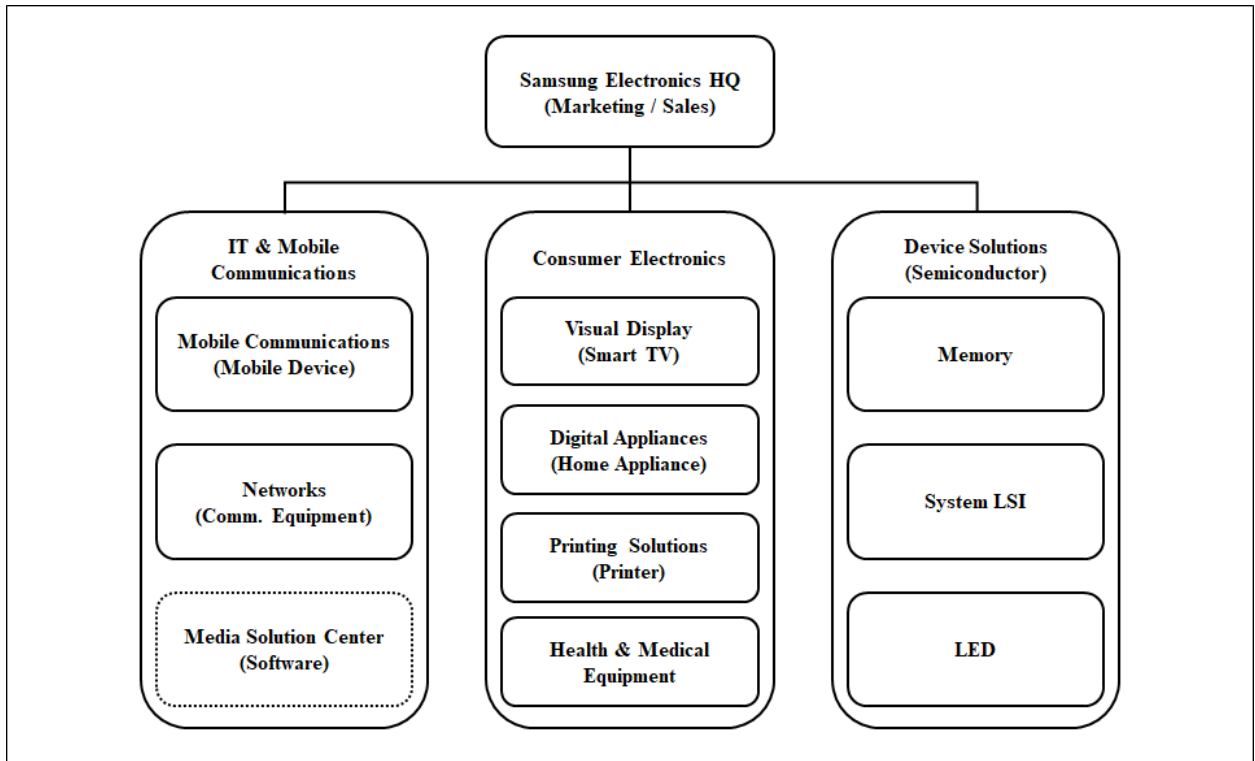


Figure 2: Organizational Chart of Samsung Electronics (Source: Samsung Electronics, 2014)

The management of Samsung and MSC believed that Samsung might be able to grab an opportunity to lead the smartphone industry someday if it landed safely as a second mover. In order to be the fastest follower, MSC organized a temporary team named the *Task Force for responding to the iPhone* (here in after, *iPhone TF*) and began to make strategies for chasing Apple. Interviewee C described how Samsung prepared and responded at that time as below:

As you might remember, Apple released its first iPhone in 2007. Then, it became more and more popular. Samsung decided to join this trend of shifting from feature phones to smartphones. So, it established MSC right away and began to prepare software and contents. ... You might remember. At that time, we established iPhone TF. The mission of this TF was chasing Apple's iPhone. Since Apple was very strong in its services and contents, we formed this TF with so-called content and service experts and began to develop services and platforms as well.

According to the interviewees, MSC and its TF executed diverse strategies in order to chase Apple successfully. Among them, two major strategies were 1) to form a partnership with global OS provider Google, and 2) to source or imitate iPhone App Store's popular applications for Samsung's app market, Samsung Apps. Firstly, Samsung quickly achieved a partnership with Google and adopted the Android OS for the launch of its flagship models such as Galaxy S and Note series. In fact, the Galaxy series were not the first smartphones produced by Samsung Electronics. In 2008, Samsung released its first smartphone named Omnia which was equipped with Microsoft's Windows Mobile OS. According to interviewee W, Samsung felt a crisis because the market's reaction to iPhone was explosive. Therefore, Samsung formed a partnership with Microsoft and developed its first smartphone in haste. Though launching Omnia was Samsung's first attempt to capture the early smartphone market, the market's reaction to this device was relatively tepid. Many interviewees agreed that both Samsung's hardware and Microsoft's operating system were not prepared yet and were at a very unstable stage. Interviewee C described this unsuccessful relationship between Samsung and Microsoft as below:

Do you remember? Actually, Samsung released its first smartphone, Omnia, in 2008. Galaxy S was not our first smartphone. We adopted Windows Mobile OS but the phone was a total mess. The OS was so-so. No, actually it was less than so-so. So was the device. It was lagging all the time and the touch screen was so dull. Anyway, it was not usable. I myself was a user of the phone and I got stressed whenever I used it. Later, Samsung also developed this phone with Nokia's Symbian OS. But these phones were so inferior to Apple's iPhone. So, they all failed in the market.

After the failure of its first Windows Mobile smartphone, Samsung realized that it needed to develop its own operating system that would be suited to its devices in the medium to longer term. Therefore, Samsung's MSC began to develop its first operating system, Bada, for a range of Samsung's smart devices. According to interviewee H who was a former software developer in Samsung and transferred to MSC, though the development of Bada stemmed from the failure of Samsung's smartphone, developing Bada was a company-wide project and Samsung aimed to apply this operating system not only to smartphones but also to Samsung's diverse hardware devices such as smart televisions, wearables or other electronic devices. Interviewee H stated that this operating system was relatively heavy and the development proceeded at a glacial pace because MSC had to consider the characteristics of various devices in preparation for the age of the Internet of things and home automation; MSC had to comply with the requests from diverse divisions producing each device, and also had to consider providing a coherent user experience throughout Samsung's devices. This plan of developing one comprehensive operating system was a long way from Samsung's fast follower strategy and dragged out the company's response.

Meanwhile, according to interviewee B, Samsung's Mobile Division, which was urgently chasing Apple smartphones, insisted that Samsung should adopt Google's Android instead of Bada for its flagship Galaxy models. Even in those days, Samsung's smartphone business was considered one of two future growth engines with its semiconductor business, and there was a company-wide consensus that Samsung would survive in the global smartphone industry only if it catches up with the first mover, Apple. Since the whole company had a compulsive need to keep up with Apple for its survival, Samsung, rather than executing its long-term strategy of applying its own comprehensive operating system to its main devices, achieved a partnership with Google which would provide a

more stable, user-friendly, and smartphone-oriented operating system in order to be the fastest follower in the global smartphone hardware industry. Interviewee X referred to that moment when Samsung decided to cooperate with Google as below:

Though Samsung was developing Bada OS, the development had been slow. Also, we didn't even have confidence in the performance of Bada. In addition, we had to respond to the requests from other divisions. The requests from Mobile Division, Visual Display, and Consumer Electronics were all different. Responding to these requests was not easy. But it was the original goal of Samsung's OS. Embracing all of Samsung's devices. Since Samsung had a range of devices, it wanted to provide a coherent experience to customers with Samsung's own OS. However, at that time, Samsung was in a hurry. Actually, Mobile Division was in a hurry. Its first smartphone Omnia was a failure. They could not rely on Win Mobile or Symbian anymore. Bada did not seem to be prepared. Android was very friendly to device makers in terms of platform partnership policies. Its openness was very high. Its performance seemed to be at least a bit better than other operating systems. Samsung only wanted to chase Apple at that time. Without thinking carefully, it immediately went with Google before the whole market would be taken by Apple.

Samsung maintained its keynote as a fast follower in the platform businesses. In order to succeed in the smartphone industry, instead of constantly developing, launching, and improving its own operating system in the market, Samsung established a strategic alliance with Google, which was a potential competitor in the global smartphone platform market. Though Samsung tackled the early smartphone market with Google, aside from its flagship models adopting Android OS, MSC consistently developed Samsung's own operating system and released its first smartphone, Wave, with Bada OS in 2010. For Samsung, it was a dual strategy of chasing Apple with its Android phones and testing the marketability of its own operating system for the future.

However, the reaction of the market and users to Bada OS fell short of Samsung's expectations. According to interviewee K who was once a software developer, despite the fact that Bada OS was brought out to the market later than Apple's iOS or Google's

Android, the application development environment for Bada was inferior to that of the dominant operating systems and was not friendly to third-party developers. Above all, when Samsung first introduced its Bada OS, the oligopoly of the global OS market had already been intensifying. Due to the characteristics of platform businesses, whose value is directly connected to the number of platform participants, there was no room for Bada OS to share.

Samsung's fast follower strategy in the smartphone hardware industry ironically made it become a late mover in the operating system market. In addition, since Bada OS did not show any technological superiority in usability or stability when it was launched in an occupied market, it fell behind in the competition with Apple and Google. Software developers were also skeptical of developing applications for Bada OS because most of them did not have enough resources to allocate for a platform with no market share. Since developers did not create applications for Bada OS, consumers ignored Wave phones with Bada OS. Though almost ten years have passed since that moment, Bada's advanced version, Tizen OS, has been adopted only by a small number of less important devices, such as Samsung's wearable devices. In contrast, the Android OS has constantly been applied to Samsung's main items such as the Galaxy S series, Galaxy Note series, and Galaxy Tab series.

SAMSUNG APPS, THE FOLLOWER OF APPLE'S APP STORE

According to the interviewees who participated in the development and operation of Samsung Apps, in addition to adopting Google's Android OS for its flagship models, Samsung's second strategic move to follow Apple was to create Samsung's version of Apple App Store and to provide Apple App Store's popular applications for Samsung smartphone users. Imitating first movers is actually a classic tactic of fast followers.

According to the interviewees who were in the iPhone TF, MSC's iPhone TF considered 1) Apple's App Store and 2) diverse applications distributed via this platform as two of the major success factors which appealed to and actually attracted users.

The model of this app market where numerous individual developers can develop and sell their applications was innovative, and it resulted in the establishment of the iPhone's platform ecosystem where external participants such as app developers and users gathered dramatically and interacted with one another (Parker, Van Alstyne & Choudary, 2016). When it launched its App Store, Apple provided standards for app development such as a software development kit and an application programming interface that were very developer-friendly. Thus, developers voluntarily participated in its iOS ecosystem, which led to the formation of an organic platform ecosystem. Numerous individual or independent developers promptly seized on an early opportunity and became eager to create iPhone applications that could attract users.

With the popularity of Apple's App Store, according to the interviewees from iPhone TF, there was a consensus in MSC that Samsung also had to launch an app market and provide diverse applications for Samsung's smartphones in order to keep up with Apple. However, Samsung and MSC worried that they might miss an opportunity to be the second runner while waiting for the voluntary participations of developers and users to join and create an organic ecosystem. According to interviewee Y, the decision-makers in MSC and related divisions set up a goal of providing a specific number of iPhone's popular applications via Samsung Apps by the time Samsung released its flagship device as one of MSC's Key Performance Indicators (KPIs). However, MSC and its iPhone TF thought they might not be able to establish an organic app market ecosystem where platform participants join voluntarily by the time of the release of its target device. In Samsung, accomplishing KPIs was of paramount importance.

Therefore, MSC's iPhone TF established a fast follower strategy of creating an ecosystem around the Android-based Galaxy series and the Bada-based Wave series in an artificial but much faster way; while an organic ecosystem provides value-creating environments and encourages numerous voluntary participants to join, Samsung directly contacted a specific group of potential participants who might produce high quality applications immediately to offer value to users. According to the interviewees who were in charge of securing a specific number of applications for Samsung Apps, rather than promoting Samsung Apps to numerous external developers, iPhone TF tried to directly contact the developers of popular iPhone applications and asked them to develop their applications for Android and Bada OS. In addition, the iPhone TF even made contracts with outsourcing developers and asked them to imitate iPhone's popular apps for Samsung Apps.

According to interviewee M who participated in the project of developing Samsung Apps, this app market was originally devised to circulate smartphone applications in Samsung's Bada OS. However, Google's app store, which was preloaded in Samsung's key devices adopting the Android OS, was at its early stage and was not competitive in terms of both the quantity and the quality of applications. Therefore, Samsung could not expect Google's store to attract users and establish an organic ecosystem around it. Since Samsung had a bigger goal of chasing Apple in the hardware market, the management of Samsung and MSC decided to convert Samsung Apps for Bada OS into Android and to use its app store for Samsung's Android devices as well. Interviewee M recalled this strategic change as below:

Samsung Apps was originally developed for Bada OS. Since we had a lot of products and were developing our own OS, we thought we might have to have a distribution channel. So, we made Samsung Apps. However, though Galaxy phones were released with Android OS, there were not enough applications for

Google Play. ... [I]t was Android Market at that time. Anyway, it was really sloppy and there were not enough quality apps. But from Apple's success case, we learned that app markets and applications are very important. So, we hurriedly converted Samsung Apps for Bada to Samsung Apps for Android because conversion was much easier than making something new. Back then we didn't know Google Play would be this successful. We just thought that Google Play was not reliable. So, we launched Samsung Apps for Samsung's Android device lineup.

After launching Samsung Apps for both Android and Bada OS, MSC's iPhone TF contacted the developers of iPhone apps individually and requested them to develop their applications for Android and Bada and distribute them through Samsung Apps. According to the interviewees, MSC set a budget for encouraging these developers' participation and paid the developers who first refused Samsung's request a specific amount of money in the name of development support. In addition, the interviewees reported contacting software or service companies who were not yet providing smartphone applications including iPhone apps to ask them to develop their applications for Android and Bada OS ahead of iPhone.

According to the interviewees, their mission was not to form a healthy ecosystem or strengthen the long-term competitiveness of Samsung Apps. Their major goal was to provide as good an app market as Apple's App Store immediately. Therefore, when they met influential service providers who did not have any smartphone applications, they were willing to share the development costs if the service providers would develop and launch Android and Bada applications a few months earlier than iOS applications. According to interviewee J, Samsung sometimes encountered criticism for encouraging unfair contracts and disrupting platform markets when these practices became known to the IT communities.

In the TF, there were members whose job was to meet service providers who didn't have any smartphone apps including iPhone apps and persuade them to make Android or Bada apps first. It was confidential, but, as if a newly-released

movie goes to theaters first and then to the DVD market after some months, we met these service providers and asked them to release their apps on Samsung Apps first and upload them on other stores if they wanted after a specific period of time. Since this could cause legal issues, we had to be very careful. We opened the details of the contract conditions only if they basically agreed with our proposal through verbal communication. But there was a new employee in the TF. When he was meeting a company to make a shopping application, he opened the details of the contract even before the company agreed. That company passed our confidential documents to a broadcaster. So, it was reported on the television news and we had to be more careful since then.

In addition to interviewee J, most of the interviewees who designed or operated Samsung Apps mentioned how Samsung's MSC tried to establish an artificial ecosystem around Samsung Apps in diverse ways. Since creating an artificial ecosystem might take less time than forming an organic ecosystem, Samsung pursued that approach. Interviewee Y, who worked for a broadcasting company before MSC, described it this way:

At that time, our KPIs were always decided based on Apple's performance. 'Apple has this number of apps. So, you should have more than this for Samsung Apps.' Like this, in 2010, one of MSC's KPIs was related to the number of applications. We had to develop or source a specific number of apps. We were always like this. In 2012 when we developed Samsung Hub services such as Video Hub or Music Hub, our KPI was the number of countries. At that time, Apple's iTunes was launched in 78 countries. So, one of our KPIs was to launch Music Hub in 79 countries. If I remember correctly, there was no goal for our team which was about the qualities of our services or platforms. All of them were based on quantitative criteria and these criteria were always decided based on Apple's iPhone. Actually, our hardware was not different. When we launched a new phone, we used to have a meeting with Mobile Division. Then, the presenter always compared our new phones with iPhones in front of the executives. For example, they said Samsung phones were superior to iPhones because the camera on Galaxy phones had more pixels than that of iPhones. But users actually liked the texture or the feeling of iPhone photos much more than Samsung cameras. Numbers do not tell everything. ... [T]he management pushed quantitative criteria for Samsung Apps and we had to provide a number of applications on Samsung Apps. But the thing is there were not many users. So, developers didn't really want to develop applications and provide them for Samsung Apps. Then, we began to directly source popular applications for Samsung Apps because we thought apps might attract users to Samsung phones. We met service providers or content providers and asked them to distribute their applications through Samsung Apps.

Though it was an artificial way of building an ecosystem in the sense of not having known demand, Samsung's strategy was efficient in chasing Apple at the early stage of the global smartphone market. With this strategy, Samsung Apps could become competitive to some extent in terms of the quantity and quality of applications. In addition, interviewees believed that this quantitative and qualitative assortment of applications contributed to the early performance of Galaxy phones. However, the business model of Samsung Apps was far from ideal. An organic platform is one which creates and increases the value of a platform ecosystem through voluntary participations and interactions among platform participants. Samsung's strategy was rather similar to the traditional manufacturing or typical pipeline model which inputs cost in order to produce goods and services, with the disadvantage of no known returns to app developers since demand was unclear.

This strategy of constructing an artificial ecosystem was not always successful. In spite of these development suggestions providing financial supports, many developers refused to develop applications for Samsung Apps. In the manufacturing industry, if a manufacturer contracts with an appropriate outsourcing company and pays, it could easily produce commodities. However, smartphone platform businesses were totally different from manufacturing businesses. In platform businesses, numerous voluntary participations from a range of external producers are much more valuable than contracting with a small number of superior developers. Interviewees mentioned that Samsung approached its platform businesses as it produced feature phones or other hardware devices without careful understanding or consideration of the attributes of software or platform services. Interview K, who is now working for a software company, criticized Samsung's approach to its platform services.

Samsung never understood how platforms work. We just offered money and asked them to develop applications for us. When developers rejected our requests

because of the shortage of manpower for development, we said that we would provide a year's salary for hiring a developer. But this approach rarely worked. Services are totally different from manufacturing. In manufacturing, launching products is the end of the process. However, for services, launching is the beginning. They have to maintain and improve their services throughout the lifespan of the services. This process constantly costs money. Paying for the development is not a big deal. Then, after one year, after consuming all the money from Samsung, should they close their services in Samsung Apps? Should they fire the developer they hired with Samsung's money? In particular, making applications for iOS was the first option for developers. And even when they make Android apps, Google Play and Samsung Apps provided different development kits and APIs. Even though Samsung pays for the development, they had to spend more and more of their resources when they improved or updated their applications. Since most developers at that time were very small, they could not and also did not want to develop an additional app for Samsung Apps.

In particular, according to the interviewees, more developers refused to develop applications for Samsung's own operating system, Bada. Since Samsung adopted Android OS for its major device line-up, developers could not expect any merit or potential in developing applications for Bada OS. While developers could expect advertising sales or in-app purchases in the Android ecosystem with a substantial user base, they could not anticipate these kinds of financial rewards in the Bada ecosystem. MSC's management thought that developers would join in the ecosystem of Bada OS if Samsung supported their app development. However, according to the interviewees who were in charge of the operation of Samsung Apps for Bada, it never happened. Interviewees mentioned that it was also because Samsung adhered to its traditional way of manufacturing hardware devices without considering the lifespans or properties of software or applications. Interviewee D delineated how Samsung approached its platform business as follows:

You know. Kakao Talk is everyone's application. In Korea, there's no one who does not use this mobile messenger. The management, of course, asked us to source Kakao Talk for Bada because no one would buy Wave phones if they cannot use Kakao Talk. So, we met Kakao Talk several times and persuaded them to develop their application for Bada. Kakao Talk is now an IT giant, but it was very small and there were not that many developers. ... [T]hey said no without

consideration. We were a bit surprised because we said we would provide a chunk of money since it was one of our top priorities. They asked us back if we would pay monthly because there might be maintenance costs every month. Samsung never thought about the operation of services after the initial launch of them. ... [S]ince people say app markets are important, Samsung jumped in. However, people in Samsung never understood how a platform or an app market works, or how an application works. Actually, even as Samsung adopted Android for its flagship models, the fate of Bada was decided. We didn't know that Bada would lose its value or potential immediately with the partnership between Google and Samsung.

After all, Samsung's cost of cooperating with Android was the loss of competitiveness of Bada OS. In order to solve this problem of app sourcing, Samsung's MSC took a shortcut rather than strengthening the competitiveness of Bada and Samsung Apps by building an organic ecosystem. This shortcut was also a part of Samsung's fast follower strategy. According to the interviewees, when the developers of iPhone's popular applications did not intend to develop applications for Android or Bada, Samsung's MSC asked a couple of bigger third-party developers, called multiple content providers (MCPs) which were Samsung's former software outsourcing developers, to develop functionally similar applications for Android and Bada, and upload them on Samsung Apps. Since these third-party developers used to develop software or applications constantly for Samsung's feature phones, the portion of their revenue from Samsung was very high, which made them hard to refuse Samsung's development requests. So, these MCPs benchmarked iPhone apps and developed functionally similar apps for Samsung Apps for Bada and Android OS. One of the interviewees who was in charge of MCPs described this process as below:

There was a very popular iPhone application named Seoul Bus. This app showed the real-time locations of buses and notified the expected arrival time of each bus. At that time, this app was convenient and many iPhone users who used public transportation used this application. Anyway, our job at that time was finding these apps, contacting the developers and asking them to convert them into Android or Bada. So, we contacted the developer of this app and found he was a

high schooler. He was a senior and he said he could not make apps anymore because he had to prepare the college entrance exam. So, we asked an MCP to make a similar app to Seoul Bus. MCPs were relatively large third-party developers who have usually worked for Samsung. When we handed over a list of apps, they made these apps very fast, and then we paid. It was a turn key base contract. Anyway, an MCP made a very similar public transportation application for Samsung Apps. Since there was no big difference in terms of their functions, users liked it and downloaded quite a lot.

According to the interviewees, these MCPs played two major roles for the quantitative and qualitative growth of Samsung Apps. Firstly, as already mentioned, MCPs developed applications functionally similar to popular iPhone applications when MSC failed to persuade the individual developers to make applications for Android or Bada. When app developers rejected Samsung's requests for app development, Samsung asked these MCPs to develop similar applications. Then, MCPs promptly produced alternative applications. Secondly, MCPs also contributed to the quantitative growth of Samsung Apps. For example, when Samsung wanted to increase the number of quality applications, Samsung made contracts with these MCPs which specified the number of applications that should be developed within a specific period of time. Then, after MCPs' proposal for app development was accepted by Samsung's MSC, they developed these applications and released them on Samsung Apps. Interviewee G mentioned how the strategy of manipulating MCPs affected the business of Samsung and Android.

I don't know. I think using MCPs to increase the volume of apps was a good idea, considering that the market for Android was so immature and there were not enough apps for Android. Also, app developers wanted to make apps for iOS, but many of them didn't really care about Android. Anyway, we could distribute applications via Samsung Apps at the early stage and we could also promote Samsung Apps when we launched a new Galaxy phone by advertising that Samsung Apps had quite a lot of applications.

Nowadays, the number of applications provided by MCPs became meaningless because of the dramatic increase of the Android app market. Nevertheless, according to the

interviewees, MSC's plan of securing applications by themselves or MCPs at the early stage of smartphones contributed both to Samsung's smartphone business and the promotion of Android and Galaxy series. In order to build an ecosystem around an app market, a platform provider needs to create positive cross-side network effects that are triggered by securing a substantial base of either producers or consumers (Parker et al., 2016). Though Samsung could not successfully construct the organic ecosystem around Samsung Apps embracing developers and users, interviewees felt that Samsung's strategy of building an artificial ecosystem resulted in the increase in user base, which had positive influences on the sales of Samsung smartphones and the competitiveness of Android platforms. Though Samsung secured a sizable user base, which is a prerequisite for a successful platform, by executing a fast follower strategy, Samsung Apps failed to gain competitive advantages as a platform. After all, Samsung's fast follower strategy surely contributed to the Android alliance, not Samsung's own platform. Android has been a leader in the smartphone industry for a decade. This research argues that Google is the main beneficiary of Samsung's fast follower strategy. Using the network effects theory, which is one of the core concepts in platform management, the rest of this chapter discusses how Samsung's fast follower strategy affected the Android ecosystem, how Google benefited from Samsung's strategic moves, and how and why Samsung's platform businesses experienced the decline in the smartphone industry.

NETWORK EFFECTS

In order for a platform to successfully establish an organic ecosystem, platform providers should create the network effects (Parker et al., 2016). In particular, in smartphone platforms such as an app market which is clearly divided into a producer's side and a user's side, creating cross-side network effects usually results in a successful

ecosystem. The cross-side network effects occur when platform providers successfully attract either external producers or users; then, those participants on one side naturally attract participants on the other side, and again it results in the increase in the other side. This process forms a virtuous cycle around the platform. For instance, when Apple provided a developer-friendly platform environment around the App Store, it prompted developers' active participation first, which resulted in the increase in users. If the number of users increases, developers could expect the increase of revenue in advertising, app sales, or in-app sales and also create new business models using the user data, which attracted more developers. This virtuous cycle is the result of positive cross-side network effects which determine the success or failure of two-sided platforms (Parker et al., 2016).

This research found that cross-side network effects clearly occurred in the case of Samsung's smartphone business. In particular, it reveals that Samsung's fast follower strategy contributed to the network effects of Google's platforms such as Android OS and Google Play. At the early stage of Android ecosystem, neither app developers nor users existed. Therefore, Google had to increase the size of one side, and it started to enlarge that of users. Google's strategy was very simple but smart. Unlike Apple, Google opened its Android OS to manufacturers. In addition, unlike Microsoft, Google mandated no loyalty to the manufacturers who allied with it. If the manufacturers agreed with Google's basic guidelines such as terms and conditions, they could adopt Android OS for their devices.

Therefore, many mobile phone manufacturers actively adopted Android OS in order to develop their smartphone devices. Then, these manufacturers tried to sell as many devices as possible to share in a substantial part of the early smartphone market. This allowed Google to create the free rider effect, which increased the user size of Android and Google Play. Samsung was the major contributor and played a huge part in the dramatic increase of the Android users. By pushing ahead with its fast follower strategy, Samsung

had soon become the largest seller of Android smartphones (see Figure 3). This means that Samsung’s strategy of chasing Apple was very successful.

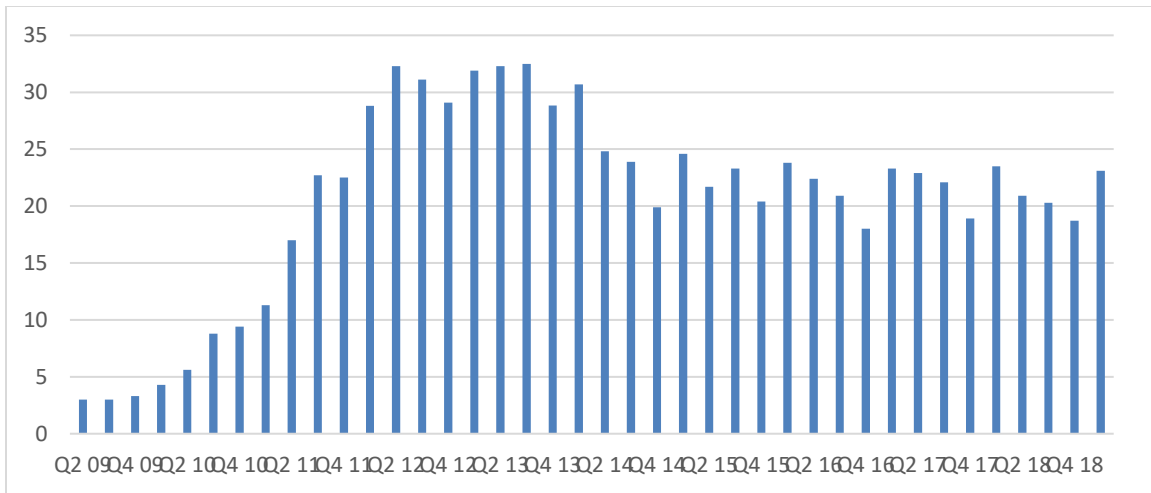


Figure 3: Samsung’s Share of Global Smartphone Shipments (Source: Statista, 2019)

Whether intended or not, the free rider effect for Google was very effective. Manufacturers were eager to increase their market share in the early smartphone market, which enabled Android OS to be one of two dominant OS providers in a short period of time. After 10 years, these two OS providers still remain the leaders in the global smartphone industry. The sales of hardware devices inevitably led to the growth of Google Play Store. Due to this free rider effect, though Samsung contributed hugely to providing early Android applications, the network effects that prompted the voluntary participation of app developers occurred around the Google Play Store instead of Samsung Apps.

Basically, even though Samsung represents the largest part of the global smartphone hardware market, the users of Samsung phones are a subset of Android users. When the Android OS had become the counterpart of Apple’s iOS, application developers could not ignore creating Android applications and distributing them via Google Play.

Therefore, the ecosystem of Android was formed around the Google Play Store instead of Samsung Apps or other manufacturers' app markets. During one interview, interviewee N described how Google's platforms took the leadership.

Back then, we thought that Samsung Apps might prosper if we provide a lot of quality applications. However, thinking about it now, it was not possible. It was all about the number of users. No matter how many phones Samsung sells, they are all Android phones. If LG sells only one Android phone, Android has one more user than Samsung. Samsung cannot have more users than Android. In other words, Google Play always has more users than Samsung Apps. Then, why do developers come to Samsung Apps? Google Play already covers 100% of Samsung phone users. They never wanted to make and maintain two different versions for Android. Though it spent money to have more quality apps in Samsung Apps during the earlier days, Samsung cannot do that forever.

Therefore, it was Google which generated the most stable and prolonged revenue in the Android ecosystem. Though the benefit of selling hardware devices was also huge, it was a one-time revenue and there also existed potential risks since manufacturers must directly invest their resources throughout the process of producing physical products¹. However, Google is creating diverse business models with various applications such as the Google Play Store or Google Maps that are preloaded in Android OS. In particular, since app markets have a business model which enables app market owners to take the largest share created by platform participants, they can generate profits with very low costs and risks. Interviewee O mentioned the high profitability of app markets:

That is the reason why platforms are special. Google opened Android and made makers use it for free, but it is a kind of a bait. Google is extracting all the benefits that come from the smartphone market and the app economy. Makers became Faust who sold their soul, I mean, OS to Google. Even telecom companies are not that influential in the smartphone industry now. Though SKT

¹Samsung has experienced risks that threatened its smartphone sales. For instance, Samsung's Galaxy Note 7 exploded several times because of battery-related issues in 2016. Due to the failure of Galaxy Note 7, Samsung's smartphone market share was the lowest (18%) in the 4th quarter of 2016 since the 2nd quarter of 2011 (Cho, 2017).

also launched its app market and promoted it aggressively, it is not really marketable now. Who cares?

To whom the platform participants of Android bestow loyalty is another issue. In other words, which of these players creates and enjoys the lock-in effect? Samsung with its fast follower strategy attracted many users in the early smartphone market and this contributed to the network effects of Google's Android ecosystem. Then, are the users of Samsung phones locked into Samsung or Android? Interviewee R comments on the issue of customer loyalty:

Also, the users of Samsung phones can buy another brand phone if the next Galaxy phone is not good enough or too expensive. There are so many Android phones in the market and there are many less expensive Chinese options that are of good quality. How about Android? They have no choice. Only two options. Android or iPhone. But there are so many barriers in shifting from Android to iOS, or vice versa. Basically, the user experience is influenced more by the operating system than by devices. ... [C]hanging an operating system is very bothersome. We need to learn how to use it and this learning process causes user inconvenience for some period of time. On the other hand, it is very natural to change phones. We buy a new phone once in two to three years. Then, we can buy the hottest model of the moment, I mean, in the same OS ecosystem. Maybe, if Huawei releases a less expensive but good quality foldable phone, many Samsung users will transfer to Huawei. Recently, Chinese phones are of good quality and Samsung is not the only maker producing high-end Android phones. Technological gap between Samsung and Chinese makers has decreased. However, the iPhone users might be reluctant to shift to Huawei phones. Users are locked in the operating systems. That is the power of the OS.

Recent surveys also reveal that users are locked into operating systems rather than hardware manufacturers (Friedman, 2018). Since users can shift to another hardware brand but still tend to adhere to a specific operating system, the developers consider the operating systems rather than hardware devices when they develop applications. Therefore, just as users, developers possess much more loyalty to operating systems than physical devices.

What would happen in the smartphone platform market from now on? Is the market oligopoly of smartphone platform businesses finalized? Would there be any opportunities

for the platform providers except for Google and Apple to increase their market shares as late entrants? Interviewees of this research gave a very skeptical response to the opportunities for new challengers. Interviewee M stated that there would be no possibility for Samsung to be a successful platform provider.

Now, the competition for operating systems is over. It's over. Period. I mean, it was already over when Google provided its OS for free to big makers and the makers joined hands with Google. Hardware? The competition never ends. Anyone can become a new leader with only a couple of state-of-the-art devices. But, anyway, it's over in OS. Platforms with less participants are not less valuable. They are just valueless. Except for Android and iOS, the global market share of other operating systems is now less than 1%. It is actually almost 0%. The OS market is fixed. And, therefore, there's no competition for app markets any more. A couple of years ago, Samsung already gave up these platform businesses.

The skepticism of the interview participants can be explained theoretically. Cross-side platforms create the ecosystem through a virtuous circle in which participants on each side attract the other. This virtuous circle increases the size of the entire network. In other words, successful platforms possess the attribute of *expandability*. This concept of expandability is what this research already assumed in the introduction chapter. As the size of a platform becomes larger, the expansion occurs faster and faster. Late entrants cannot catch up with the leading platform's speed of expansion. Therefore, there is no room for new entrants in the current market where the operating systems of two players such as Google and Apple have fully expanded and established a global oligopoly.

Chasing Apple with Google's Android was Samsung's strategic choice and it was successful in the smartphone manufacturing field. Some of the interviewees who spent their career only in Samsung tended to believe that using Samsung's platform services as marketing tools for hardware devices was a reasonable decision for the business performance of the entire company. A couple of them even mentioned that Samsung might

lose both the hardware and platform markets if it persisted with its platform businesses. However, though Samsung still maintains its global leadership in the hardware market, rather than achieving market monopoly or oligopoly, potential risks and fierce competition are always threatening Samsung. The opportunity to be a leader can move to new entrants any time in the smartphone hardware market.

CONCLUSION

By investigating Samsung's fast follower strategy and its effects on Samsung's platform and smartphone businesses, the current chapter found the answers for the first research question and its mid-level questions. To sum up, Samsung's strategy of being the fastest follower resulted in its partnership with Google, which contributed to the spread of Android but pre-empted the opportunity of Samsung's operating systems such as Bada and Tizen. Meanwhile, the conditions for generating network effects around Samsung Apps were established since Samsung sold a substantial number of its smartphones and thus secured a sizable user base. However, Samsung's successful smartphone sales ended up with the positive network effects for the Google Play Store due to the relational structure of Samsung and Google which always made the potential user base of Google Play Store larger than that of Samsung Apps.

Being the fastest follower was Samsung's major strategy in the smartphone industry and it hugely influenced not only its smartphone hardware business but also its smartphone platform businesses. In order to prevent Apple from dominating the early smartphone market and maintain its leadership in the mobile industry, Samsung actively executed a fast follower strategy. To pursue this strategy, Samsung adopted Google's Android OS for its flagship models instead of its own operating system, Bada. Samsung also converted its app market, Samsung Apps, which was originally developed for Bada

OS, into Android. Then, in order not to fall behind in the competition with Apple, Samsung tried to form an artificial ecosystem around Samsung Apps by providing development costs to third-party developers or encouraging the MCPs who had been Samsung's software outsourcers to imitate Apple's popular applications. Due to these strategic moves, Samsung could survive in the early smartphone market and maintain its leadership in the global mobile industry.

Samsung's fast follower strategy exerted negative influences on its smartphone platform businesses including its operating systems or app market. First of all, Samsung's operating system, Bada, lost its opportunity to increase its market share in the early smartphone market, and had to witness Google taking benefits created by Samsung and gaining the global leadership in the smartphone platform market. Secondly, though Samsung's app market, Samsung Apps, contributed to the spread of Android OS by providing quality applications and attracting users, Google Play Store took the initiative in the Android ecosystem. Since the potential user group of Samsung Apps always would be a subset of Google Play Store's user group, third-party developers participated in the ecosystem of Google Play Store rather than that of Samsung Apps, which created a positive network effect for Google Play Store instead of Samsung Apps. Recently, Samsung Apps still remains as Galaxy Apps. However, while this app market does not play the role of a platform which creates interactions among external producers and users; it is only used as a distribution channel for Samsung's own software or content.

This research found one thing that differentiates the Samsung case from existing studies on platforms. Multiple heterogeneous platforms within an industry are closely related and influence one another. Multiple platforms can exist in a specific industry. For instance, in the smartphone industry, there are diverse platforms including operating systems and application markets; oftentimes, individual applications such as social media

or streaming services play the role of platforms. In most cases, platform studies focus on the management or performance of a single platform. When some studies pay attention to multiple platforms, they explore homogeneous platforms (e.g., Google Play Store vs. App Store, or Android vs. iOS) in order to figure out the characteristics of successful or unsuccessful platforms (Eaton et al., 2011; Hyrynsalmi et al., 2016; Kenney & Pon, 2011; Reuver, 2011). On the other hand, this study found that operating systems hugely influence the performance of app markets in the smartphone industry. For example, by expanding Android OS, Google successfully secured its user base for Google Play Store. However, studies on the relationship among heterogeneous platforms are scarce.

In terms of the relationship among different platforms, this study revealed that the platforms on the upper layers such as operating systems tend to influence the platforms on the lower layers of the entire architecture. In other words, who controls the entire market and sets up the standards or norms of the platform businesses is not the first movers or fast followers, but the player standing on the top layer of the architecture. In addition, what decides this hierarchical relationship is the replaceability of each player. In the Android ecosystem, who can be replaced more easily, and who cannot be? Operating systems? Devices? Or individual applications? One of them which cannot be replaced might control and establish the rules of the platform governance.

In the next chapter, focusing on the case of Samsung's platform businesses in the smartphone industry, this research discusses how these power discrepancies among platform participants occur, how they affect the control mechanisms of a platform ecosystem in the smartphone industry, and how the control mechanisms of the Android ecosystem include critical implications such as free competition or fair trade.

Chapter 4: Platform Governance: Control Mechanisms in the Android Ecosystem

The previous chapter examined how Samsung's fast follower strategy affected the performance of its platforms, such as its operating systems or app market, and the entire platform ecosystem of Android OS at the early stage of the global smartphone industry. Cross-side network effects are critical factors for successful platforms. By using fast follower ideas alongside network effects, the previous chapter demonstrates how the entire platform ecosystem has formed around Google's platforms instead of those of Samsung.

Based on the findings of the previous chapter regarding the influences of Samsung's internal factors such as its platform strategies, this chapter extends the attention of this research to the influences of external factors such as Samsung's relationship and interactions with other players such as Google in the global smartphone industry on the performance of Samsung's platform businesses. By investigating how Samsung Electronics established business relations with other platform participants and interacted with them, this chapter explores how global relations within the smartphone industry influenced Samsung's platform businesses, especially its operating system, app market, and content streaming services.

In particular, this chapter examines how certain players control other players in the Android ecosystem. By looking at platform governance and control mechanisms around the Android ecosystem, this chapter provides answers for the research questions as below:

RQ 2: How did the platform governance and control mechanisms in the global smartphone industry influence Samsung's platform services?

RQ 2-1: Why did Samsung MSC's control mechanisms fail to establish the authority to control its platform ecosystem?

RQ 2-2: What external factors such as hierarchy or power discrepancies in the smartphone industry affected the failure of Samsung in launching platform services including its app market and operating systems?

Two theoretical concepts, *platform governance* and *control mechanisms*, are central to this investigation. Platform governance is defined as the ways that platform providers activate authority to encourage or control platform participants to participate in and contribute to the platform ecosystem (De Reuver & Bouwman, 2012). By designing platform policies or mechanisms and controlling the entire system, platform providers decide who participates (Tiwana et al., 2010), or how to allocate benefits (Eaton et al., 2011; Lerner et al., 2006; West, 2003).

Previous studies agree that platform owners can possess architectural advantages in the platform ecosystem, which allows their authority to control the ecosystem (Jacobides et al., 2006). Many studies insist that the authority of platform providers comes from the modularized structure of the platform ecosystem which makes core platforms irreplaceable, while also making other parts except for the cores highly replaceable (Tatsumoto, Ogawa, & Fujimoto, 2010).

For instance, while Apple opens its operating system to third-party app developers or content providers and encourages their participation, Apple strictly controls the entrance of smartphone manufacturers by closing its operating system. In return for opening its operating system to third-party developers and distributing their applications in the App Store, Apple takes approximately 30% of the participants' revenue and allocates the rest to platform participants. Though certain applications can be replaced with other applications with similar functions, third-party developers do not have many alternatives in terms of operating systems.

Existing studies identifies three different types of control mechanisms: input control, outcome control, and behavioral control (Johnson, 2011; Kirsch et al., 2002; Ouchi, 1979; Snell, 1992). For instance, Apple prevents other hardware manufacturers from entering its iOS ecosystem, which would be an example of an input control. The fact that Apple reviews applications uploaded by app developers and decides whether the applications could be distributed through Apple's App Store can be an example of an outcome control. Meanwhile, Apple's guidance, such as its UX design guidelines or its software development kit, which recommends specific ways of developing or designing iOS applications, becomes an example of behavioral control.

This research approaches Google's Android ecosystem from the perspective of control issues. It seeks to add to our understanding of platform governance and control mechanisms and provides empirical evidence on the relations and interactions between platforms and platform participants. In particular, while some studies pay more attention to the relationship between platform providers and third-party developers, studies on the relationship between platforms such as operating systems and hardware manufacturers are scarce. By interviewing Samsung's former or present employees who experienced the platform ecosystem of Android as a member of a manufacturing company, this study reveals the relationship between the platform provider, Google, and the platform participant, Samsung, and the control mechanisms around these players in the Android ecosystem.

This study found that Google's control mechanisms consist of three major approaches; firstly, Google controlled the behaviors of the whole group of platform participants and restricted their business practices by establishing norms and standards over its Android ecosystem. Second, Google unofficially controlled platform participants and prevented them from entering core areas (e.g., app stores) in the Android ecosystem.

Lastly, Google controlled the outcomes created by platform participants in order to decrease the competitiveness of their services.

ARCHITECTURAL HIERARCHY & GOOGLE'S AUTHORITY TO CONTROL THE ANDROID ECOSYSTEM

Samsung's platforms such as Samsung Apps or Bada OS had difficulty establishing efficient control mechanisms. Basically, Samsung's own operating system, Bada, as discussed in the previous chapter, lost momentum when Samsung decided to adopt Android for its flagship devices. Since there were not enough users of Bada devices, Samsung could not generate positive network effects around Bada, which made it impossible to establish an organic ecosystem. Without replaceable platform participants, Samsung could not secure authority to establish or control the Bada ecosystem. Meanwhile, according to the interviewees, since Samsung's operating systems Bada and Tizen were located out of the boundaries of Android OS, Google had no need or justification for controlling Samsung's operating systems. During the interview, interviewee C delineated the status of Samsung's operating systems:

In fact, Bada was out of Google's interest. Or, it was out of everyone's interest, I mean, including Samsung. I think only the people in MSC cared about Bada OS or Phones. Bada basically didn't have any link with Android ecosystem because it was the leader of a Bada ecosystem which did not really exist. So, Google could not control this OS. I don't know. If Bada were a competitor with some potential, Google might do something even without a justifiable reason. However, Bada or Tizen was no threat to Google at all. Actually, in addition to Google, developers, content providers, or users didn't care about Bada.

So, leaving Bada out of the discussion because it could not control or be controlled by other participants, all interviewees agreed that Google controls the entire ecosystem of Android in which a lot of powerful manufacturers such as Samsung, LG, or Huawei and countless third-party developers participate. The interviewees took the authority of Google

for granted because it is the owner of Android platform. As existing studies on platforms already found (Jacobides et al., 2006), many interviewees believed that Google could possess the authority to control the entire smartphone architecture since it is irreplaceable.

Android was almost the only option for smartphone manufacturers and one of two choices (including iOS) for app developers. However, Android had several alternatives for smartphone manufacturers or telecom companies, and third-party developers were even more replaceable. For example, in the Android ecosystem, Samsung could be replaced by other manufacturers including LG, Huawei, or HTC, while AT&T could be replaced by other carriers including Verizon, T Mobile, or Sprint; a specific application could also be selected from among the numerous Android applications (see Figure 4). Interviewees agreed that the different levels of replaceability awarded different authority to various platform participants. Interviewee M who was in charge of the designing and marketing of Samsung Apps raised an issue of authority:

Google's power is a matter of course. Think about this. Except for Google and Apple, other operating systems share less than 1% of the global market. iOS is a closed platform and Apple is vertically integrated. We cannot use iOS. Then, there is just one OS for makers or developers. Android. It's over. Game is over. What if Samsung decides not to work with Google anymore? Google might suffer, but it still has other options. How about Samsung? It might be a disaster. Apple's not going to help. Tizen? WinMo? No way. They all know this. So, other players just have to accept what Google wants or what Google decides. Google is the king in the world of Android. It is untouchable. That's how it can drive other players to its ideal directions.

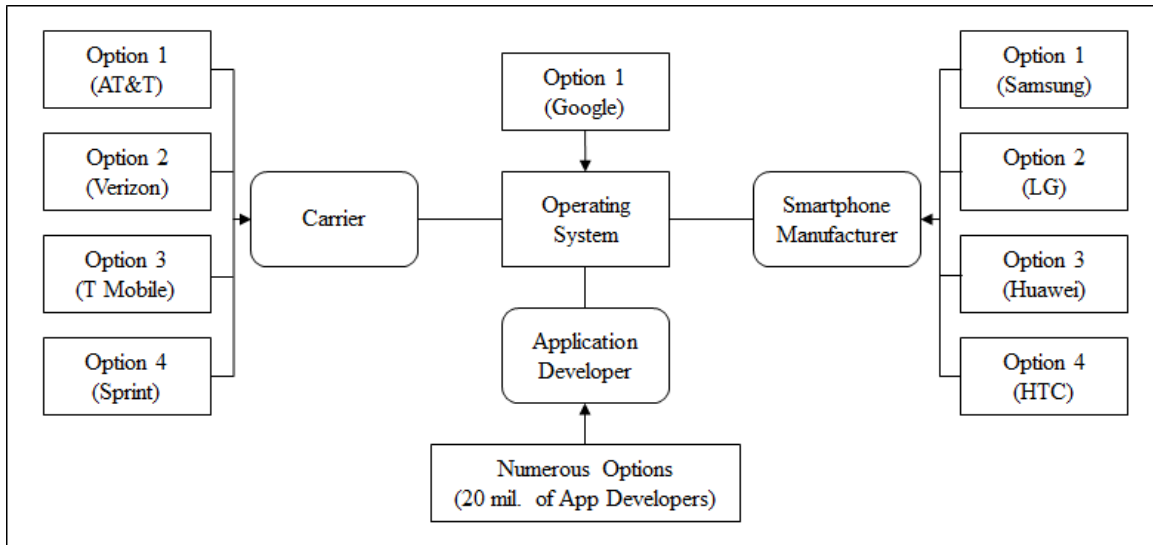


Figure 4: Basic Architecture of the Android Ecosystem

Some interviewees regarded the recent oligopoly by Android and iOS (see Figure 5) as a natural part of the process of a capitalistic competition. For instance, interviewee N analyzed that this oligopolistic status in the global OS market would be the result of the survival of the fittest. In other words, Android and iOS might be more competitive and attractive than other operating systems. However, most interviewees agreed that this issue of intensified market oligopoly cannot be understood only as a late stage of free competition. Interviewee M pointed that the current oligopoly status in the global OS market has been shaped and fixed because of a lack of appropriate policies or laws that can protect the fair competition among platform service providers.

You know what? Now, Samsung Apps is riding quite high in China. There still exist 60 to 70 app markets in China. The app markets of Baidu, Alibaba, and Tencent that are collectively called BAT are the top rankers. In addition, the markets of smartphone makers such as Xiaomi or Oppo are also very popular and competitive. Samsung Apps is also in the top ten. Competition is still cutthroat. In fact, these words, free and competition, doesn't really go well with China. China has been notorious for severe governmental regulations. In a country where we do not really expect capitalistic market logic, many app markets are still competing. Then, who would take the benefits? After all, users will be provided

with better environments and more choices. But, in capitalistic countries that ideologically pursue so-called free competition, there is no more competition. Monopoly? Oligopoly? Whatever it is, it is very ironic.

According to the interviewees, except for some countries with less capitalistic national identities, the architecture of the global smartphone industry tended to be vertically constituted, which resulted in the hierarchical relations between platform providers and platform participants.

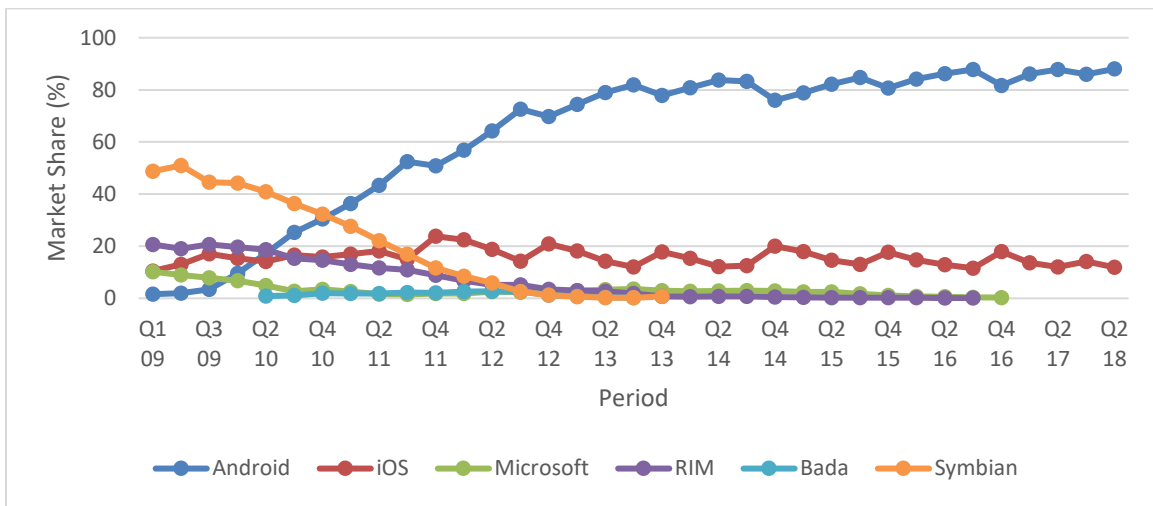


Figure 5: Global Mobile OS Market Share (Source: Statista, 2018)

Meanwhile, the interviewees mentioned that another big group in the smartphone ecosystem, third-party developers, was also in a strong hierarchical relationship only with OS provider Google, and not with telecom carriers or manufacturers. In the Android ecosystem, in addition to Google, the manufacturer, Samsung, or the telecom carrier, SKT, were also operating app markets such as Samsung Apps or T Store; as Samsung launched Samsung Apps, Korea’s largest carrier SKT also released its app market T Store and competed against Google and Samsung. Unlike other studies that revealed a hierarchical relationship between app markets and third-party app developers (Ghazawneh &

Henfridsson, 2013), neither Samsung Apps nor T Store could tightly control the app developers within its ecosystem. In a sense, a lack of controllability might occur because of the existence of a strong competitor, Google Play Store.

However, interviewee R insisted that it is because the Google Play Store is provided and supported by Google, which owns the operating system Android. Though Samsung and SKT were also providing app markets, they could not gain benefits from the emergence of a global app economy since app markets are also influenced and controlled by operating systems that are on the higher layer of the architecture and Samsung and SKT did not possess any influential operating systems. The architecture in the Android ecosystem was hierarchical and this hierarchy allowed different levels of control authority (see Figure 6). Interviewees who participated in the process of designing, launching or operating Samsung Apps agreed that it is not possible for app market providers to increase their markets without the support of strong operating systems.

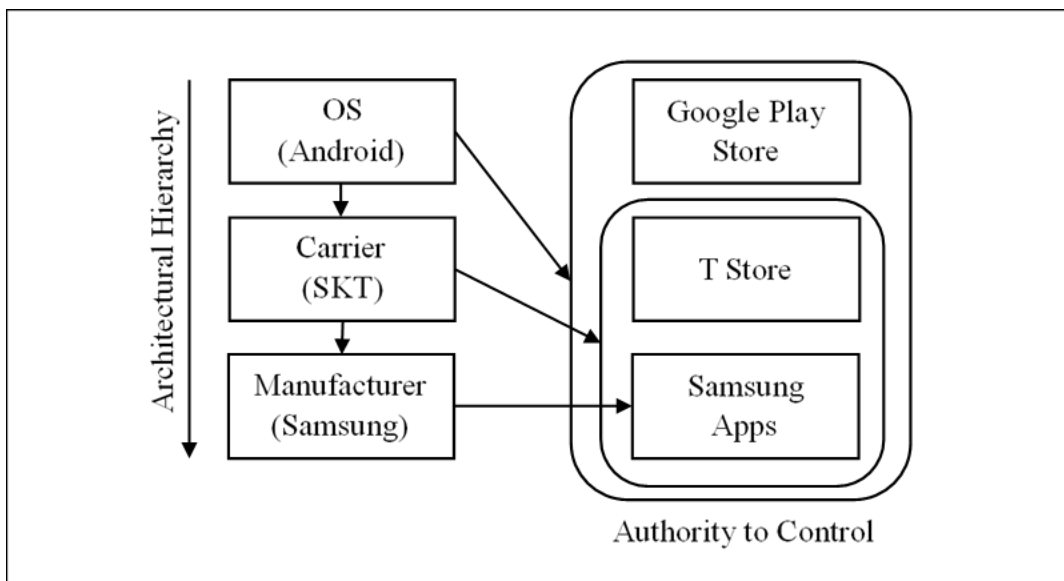


Figure 6: Architectural Hierarchy and Control Authority

Therefore, interviewees believed that the only player that can control the entire smartphone platform architecture is the OS provider, and the influence of Google as a monopolistic OS provider, except for Apple's closed OS, is undisputed. This means that no players in Google's Android ecosystem can step aside from the control of Google if they do not possess their own operating systems. According to the interviewees, by manipulating its authority as an OS provider, Google was building the entry barriers into specific areas in its ecosystem and preventing competitors from entering these areas. By doing so, Google could maintain its control over the entire ecosystem and maximize its own value. Interviewee X described Google's control in the Android ecosystem as below:

So, to some extent, we can say that Google decides or limits the role of each participant. There seems to be some areas that are more important for Google. For example, things like Google Play Store or Google Maps? Also, Chrome browser or Google Music? In fact, Apple also puts emphasis on these services. So, these might be more important platform services in the smartphone industry than others, and thus, Android OS has been provided for free in order to be widely spread and increase benefits from these platform services such as Play Store or Music. These platforms are profitable, or can collect a lot of user data. You know. Data is money now. Since Google is doing the same businesses, it restricts others' entrance into these areas in Android. For example, Google rejects applications with any kinds of app distributing functions². Mobile Chrome blocks app downloads. Also, Google asks device makers to expose its map application on the first page. After all, these apps have business potentials. So, Google tries to close its strategic areas and open the rest.

Meanwhile, interviewees pointed out that Samsung's fast follower strategy of chasing Apple resulted in the failure of Samsung's operating systems because Samsung adopted Android in order to catch up as soon as possible; therefore, Samsung could not lead or control the entire smartphone market even though it could lead the global hardware

²According to Google Play Developer Distribution Agreement, developers "may not use Google Play to distribute or make available any Product that has a purpose that facilitates the distribution of software applications and games for use on Android devices outside of Google Play (https://play.google.com/intl/ALL_us/about/developer-distribution-agreement.html)."

market for a long time. Samsung could maintain its leadership in the field of hardware manufacturing by competing against other manufacturers that were in a more horizontal relationship with Samsung. However, in the entire smartphone industry where diverse fields including manufacturing are intertwined more vertically, the hierarchical relationship among participants was very clear and thus Samsung could not control the players on the higher layers even though it has been a global leading manufacturer for decades. Actually, Samsung could not get out from under the control from the players that were on the higher layers of the architecture. Interviewee O mentioned the hierarchical relationship:

Though Samsung has been a global leading manufacturer for much more than 10 years, that doesn't allow it to control the entire manufacturing field. It doesn't work like, 'hey, I sell more, so just do as I tell you.' Samsung just has to keep competing beat win competing makers in order to defend its leadership. Samsung is facing stiff competition from Chinese manufacturers. We cannot assume that Samsung would be leading the market next year. Also, we cannot control third-party developers, using our position as a leading manufacturer. That kind of power is not allowed to us. But Google has the power. First, Google has no competitor in the OS market. Second, all players are hugely affected by operating systems. So, Google can exercise strong influence over other players such as makers or individual developers, or even over users. Samsung does not have that power because it depends on Google's OS.

According to the interviewees, Google actively adopted diverse control mechanisms such as input control, outcome control and behavioral control in order to govern platform participants within its Android ecosystem. In many cases, rather than encouraging the platform participation of other players, Google used its authority to control the participants in order to keep them away from certain areas where Google wanted to operate exclusively with its own services.

Behavioral Control & Norms of Android

Samsung employees found that Google possessed the authority to decide the norms, standards, or rules for the entire ecosystem because Google's operating system was on the top of the architecture in the global smartphone industry. By establishing norms and standards, Google provided basic guidelines on how platform participants should behave (e.g., how smartphone manufacturers should arrange preinstalled applications). This is a good example of Google's behavioral control. For instance, Google recommended how smartphone manufacturers should arrange specific applications, which include not only its own applications but also the apps from its competitors. Interviewee G explained how Google imposed its rules on Samsung:

Have you heard about GMS? I think it is an acronym of Google Mobile Services. In order to use Android OS, manufacturers should get a license for GMS. GMS asks manufacturers to pre-install its applications such as its search engine, YouTube, Google Maps, or Google Play Store. Actually, these apps are bundled with Android. Google even decides where these apps should be located. For example, Google recommends these apps such as Google Play Store or Google Search to be exposed on the first page. Google Play Store has always been one of its top priorities. Google always wanted its store to be much more notable than other app markets such as Samsung Apps or T Store. For Google, Play Store should represent the Android ecosystem and be the first app market exposed to users. Some less important apps are negotiable. For instance, if we really want to remove Google Drive app from Google's folder, Google might accept. However, things like Google Play are just impossible to move or remove because it is so important. Anyway, in order to use Android without any problem, we needed to accept Google's recommendations.

As mentioned above, default values in the Android ecosystem were decided by Google. Though the conditions recommended by Google were ostensibly negotiable, platform participants such as hardware manufacturers had to accept Google's *mandatory* recommendations if there were a conflict of interests within Google's strategic points.

Controlling the behaviors of platform participants also could be easily observed in the relationship between Google and third-party developers. For instance, Google provides

its application design guides for Android named Material Design to developers. This design guide suggests the norms of Android in regard to graphic designs and user interface designs. While these design guidelines or development tools such as Google's SDK helped developers create application more easily, they also played the role of controlling developers' behaviors to some extent. Interviewee A mentioned that third-party developers used to complain because if they did not follow Google's guidelines, the app review time took longer and they tended to have revision requests more often.

Google provides design guidelines both for Android's graphic designs and for the UX designs. Developers didn't like them because these guidelines could weaken the identities of each service, though they might enhance the coherence of Android apps. Big players such as Facebook could use their own unique graphic designs or color patterns. But normally, developers followed the Android guidelines because it made the applications be accepted by Google much more easily.

Since Google reviews the applications created by third-party developers and decides whether it distributes the applications through Google Play Store or not, third-party developers could not be free from the control of Google and Android.

Unofficial Input Control & Unfair Competition

According to the interviewees, Google took advantage of its architectural superiority as an OS provider in order to prevent other platform participants from entering specific areas and providing competing services in these areas. This is an example of input control and much of it occurred through unofficial channels. In the Android ecosystem, Google even tried to enforce the service providers that already launched their services in the market even so far as to discontinue the services. According to the interviewees, this type of control usually occurred via unofficial channels rather than through official documents, such as GMS, Material Design, or contract clauses. Interviewees assumed that

Google might not use its official channels because it worried about violating fair trade law. For example, most interviewees admitted that they heard Google strongly disapproved of Samsung's operation of an app market and claimed that Samsung's software and platform services decreased the efficiency of the entire platform ecosystem of Android. Interviewee N mentioned the rumor spread over MSC.

At that time, rumors about Google's intervention with Samsung's services circulated widely throughout the center. According to the rumors, the CEO of Google contacted Samsung's top management to ask us to stop our app market service. In order to make a win-win situation in the Android ecosystem, Google insisted, Samsung should give up the app market service because Google was doing the same service. But, as a matter of fact, Google and Samsung began serving application markets at the same period of time. In fact, Google also benefited from Samsung's app sourcing to some extent during the early period of Android. But since Google pressed Samsung quite hard, Samsung couldn't push ahead with its app market so strong. After using Samsung Apps for the early promotion of Galaxy S in order to sell more phones, Samsung could not promote or invest in the market aggressively. It was a rumor, but we accepted it as a fait accompli. Samsung really had emphasized the importance of platforms, software, and contents. But then it just moved back all of a sudden.

Samsung's app market was not the only service that was tightly restricted by Google. Samsung benchmarked Apple's iTunes and launched content streaming platforms including music streaming service Music Hub, video streaming service Media Hub, and gaming platform Game Hub. For these content streaming services, Google allegedly contacted Samsung directly to request the termination of these platform services. At that time, since Google was also giving its best to its own music streaming service, Google Play Music, interviewees assumed that Google might want to control the business practices of potential competitors within the same ecosystem before they became more competitive. Interviewee P recalled Samsung's experiences with Google at that moment.

I remember that it was also on the news at that time. Samsung and Google released their streaming platforms around the same time because both of them witnessed the success of Apple's iTunes. But I heard that Google's CEO, Sundar

Pichai asked Samsung's CEO to stay away from platform or software services when he visited Samsung. He said Google would take care of those things because Google was better than Samsung in those software areas. He wanted Samsung to devote more to the development of innovative hardware devices. I heard that it was more than just advice. He worried that Samsung's platform businesses would worsen the tight partnership between Samsung and Google. From my understanding, Samsung ceased most platform services because of the relationship with Google and even dismissed Media Solution Center because Google hated a hardware maker such as Samsung having an organization for software and platform services.

Though interviewees were aware of different kinds of Google's unofficial control mechanisms, they also mentioned that they heard these rumors from their colleagues or managers rather than directly from Google. However, all interviewees have heard some of these episodes and they accepted them as true. Since these conversations might occur subtly between the management of both companies rather than through working-level talks, interviewees said that these rumors spread throughout the company without a specific source of information. However, this type of Google's control was also supported by news articles (Ryu, 2017). This finding of unofficial control is significant.

Outcome Control & Manipulating Competitiveness

According to interviewee A who was in charge of the operation of Samsung's music streaming platform, Music Hub, Google also intervened directly in Samsung's platform strategies. For example, when Samsung improved its platform services for its new hardware devices, Google asked Samsung to restore the changes if those improvements were expected to affect Google's services negatively. This is a clear example of outcome control that is revealed by existing studies (Merchant, 1985).

We also had to revitalize Music Hub at that moment. We thought, as a manufacturer, what we could do best was to provide a platform which integrates devices and services. Apple was doing that very well. So, we decided to combine our music streaming, Music Hub, with our music player which is pre-installed as a native application. We thought that we didn't really need an additional player

for Music Hub since we already had our native player. So, we were going to develop this project in order to have this integrated app in Samsung's new Galaxy device. We shared our new project with Google, but Google opposed this plan. Anyway, the features of our new phones had to be reviewed and approved by Google. At that time, Google also had to revive its own music platform. So, when we showed the expected changes of our new music platform, Google said like, 'Why do you combine Music Hub with the native player? That's not a good plan. Native players should be value neutral because they are just utility applications. Though they said like this, we all understood that they might worry about Music Hub to be Google's competitor. So, we finally had to drop this project.

Interviewees referred to diverse practices of Google that intervened in and controlled Samsung's platform businesses. As already mentioned, these control mechanisms of Google consist of multilateral ways to control input, outcome, and behavior. Since 2018, Google has been under investigation in South Korea on suspicion of illegally bundling its services such as Google Play Store with its OS platform, Android. Google has been suspected of forcing manufacturers to preinstall its applications such as Google Play Store and abusing its market dominance in the OS market (Park, 2019). In fact, Google's business practice is very similar to Microsoft's case of unfair trade which compelled PC makers to preinstall its browser, Internet Explorer, at the expense of its Windows operating system. In 2018, Google was fined 4,340 million euros by the EU with the same suspicion in European countries (Warren, 2018). These examples of Google's control mechanisms show that the reasons for dismissing MSC that managed Samsung's software and platform services after a series of failed platform businesses were not only because Samsung's platform services were less competitive than Google's services.

HIERARCHICAL RELATIONSHIP BETWEEN CARRIERS AND MANUFACTURERS

Hierarchical relationships exist among platform participants. For instance, though Samsung Electronics is a global leading manufacturer whose corporate value is higher than most telecom companies, the fact that telecom companies buy hardware devices from

manufacturers and sell them to individual customers (see Figure 7) put smartphone manufacturers such as Samsung on the lower layer in the architecture than telecom companies. Interviewee Y supported this structural hierarchy with her experience of working with global telecom companies.

I don't remember exactly. But, 5 to 6 years ago, MSC cooperated closely with, maybe, Verizon for the US market. So, we did a sales promotion that provided Samsung's Music Hub for free for a couple of months to Verizon's Galaxy purchasers. Since Verizon also wanted to provide a stronger music package, it was a win-win strategy. Users' feedback was also quite good. MSC really liked it because it was very rare for MSC's promotions to be welcomed by users. Then, I don't remember it was AT&T or T Mobile. But, anyway, another telco contacted Samsung and said, 'You guys seem to be having a good time only with Verizon. So, you will not sell Galaxy S6 to us, right?' Then, guys in (Samsung's) overseas sales and also the management (of Samsung) called us immediately. They said, 'Hey, you really have to do this promotion? Don't work too hard. So, how much would you make? Do you know how much we will lose for this? Take it easy, man!' Whenever we got these messages, we had to stop our services or promotions even though we prepared a lot more for a long time. You know. Telcos' support is so important to sell more phones.

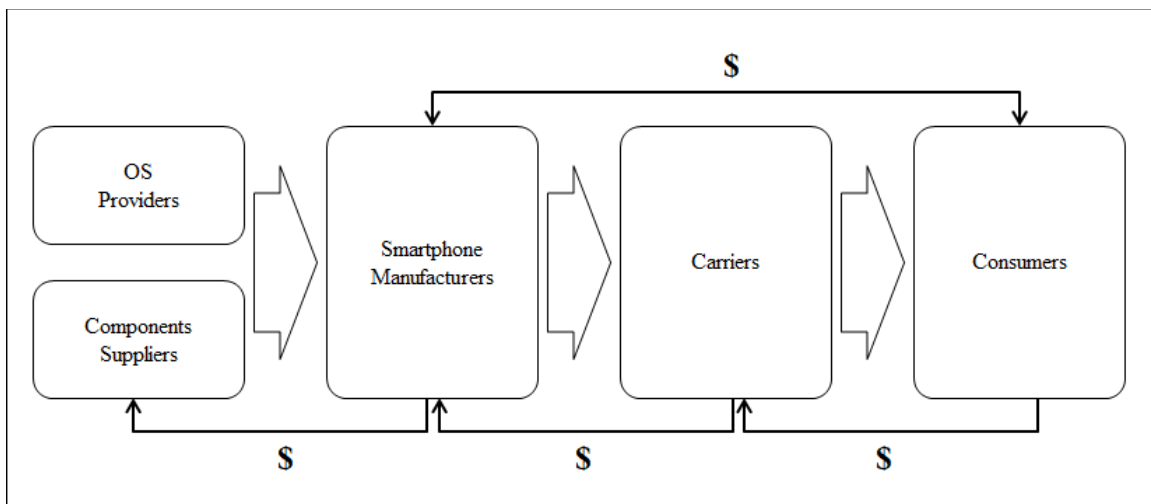


Figure 7: Smartphone Hardware Value Chain

As interviewee Y described, when MSC provided its music streaming service to the customers of a specific carrier for free, a competing carrier warned Samsung that it would not do its utmost to sell Samsung's phones, which eventually resulted in the end of promotion. As aforementioned, since players were in a hierarchical relationship in the smartphone architecture, players with higher ranks, such as carriers, could use their power instead of competing fairly in order to control other players when there were conflicts of interests. Many interviewees who participated in the designing or operating of Samsung Apps described how telecom carriers such as SKT tried to restrict the operation of Samsung Apps in Korean market. Though carriers and manufacturers certainly needed each other and the replaceability of these two players was similar, telecom companies could take the architectural advantage: carriers were the largest customers for manufacturers. Interviewee J delineated the interactions between smartphone manufacturer, Samsung and telecom company, SKT:

There were three very similar app markets in a Galaxy phone. There were Google Play Store, Samsung Apps, and carriers' stores such as T Store. At that time, we all expected app economy to emerge dramatically and thus jumped in aggressively. SKT was also highly enthusiastic. So, when we met app developers to ask them to make apps for Samsung Apps, many of them said, 'SKT already dropped by and they said they would reject our apps if we distribute our apps on Samsung Apps.' Like this, SKT tried to control the developers in order to make its app market better than ours. Then, after a while, they directly asked us to quit our app market business. 'Don't you want to sell more phones? We will sell your phones and get you more money. So, please don't do this.' Finding the middle ground was not easy because Samsung also considered its app market something critical for its smartphone business at that time. Finally, Samsung Apps went into T Store as a shop-in-shop model. When users entered T Store, there was a banner of Samsung Apps on the corner. This shop-in-shop concept was maintained for a quit long time. So, who's gonna use Samsung Apps? It is not even visible. Think about this. Google's app market is on the first page. On the next page, there's SKT's market. Ours is invisible because it is in T Store. On the corner as a little banner. Since our market was not exposed to users, apps in Samsung Apps could not be downloaded that much. So, the value of this market to developers or users had to drop.

The practices of diverse control mechanisms described in this chapter illustrate how the architectural hierarchy has been established in the smartphone industry and how platform providers and platform participants influence one another, using power discrepancies caused by this hierarchical structure. As the interview data of this study suggest, players on the higher layers tend to control other platform participants or competitors with diverse types of control mechanisms. In particular, though these controls have been generally justified in the name of creating synergy effects and maximizing the value of the entire Android ecosystem, Google was always on the top of the architecture as an OS provider and intended to restrict other platform participants from invading its major business areas. In fact, Google's control mechanisms are very similar to those of Microsoft that insisted its bundling policy with its operating system in the PC industry 20 years ago. However, there are concerns about Google's practices because its control mechanisms can be used to restrain competition in the entire smartphone industry and maintain unfair monopolistic or oligopolistic status.

CONCLUSION

Previous studies on platform governance or control mechanisms generally investigated how a certain platform provider manipulates the architectural advantages in order to encourage or control other platform participants to increase the value of the entire platform ecosystem. The current study explored how the OS provider that is on the top of the smartphone industry uses its architectural advantages in order to heighten the entry barriers in highly profitable heterogeneous platforms (e.g., app markets or streaming platforms) and make its own services more attractive and competitive than those of its competitors. Though existing studies also insist that platform providers protect their core platforms through modularization (Jacobides et al., 2006), this research reveals that the

owner of a top-level platform can also tightly control sub-platforms or profitable services that are out of the core area, abusing its authority as a platform provider.

Returning to the initial research questions, ‘why did Samsung MSC’s control mechanisms fail to establish the authority to control its platform ecosystem?’ this research found that established authority leads to the activation of control mechanisms, and not vice versa. According to the interviewees, the most important reason why Samsung Apps could not generate successful control mechanisms was Samsung’s architectural inferiority; since Samsung Apps was provided by hardware manufacturer Samsung Electronics, whose hierarchical position is lower than the OS provider, and Google provides another app market in the form of Google Play Store, Samsung could not efficiently control other players that were under the tight control of Google. Meanwhile, Google could practice diverse types of control mechanisms such as input, outcome, and behavioral control in order to restrict sub-platform services such as Samsung Apps, wielding irresistible power as an OS provider. In addition, Samsung’s own operating systems such as Bada and Tizen could not secure the authority to control other participants because of the existence of Android which could easily replace these operating systems.

This chapter also answers research question 2-2 that asks: What external factors such as hierarchy or power discrepancies in the smartphone industry affected the failure of Samsung in launching platform services including its app market and operating systems? Samsung’s operating systems Bada and Tizen were relatively free from the influences of external factors such as power discrepancies among platform providers and platform participants and since Samsung’s operating systems were physically out of the Android ecosystem, Google’s intervening with Samsung’s OS was not justifiable. But most important, Google did not see any necessity to control Samsung’s operating systems

because Samsung was in a close partnership with Google and adopted Google's Android OS for its flagship devices from the early era of smartphones.

On the other hand, Samsung's app market, Samsung Apps was extensively controlled by Google whose operating system governed the whole ecosystem. In addition to Samsung Apps, Google tightly controlled other platform services, such as video and music streaming services, whose business areas overlap those of Google. In terms of behavioral control, Google officially suggested norms or rules for Android ecosystem such as Google Mobile Services (GMS) to platform participants in order to prevent its platform participants from invading its major business areas or to make its platform services more competitive than those of its platform participants.

Moreover, when the Android platform participants enter and provide competing services, Google directly asked them to recede from these services via unofficial channels. News articles supported the statements from the interviewees mentioning that Samsung terminated many of its platform services and dismissed Media Solution Center due to Google's strict control mechanisms. However, Google's unofficial input control can hardly be free from the criticism pointing that these practices unfairly impede free competition which is the basis of capitalism and maintain the monopolistic status in inappropriate ways.

In addition, using its authority as an OS provider, Google controlled the outcomes of platform participants (e.g., Samsung's music streaming service, Music Hub) if these outcomes conflicted with its own service areas. By preventing platform participants from improving their platform services, Google tried to aggravate the competitiveness of these services. This finding proves that Google activated control mechanisms in order to protect its own business rather than enhancing the entire Android ecosystem.

This chapter is significant in two ways. Previous studies have discussed many conceptual aspects of control mechanisms in the platform ecosystem and developed

theoretical areas successfully. However, no empirical studies have explored how these control mechanisms are activated in reality, and who has the authority to activate control mechanisms with which reasons. By investigating the case of Samsung Electronics which contributed hugely to Android ecosystem but also competed against Google with its platform services, this study provides empirical evidence of how power discrepancies and control issues affect the entire smartphone industry and smartphone platform businesses.

Second, while existing studies mainly explain how platform providers adopt control mechanisms to protect the core platform and encourage platform participants to contribute to their platform ecosystems, the current study reveals that platform providers, especially the OS providers, use the power discrepancies in order to protect and monopolize sub-platforms which generate substantial value within the platform ecosystem even with unfair means. Although some studies regard these practices as efficient management strategies, this study insists that these control mechanisms should be approached from more critical perspectives, cognizant of anti-competitive intent.

While the previous chapter explored how Samsung's internal factors such as platform strategies affected its platform businesses in the smartphone industry, this chapter examined how the external factors such as Samsung's relationship with other players influenced its platform performance to provide empirical evidence for the research questions. In the following chapter, this research discusses how the complicated cultural aspects of Samsung's MSC, which was formed as a software division in a global smartphone manufacturer based in an Asian country, affected Samsung's challenge to smartphone platform businesses.

Chapter 5: Samsung's Organizational Culture & Platform Business

In the previous chapters, this research discussed how Samsung's internal platform strategies and its relationship with external players influenced its smartphone platform services and affected the global smartphone industry at large. In the chapter on platform strategies, this dissertation revealed that Samsung's fast follower strategy contributed to the growth of Google's platforms such as Android OS instead of its own platforms in the early days of smartphones. In particular, that chapter investigated how Samsung's platform strategies marginalized its own platforms and helped generate the cross-side network effects around Google's platform services. The following chapter on Samsung's relations with other players in the smartphone industry explored how the dominant smartphone OS provider, Google, controlled platform participants such as Samsung Electronics, manipulating the power discrepancies between a dominant platform owner and platform participants, and governed the entire Android ecosystem. That chapter insisted that Google's control mechanisms restricted free competitions among platform providers, which provokes controversy over fairness. This chapter examines how Samsung's organizational culture affected the performance of its platform services.

Organizational culture can be defined as certain values, beliefs, or hidden assumptions shared by organizational members (Miron, Erez, & Naveh, 2004). As demonstrated in the earlier review of literature, the culture of an organization is complex and thus hard to define with a couple of words. It is not possible to investigate every cultural aspect of an organization, but this research focuses on two typical cultural characteristics of Samsung: *hierarchical culture* and *micromanaging culture*. These qualities can help explain MSC's platform performance both directly and indirectly.

In addition to examining Samsung's company-wide cultures, this chapter also attends to the cultural characteristics of Samsung's MSC. MSC was a division within

global hardware manufacturer Samsung Electronics. While most of Samsung's other divisions managed hardware manufacturing fields, MSC was in charge of Samsung's software or platform services. MSC's businesses encompassed a range of services including smartphone platforms (e.g., Samsung's operating systems, app market, or content streaming services), Smart TV applications, software for wearable devices, or PC-based online games. While the proportion of pure-blooded employees³ was very high throughout the company, the proportion in MSC was relatively low because Samsung actively recruited external experts who had experience in the fields of software or platform services that were new business areas for Samsung. While hierarchical and controlling cultures were widespread in Samsung, previous studies on organizational culture insisted that a flexible culture would enhance the performance of software services (Boland & Tenkasi, 1996; Vecchiato, 2015). Therefore, it will be very meaningful to investigate how the cultural characteristics of a software division coped or conflicted with the existing hierarchical culture of an organization and how these cultural interactions influenced its performance. By interviewing the former or current employees of Samsung's MSC, this chapter provides answers for the following research questions:

RQ 3-1: How did Samsung's hierarchical culture affect MSC's platform businesses?

³Samsung treated so-called pure-blooded employees who spent all of their career in Samsung considerately. These employees were regarded as blue-blooded because blue is a representative color of Samsung. For example, Samsung's logo is blue and the uniforms of its sports teams (e.g., Samsung Blue Wings or Samsung Lions) are all blue. Recently, however, Samsung is reported to be weakening this blue-blood culture because it caused a series of social or corporate issues (Kim, 2017). Nevertheless, even the fact that these issues exist says something about its culture.

RQ 3-2: How did micromanagement and tight control within Samsung influence MSC's platform businesses? How did these cultural characteristics affect Samsung's hardware and platform businesses respectively?

In general, organizations with hierarchical culture have formalized and systemized their work processes (Cameron, 2008) and these organizations tend to value organizational efficiency (Cameron, 2008; Tseng, 2010), as discussed in the earlier literature review. A small number of studies insist that hierarchical culture increases efficiency with strong control and effective management, and thus influences organizational performance positively (Chan et al., 2004; Denison & Mishra, 1995; Tseng, 2010). In particular, the management of an organization tend to consider hierarchical culture as a tool which improves organizational efficiencies (Keyton, 2010; Penman, 2000). In addition, in the manufacturing industry, tight management was considered necessary (Langfred & Rockmann, 2016).

Cultural aspects such as tight control or management have been regarded as the success factors of Samsung Electronics as a hardware manufacturer, even though many studies find results showing a negative relationship between hierarchical culture and organizational performance (Deshpande et al., 1993; Gordon & DiTomaso, 1992; Han, 2012). Samsung Electronics is a typical example of a company with hierarchical culture (Min, 2018). It has always emphasized tight control and micromanagement, which might influence Samsung's performance in the manufacturing field. On the other hand, according to the interview participants of this research, the organizational culture of Samsung's MSC was differentiated from the typical culture of Samsung. Since MSC recruited a number of professionals from external media, IT, or entertainment companies whose organizational culture seemed to be more flexible, the organizational culture of MSC was relatively

flexible. In addition, since MSC had to develop new and innovative services, it pursued organizational values such as creativity or innovativeness in order to respond the environmental or technological changes in the global smartphone industry. Therefore, it is important to explore how these conflicting cultural aspects around MSC affected its performance in the platform businesses.

THE INFLUENCE OF HIERARCHY

Organizational hierarchy can explain a huge part of Samsung's culture. Hierarchical culture and top-down communication allegedly allowed Samsung to become the global leader in the manufacturing industry by enabling fast and efficient decision-making (Cho et al., 2005). About a half of the interviewees experienced the organizational culture of Samsung's other divisions because they came to MSC from other divisions of Samsung, or moved to Samsung's other divisions after the closure of MSC. They agreed that Samsung had a very hierarchical culture and decision-making system in general. While the interviewees who began their career in Samsung tended to perceive its organizational hierarchy more positively (e.g., as a success factor of Samsung's manufacturing businesses), interviewees from external media or IT companies portrayed Samsung's hierarchical culture more negatively. Interviewee C who came from a broadcasting company and worked for Samsung's Mobile Division and headquarter marketing team after the closure of MSC, delineated Samsung's hierarchical culture as follows:

I also worked for Mobile Division and the headquarter marketing team. Actually, I saw the worst cases there. For example, when I attended meetings where executives also attended, general managers always were very nervous. They were all silenced by any words from the executives. I have no military experience, but I felt like I was in the military. If the executives attended, all sat up straight throughout the meeting. Since general managers did that, I also had to follow. Also, the corporate marketing team prohibited wearing jeans or running shoes. I felt I was working for a Japanese trading company of the 1970s or 80s. If

superiors command, we need to follow without saying anything. Compared with that, MSC's organizational culture was way better than other divisions in Samsung.

As mentioned above, interviewees recognized that MSC was relatively free from Samsung's hierarchical culture, and stated that this culture was formed due to the extremely high proportion of the employees scouted from external companies. Since MSC was managing Samsung's new challenges to platform and software services, it could not be organized only with existing employees with manufacturing bases. Therefore, MSC recruited a number of professionals with enough experiences in diverse fields related to platforms or content services. According to the interviewees, employees recruited from the outside contributed not only to the business-side of MSC, but also to the cultural aspects because the cultures of their former companies came with them, evident in such things as behaviors, appearance, or ways of thinking. The cultural aspects brought by these employees were combined with Samsung's culture maintained by existing employees, which led to the establishment of MSC's culture. Therefore, as will be further discussed later in this chapter, the organizational culture of MSC consisted of a part of Samsung's traditional culture and another part of the culture of software or platform companies.

According to the interview participants, MSC possessed flexible and free cultural aspects that were different from Samsung's hierarchical culture due to the employees from software or entertainment companies. In particular, they felt that the executives scouted from foreign IT corporations contributed to MSC's cultural flexibility. Interviewee R mentioned the cultural influences of new employees from the outside as follows:

Actually, MSC was very different from other divisions in Samsung. In addition to the composition of employees, that of the executives was also very different. Many came from other companies. Also, there were many foreign executives. I think this difference led to a more flexible culture. For example, Samsung already adopted flexible work schedules at that time and employees could come and go at any time in principle. I mean, in principle. None of my friends working for other divisions

could practice this policy. Their bosses hated them to come late. But, MSC was much more flexible. We could come a bit late. We could wear what we wanted to. We could skip a get-together. Actually, our get-togethers were different. While it was all about drinking in other divisions, we used to attend a concert or something like that. Anyway, before I moved to MSC, I had to take corporate shuttle buses to come to work around 8 a.m. But in MSC, I think I usually came between 9 and 10 a.m. ... Some Samsung-minded superiors hated that, but many others didn't really care.

According to the interviewees, this type of flexible culture was formed intentionally. Since Samsung agreed that software or content businesses need a more flexible culture for more innovative or creative services, it allowed MSC to manage the organization more loosely than other manufacturing divisions. In particular, the executives from the outside wanted to establish a more flexible and horizontal culture in MSC as they had experienced in their former companies. Meanwhile, Interviewee B who started his career at Samsung mentioned that Samsung's pure-blooded employees felt antipathy to MSC's culture at the early stage of MSC. According to this interviewee, though Samsung's culture emphasizing hierarchy between seniors and juniors had negative influences, it also strengthened union power among employees and boosted employees' loyalty to Samsung. However, according to many interviewees, MSC, with a half its employees recruited from other companies, could not expect the same level of union power or loyalty. Therefore, the cultural conflicts between MSC and Samsung's existing divisions developed. Interviewee H described his experience of this cultural conflict as follows:

I attended a meeting conducted by Mobile Division with my boss. There were many officials from Mobile Division. As you might know, my boss had a mustache at that time. Though having a mustache was not very common in MSC, it was not that special. There was a new recruit with a mustache and also male employees with earrings. Anyway, it was not easy to find employees with a mustache in Samsung at that time. My boss was very competent, but his appearance was not suited to Samsung's culture. In the meeting, one of the directors from Mobile Division told him that he would promote my boss if my boss would shave his mustache. It seemed to be a joke, but I felt that they didn't really like his mustache.

Since the head and many of the executives of MSC were scouted from diverse companies, they did not stick to Samsung's hierarchical culture or senior-junior relationship. Though Samsung treated blue-blooded employees who spent their whole career in Samsung more considerately, approximately a half of MSC's employees were not blue-blooded, which allowed MSC to stay away from this hierarchical culture of Samsung. Therefore, MSC could establish more flexible and free environments due to this unique composition of organization. According to the interview participants, these cultural characteristics hugely affected the early work processes of MSC. In the early days of MSC, its internal work processes or decision-making processes were relatively flexible or casual. Interviewee X described how they developed ideas and made decisions in the early days as follows:

In MSC, there were many services developed through bottom-up communication. Since we had many employees newly came from other companies, they were very enthusiastic. Also, they understood these areas of content businesses or platform services. Many of these employees were hands-on staff such as assistant managers or rank-and-file workers. So, when we had meetings, juniors also expressed their views freely and we tried to select the best options. I think seniors were also open to the voices of juniors. It would be possible partly because seniors from Samsung were not platform professionals and seniors from other companies were accustomed to that kind of stuff. I think it worked like that in the early days of MSC's operation. However, both the employees and the processes had changed as time goes by.

Though MSC's flexible culture hugely affected their work experiences in MSC, the influence of this culture on the platform performance of MSC's services (e.g., the increase in users or revenue) was relatively marginal. As interviewee X mentioned above, based on its flexible culture, MSC's decision makers encouraged horizontal or bottom-up work processes rather than top-down or hierarchical processes. However, there was a hurdle external to MSC: Though MSC had formed a flexible culture internally, what affected MSC's decision-making was not the interpersonal flexibility in MSC, but rather the

interorganizational hierarchy between MSC and the Mobile Division. This meant that MSC's decision makers were obliged to accept the directions from the Mobile Division when these two divisions had different ideas.

In terms of organizational structure, MSC was an independent division that was not technically subordinate to Samsung's other organizations. Nevertheless, the decision-making on MSC's businesses did not occur independently. Though both flexibility and discretion are the characteristics of adhocratic culture, Samsung's MSC had little discretion in its decision-making while its working conditions were highly flexible. Interviewee N delineated how the organizational culture of MSC was flexible, but not independent as follows:

Actually, our bosses didn't really pursue a hierarchical culture. So, when we worked in MSC, the atmosphere was very horizontal. Because of this atmosphere, I think there were more ideas or opinions about new services. But the thing is that so many of these ideas were rejected by Mobile Division. People in Mobile Division made final decisions on MSC's businesses and MSC's executives had to follow in order to keep themselves in office. There was a structural hierarchy. Whenever MSC tried to enhance platform services, Mobile Division stopped us if those projects were not really supportive of its businesses.

In order to reap the rewards of flexible structures, there should be the execution of the ideas in addition to the ideation (Jamrog, Vickers, & Bear, 2006; McLean, 2005). However, MSC's flexible culture could not affect its business performance because many creative ideas proposed by MSC were rejected or modified by the Mobile Division.

Issues of decision-making and interorganizational hierarchy influenced the internal culture of MSC and its employees. As the employees eagerly developed ideas in order to create more competitive services in the early days of MSC, those ideas were repeatedly turned down by Mobile Division. According to interviewee Y, these repetitive experiences weakened MSC's culture of bottom-up communication, and discouraged employees just to

respond to the top-down orders passively. This finding supports previous studies insisting that the autonomy in decision-making is closely related to the intrinsic motivation of employees, and thus causes either the increase or decrease in organizational creativity (Amabile, 1998; McLean, 2005). Interviewee Y, who had led the development process of a video streaming service in another company, admitted that his approach and attitude to his duties in MSC had changed over time.

At first, I tried to produce more ideas and design more services so aggressively. Since I could design global platform services in a global conglomerate, I was highly motivated. There seemed to be so many things that I could do. Once, we designed a streaming platform named K-Pop Hub. Have you heard about V App? This app is very popular now. K-Pop Hub was very similar to V App. We designed this app years ago in MSC. At that time, MSC liked this idea, so we formed a TF for this project and really worked hard to develop this service. We made a proposal and presented our plan at a meeting. At the meeting, one of the executives from Mobile Division asked, 'How much can you make with this? We earn 200 billion dollars with our devices. Isn't it better to make something else that can support the sales of devices rather than making little money with this service?' Then, the project was dropped immediately. Since then, I never designed services initiatively. I just knew they would be finally dropped. Then, when I had to make proposals, I always considered the interests of the executives in Mobile Division rather than the tastes or the needs of users.

Interviewee Y added that MSC's services could not appeal to the market since service planners had to consider the corporate executives who shared few of the demographic characteristics of the core target of the services. Interviewee J agreed with interviewee Y's statement.

At that time, reading webtoons on smartphones was very popular among the younger generation. So, we decided to make a webtoon application. I made a proposal and presented our plan in front of a director of the Mobile Division. He asked me if we had the cartoons by Wooyoung Ko. You know what? Wooyoung Ko's cartoons were popular about two to three decades ago. Webtoon readers do not even know his name. He died 15 years ago! The director told me no one would use the webtoon app if it doesn't have Ko's works. That was ridiculous but, I met Ko's son and bought the license. Since there were only the original paper

version, I had to digitalize all the scenes by myself. It was very tiresome, but might be easier than persuading the director to forget about Wooyoung Ko.

These experiences show that MSC's employees had to consider the hierarchical decision-making process more than the actual need of potential users. To some extent, this statement supports previous studies claiming that the performance of companies focusing on internal elements was worse than that of companies with external orientation (Wolpert, 2002) because MSC's employees had to conform to organizational hierarchy and reflect the tastes of their superiors rather than market demands.

Interviewees recognized that the Mobile Division could affect MSC's decisions because it produced the largest revenue in Samsung and also was the most important internal client to MSC because of the emergence of smartphones. According to the interviewees, except for semiconductor divisions, the authority of making decisions was allocated in accordance with the revenues of each division, and thus the Mobile Division, with its large revenue, could hugely influence MSC's decisions on the platform services for smartphones. Many interviewees referred to the case of Samsung's operating system as an example revealing the controversial issues of decision-making processes. Interviewee P who worked with diverse divisions such as Mobile Division or Visual Display (VD) described the decision-making process of Samsung's OS as follows:

At that time, except for Mobile Division, there seemed to be a company-wide consensus about developing Bada OS a bit more. Devices like smart TV or other digital things also needed operating systems. Samsung produces a wide range of hardware devices. If it has its own OS, it would be really beneficial. Things like home automation or the Internet of things could be achieved technologically if Samsung had an OS. But, since Mobile Division said like, 'No, we are going with Android,' we just said, 'Yes, sir.' Actually, MSC was expected to develop services not only for Mobile Division but also for other divisions such as VD. We had to develop and operate app services for smart televisions. So, VD expected a lot of platforms or applications from us. But, for us, the requests from Mobile Division were always the first priorities and we couldn't really respond to the requests from other divisions quickly. We allocated minimal workforce for other divisions.

Then, later, VD formed its own team for developing applications for its smart TV. When we asked them why they did that, they answered they would develop their services by themselves because we were only working for Mobile Division.

What exerted substantial influence on the performance of MSC's platform services was not the flexibility within MSC but the hierarchy between MSC and Mobile Division. The resulting decision-making process was more critical to MSC's platform performance than the working conditions in MSC. Though Samsung scouted a number of external professionals and established flexible organizational culture for MSC in order to create more innovative and successful platform services, these cultural changes could not affect MSC's business performance in a short period of time and MSC could not be entirely free from the company-wide organizational culture. Though MSC was expected to develop more creative and innovative platform services, based on its flexible and relatively loose organizational culture, Samsung's hierarchical culture and its interorganizational hierarchy weakened MSC's autonomy in making decisions and thus the influences of flexible culture were insignificant.

Meanwhile, though Samsung's hierarchical culture tended to weaken within MSC, MSC's employees sometimes manipulated the hierarchical relationship when they worked with external partners such as third-party developers or content providers. For instance, according to some interviewees, as a platform owner of Samsung's app market, Samsung Apps, or its streaming services such as Video Hub, MSC's employees tended to follow Samsung's old culture of hierarchical relationship as expressed in the way they treated platform participants. When MSC sourced video or music contents for its streaming platforms, they showed authoritative attitudes to the content providers. These attitudes are very similar to Samsung's traditional ways of treating outsourcers, adopting an authoritative manner. Interviewee S mentioned what he heard as follows:

I did other services and was not deeply involved in Video Hub. But I have a network in the film industry because I worked for film companies. One day, I was talking with my ex-coworker who was working for a film studio. He said he felt so bad after meeting MSC people. He said, though MSC wanted to have a meeting with them to talk about future partnership, MSC people asked them to visit MSC which was very far from their office. When they arrived, they had to go through very strict security check. As you know we check every device brought by any guests or even by employees. Anyway, at the meeting, though MSC was asking for the copyrights of their films, MSC's meeting participants were very arrogant. They acted like they were the bosses. It was like, 'Hey, how much do you need? We'll pay, so just provide your contents to Video Hub.' Though Samsung was a global conglomerate, MSC was not their important client at all because Video Hub was not an influential platform. Because they felt so bad, he said, they did not even take Samsung's calls since then.

Interviewees mentioned that many employees of MSC whose organizational culture was flexible also treated its partners just as Samsung treated its outsourcers, i.e., in a commanding manner. Though a half of MSC's employees were recruited from more flexible companies, the other half were from other divisions of Samsung. Therefore, it might be inevitable for MSC to share Samsung's hierarchical culture of dealing with external partners with authoritative attitudes. Samsung could possess the authority in the pre-smartphone market because Samsung could decide whether it would include a specific service in its mobile phone or not. On the other hand, the emergence of smartphones allowed diverse, alternative options for content or service providers. Without Samsung's permission, they could distribute their services in Samsung's smartphones, using other channels such as Google Play Store or T Store. Therefore, the authority of Samsung who possessed no influential operating system or app market unavoidably became marginal. Samsung and MSC might not understand this change of their authority accurately. Or, cultural inertia seems to let MSC's employees stay authoritative even when their power had weakened.

One interesting finding from the case of MSC is that organizational culture is pervasive and entrenched; Samsung's organizational culture influenced not only the

individual employees but the organizations within the company. In other words, Samsung's hierarchical culture is reflected in the hierarchical relationships among the divisions in Samsung Electronics. Though Samsung's typical culture of hierarchy was not clearly found in the organizational culture of MSC, the hierarchical relationship between Mobile Division and MSC affected MSC's decision-making process and platform performance. Therefore, the goal of Samsung and MSC to enhance platform performance with a more horizontal and flexible culture could not be achieved. In addition, due to the characteristics of platform services which mandate external participants, Samsung's hierarchical culture also influenced the interactions between MSC and platform participants. While the internal culture of MSC was relatively flexible, organizational hierarchy which affected MSC's work and decision-making process made MSC's employees be more authoritative when they communicated or negotiated with external platform participants.

Previous studies on organizational culture insisted that flexible culture exerts positive influences on the knowledge industry (Boland & Tenkasi, 1996; Vecchiato, 2015). However, this research reveals that organizational flexibility may have only marginal influence on business performance if it does not secure authority in decision-making. In case of MSC, though it successfully established flexible work experiences within the organization, interorganizational hierarchy hugely affected the actual decision-making process, which caused negative consequences in MSC's platform performance. While we cannot assent to an overall negative causal relation between hierarchical culture and platform performance, this research suggests that the culture of hierarchically higher organizations or divisions strongly influences that of a lower organization, and these cultural differences affect the business performance of hierarchically lower organization.

This research found that organizational culture influences external players in platform businesses and thus affects platform performance as well. Rather than having a

value by itself, a platform becomes valuable when it attracts external participants and generates interactions with them. Since the interactions between platforms and platform participants or potential participants are mandatory for platform businesses, the cultural influences of platform providers on platform participants might be inevitable. In case of MSC, though its flexible culture might be expected to affect its interactions with platform participants, it is notable that as a hardware manufacturer, Samsung's hierarchical and authoritative attitudes influenced MSC's approach to external platform participants such as the third-party app developers.

MICROMANAGEMENT & SAMSUNG'S GWANRI CULTURE

Another keyword explaining Samsung's cultural characteristics is micromanagement. People define Samsung with a Korean word *Gwanri* which means management or supervision in order to highly appreciate Samsung's well-systemized business management. Unlike the word *hierarchy*, this term implies a more positive nuance when it is used to describe Samsung. Micromanagement and tight control have been typical in Samsung's culture. All interview participants agreed that Samsung's tight management contributed to the success of Samsung as a hardware manufacturer. According to the interviewees, Samsung systemized and structured all the work and production processes and micromanaged every step of these processes. With this micromanaging culture, Samsung could lower the defect rate of its hardware products and produce high quality devices. Interviewee B described Samsung's micromanaging culture as follows:

As we call Samsung as Samsung for Gwanri, it is a very representative word defining Samsung. Samsung has always been proud of this value. Actually, this is what every hardware maker has been pursuing because manufacturers want to make their manufacturing processes more and more efficient. Anyway, Samsung's micromanaging culture eventually seeks its complete control over every element of Samsung. This includes everything such as human resources or outsourcing

manufacturers, or manufacturing processes. Or sometimes, employees' private lives as well. Through this kind of tight control, Samsung pursues perfection in product manufacturing. Customers also tend to recognize Samsung as a maker producing quality products with less defects. Since customers take this positively, being in control has become so important to Samsung.

According to the interviewees, Samsung's micromanaging culture influenced MSC's software or platform businesses to a substantial amount. However, interviewees felt that this micromanaging culture aggravated the performance of MSC's platform services rather than improved them. Negative effects were generated since software services' attributes are far from those of hardware and required different approaches or degrees of control. In particular, interviewees who experienced software businesses before MSC or moved to the software industry after their career in MSC mentioned that Samsung did not understand different ways of managing software and hardware services. Interviewee K who is now working for a software company stated as follows:

I think Samsung knew nothing about Software. Samsung still do not seem to know anything. After I came here, I found some commonalities in successful software services. Software and hardware are another pair of shoes. Actually, at the point that hardware manufacturers sell their devices, the role of the producers is over. After a manufacturer hands over their products to customers, hardware-wise, there are not many things that producers can do or have to do. This is why hardware makers try to make products as perfect as possible before they release them. Another reason is that it would cost a lot of money to repair hardware devices with defects. Software? It is totally different. The release date is like the date of birth. A timely launch is more important. It's okay unless the core functions are missing and there are critical defects. Software cannot be perfect. If we find bugs, we can fix them. If we get feedback from users, we can develop the service. Software is more about operating, developing, and improving. Samsung thinks they can make their software services perfect before their release. Software doesn't work like that. It's not possible and business-wise, it's not necessary at all.

According to the interview participants, Samsung's micromanaging culture exerted negative influences on Samsung's platform services, especially on the performance of its app market. Basically, as aforementioned, the value of a platform is decided by the number

of platform participants and the amount of interactions in the platform ecosystem. However, according to the interviewees who were involved in the operation of Samsung Apps, Samsung's culture of micromanaging and tight control was applied not only to Samsung's employees operating the app market, but to the third-party developers who were willing to join the platform to provide applications, which ended up discouraging participants instead of encouraging them. Interviewee W who was engaged in the operation of Samsung Apps offered this:

Samsung's app review process was too strict. App review time took longer than Google. Apple was a bit notorious for its long review time. But developers complained that Samsung's review takes even longer than Apple. We also asked for so many minor revisions. Developers really complained that they got revision requests too often even when they got accepted by Google and Apple. For developers, the release date is important and they want to release them on the markets simultaneously. In particular, when it comes to online games, it is really important because there can be technological conflicts if gamers play different versions of the same game. So, developers were very sensitive about app review time. But, as you know, Samsung never compromises that kind of stuff.

Interviewees stated that MSC managed platform services as if Samsung controlled hardware manufacturing processes because MSC's Quality Assurance (QA) team that reviewed its own platform services or the third-party applications in MSC came from Samsung's other divisions where they mainly reviewed services that would be preinstalled in feature phones or other digital devices. Since they were assigned with the same duties, their behaviors never changed and they tested the services or applications as strictly as possible. Since Samsung already made contracts with the developers creating preinstalled applications and the release dates for target devices were fixed, the QA team could manage the development of these services and control the developers more tightly, based on the contracts.

However, smartphone applications provided by third-party developers through app markets do not basically depend on Samsung because they are not preinstalled or provided exclusively with supply contracts. Also, there were alternative and more influential choices such as Google Play Store for these third-party developers, which did not allow Samsung's authority to manage and control them as it did with traditional outsourcing companies. Many interviewees who were in charge of app distribution in MSC said that they raised an issue of this inappropriate control to the QA team but the power of QA team was too strong. Essentially Samsung emphasizes a micromanaging culture. The QA team represented Samsung's complete control over its businesses. Even after raising issues about the app review process, according to the interviewees, the QA team never changed the way they reviewed the applications uploaded by third-party developers.

Samsung and Gwanri are inextricable. Maybe, anyone who worked for MSC regardless of their duties or positions might experience troubles with the QA team. Bosses always put pressure on us to make the services be prepared as early as possible and developers always pushed us to pass the app reviews. But the QA team always asked for additional revisions. Then, we went crazy. So, we went to meet the reviewers in QA team and sometimes even threatened them if they could take responsibility for the delay of services. When we launched Hub services or something, my boss called an emergency meeting a couple of days before the release of a target device because QA team required a lot of revisions. All hell broke loose in our team. The QA team never cared. They didn't even care about the schedules of third-party developers at all. So, who would make applications for us when they can cover Galaxy users with Google Play?

In addition to the inappropriate process of reviewing third-party applications, interviewees also mentioned that micromanaging platform services in accordance with the release schedules of hardware devices affected MSC's platform performance negatively. The development of MSC's platform services was generally engaged with the launch of new devices. The Mobile Division always required MSC to develop new platform services for its new devices because these new platforms could be used as promotional points when

Samsung launched a new smartphone. Therefore, instead of developing platform services based on the service development processes, and then deciding service release dates, MSC had to develop its services considering the fixed deadlines that were the device release dates. According to multiple interviewees, when MSC failed to complete the QA process, it had to limit the competitiveness of its services voluntarily in order to pass the review process and meet the deadline. Interviewees anticipated that these practices might decrease the competitiveness of MSC's platform services. Interviewee O supported this idea by stating as follows:

I don't exactly remember, but it happened when we were launching either Music Hub or Video Hub. At that time, the schedule was very tight. The device release date was coming very close and we could not go through another round of the routine process of reviewing our services if the QA didn't pass our service immediately. However, sure enough, they rejected. They asked us to revise a lot of things. Actually, they were all minor. We could just launch it and make the users download the update files afterwards. But the QA never agreed. Thus, we just excluded some functions which seemed to need a lot of work because we had to meet the deadline by all means.

According to the interviewees, though the employees who were in charge of MSC's platforms assumed that Samsung's organizational culture of micromanagement exerted negative effects on its platform performance, the management of Samsung or the Mobile Division were very proud of tightly managing and controlling its platforms. According to interviewee R, the management who had been in Samsung for a long time believed that tight controlling would differentiate Samsung Apps from other competing platforms, such as Google Play Store, and that this controlling process enabled Samsung's platforms to be positioned as clean and ideal platforms prohibiting the distribution of provocative or anti-social contents. Interviewee B provided an episode related to this assumption as follows:

It's very funny. Our management seemed to take for granted and also take pride in our tight control over the applications in Samsung Apps. One of the PR points of Samsung Apps was that Samsung Apps was tightly controlled and thus

provided harmless contents for everyone. I am not sure if it was intentional, but the review process of Google Play Store was very loose at the beginning of its operation. It was a bit controversial because there were so many applications seemingly harmful to juveniles. Users could easily find porn-like contents on Google Play Store. But we could filter them out during the thorough reviewing process. So, the management always said that Samsung's platforms were clean and safe. Criticizing Google's app review policy, they emphasized the importance of this tight control even more. They said it's the power of Samsung's Gwanri culture. Actually, this control was decreasing the value of Samsung's platforms, but they didn't know. By the way, Samsung Apps was really clean. That's true. Since there were so few applications, it couldn't be 'not clean.'

Behind these ideas, Samsung's executives assumed that the contents or applications provided by platform participants on Samsung's platforms should be under Samsung's complete control, which shows Samsung's lack of understanding of platform mechanisms.

Interviewees insisted that Samsung's effort to establish clean platforms with no issues through tight controlling might hamper the performance of MSC's platform services. Interviewee J stated that MSC could solve the problems after they became problematic in the market, and timely-launched platforms with problems would attract more users than belated platforms without any issues. Blocking participants first and allowing only a few quality participants or services could not help Samsung Apps become an ideal platform. In terms of platform business, it was not an ideal practice. Interviewee F maintained that this type of platform control was not good for the performance of platforms even though it worked well for hardware devices.

Controlling apps or services was not to improve our platforms. The management could not approve MSC's platforms that distribute harmful applications to the users of Samsung's flawless devices because they might decrease the reputation of the devices. I really heard this. When we got some complaints about harmful applications, Mobile's executive said like, 'Samsung is not a company which allows such applications in Samsung's devices. Why don't you guys think of Samsung's corporate image? Why don't you think of the image of Galaxy phones?' So, they were not concerned about MSC's platform performance at all. They just worried whether MSC's platforms would have a bad influence on Samsung's devices. After all, Samsung is a traditional manufacturer.

To sum up, Samsung's hierarchical *Gwanri* culture emphasizing micromanagement and tight control also exerted negative influences on Samsung's platform performance. In the past, this term, *Gwanri*, was a positive keyword defining Samsung, and the micromanaging culture had been regarded as something that contributed to the success of Samsung as a hardware manufacturer because Samsung could minimize hardware defects by micromanaging every aspect of the corporation, including each process of hardware production. However, pursuing perfection is not suited for software businesses because software has more flexible lifespans than physical products, and it is more important to manage and develop software services after their release. Therefore, missing timely release dates for services without flaws was not an ideal approach for software services. In particular, micromanaging practices around platform services, which needs to encourage the participations of external players, illustrates that Samsung did not understand the characteristics or mechanisms of platform services, nor it cared about the performance of its platforms. These practices disadvantaged the performance of Samsung's platforms. Though Samsung's micromanaging culture successfully helped MSC develop its clean and pro-social platforms, it could not guarantee MSC's platform services' success in the smartphone platform market.

CONCLUSION

This chapter provides answers for two research questions: RQ 3-1: How did Samsung's hierarchical culture affect MSC's platform businesses? and RQ 3-2: How did the micromanagement and tight control of Samsung influence MSC's platform businesses? And how did these cultural characteristics affect Samsung's hardware and platform businesses respectively? This chapter found that Samsung's cultural hierarchy affected not only the interpersonal hierarchy within an organization but also the interorganizational

hierarchy in a company. MSC could establish a very flexible and loose work environment because the proportion of employees scouted from the outside was much higher than other divisions of Samsung. Building on the notion that this kind of flexible organizational culture supports companies in the knowledge industry to develop more creative and innovative services (Jiménez-Jiménez, Sanz-Valle, & Rodríguez-Espallardo, 2008; Martins and Terblanche, 2003), employees were eager to produce many creative ideas in the early days of MSC's operation.

However, interorganizational cultural power was based on the revenue of each division. MSC could not stay away from the direct or indirect control of the Mobile Division which was on the top of the corporate hierarchy. Thus, Samsung's Mobile Division was exercising strong influence on MSC's decision-making. Since the Mobile Division pushed MSC to make decisions for the success of hardware devices, MSC's platform services tended to be positioned to support Samsung's devices as a temporal marketing tool. This finding supports the ideas of previous studies insisting that autonomous decision-making should be guaranteed for the enhancement of innovativeness (Martins and Terblanche, 2003; McLean, 2005).

Secondly, for the research question asking how Samsung's *Gwanri* culture which stresses Samsung's micromanaging and tight controlling exerted influences on MSC's platform performance, this research reveals that this cultural characteristic disrupted the performance of Samsung's platform services even though it had contributed to Samsung's success as a manufacturer. This finding is in line with previous studies claiming that the organizational culture emphasizing control or management decreases organizational flexibility, which, therefore, exerts negative influences on the organizational performance (Fekete & Bocskei, 2011; Deshpande et al., 1993; Gordon & DiTomaso, 1992; Han, 2012).

Since Samsung did not understand the attributes of software such as its lifespan or business mechanisms, it controlled and managed software services tightly in order to launch perfect software or platform services. However, for software services, the launch date was just the beginning of their lives. Therefore, while timely release and constant improvement were more important, Samsung's tight control delayed the release of software services. In addition, MSC tried to control platform participants such as third-party app developers as Samsung managed outsourcers that were subordinated to Samsung by contract. Their heavy review and control were applied to the reviewing process of applications uploaded by third-party developers, which frequently delayed the release dates of applications and required the investment of additional resources. Since there were alternative platforms such as Google Play Store or T Store in the Android ecosystem, developers began to exclude Samsung Apps from their platform consideration, which aggravated the problems of MSC's platform businesses.

Two aspects of organizational culture are significant here. Firstly, previous studies on organizational culture and performance generally focused on a single culture of an organization. However, in reality many lower-level organizations exist within a large organization, and these lower-level organizations can have different organizational cultures. This research provided evidence showing how multiple organizational cultures formed hierarchical relations and how these complex cultural relations influenced organizational performance. Secondly, while previous studies on platforms examine the perspective of platform management or media industry studies, the influences of organizational culture on platforms have been overlooked. This research provides empirical evidence showing that organizational performance is influenced by organizational culture. Therefore, exploring the relationship between organizational culture and platform businesses requires additional research.

The following chapter summarizes the significant findings for the research questions. It discusses how the findings agree with or deviate from the findings revealed by previous studies. After stating this dissertation's contribution to platform studies, the chapter also addresses research limitations. Finally, it will suggest the areas that still need to be explored and the foreseeable opportunities for the future studies.

Chapter 6: Discussion & Conclusion

Organizational culture does not change easily. In 2019, Samsung's excessive hierarchical and controlling culture caused a social issue and was reported by diverse news outlets. According to these news articles, an executive of Samsung Electronics coerced the employees into following unofficial and unfair rules that were designed to control or monitor the behaviors of employees (Kim, 2019). Below are some of the rules created by the executive.

- If you go out for lunch before lunch time, you will get minus points for your evaluation.
- If you leave the workplace in the morning without work-related reasons, you will get minus points for your evaluation.
- Don't brush your teeth except for lunch time.
- Put your main computer under the desk in order for me to see your screens (Kim, 2019).

Moreover, reports state that a director frequently threw office equipment at employees or verbally abused them while he gave orders (Choi, 2019). After this issue became public, Samsung emailed its employees to apologize for its inappropriate organizational culture. Until now, the hierarchy between superiors and juniors remains and superiors manipulate this hierarchical relationship in order to tightly control their subordinates.

This dissertation investigates how platform businesses have developed or changed to compose the current landscape of the global smartphone industry, focusing on the platform management and the global relations and interactions among influential players, especially platform providers and smartphone manufacturers in the smartphone industry. As mentioned earlier, political economy perspectives have not provided a lot of empirical

evidence. This case study of Samsung offers more extensive and meaningful answers to explain the shape of the industry's development, especially among large, multifaceted companies. In addition, this research examined the influences of the organizational culture on smartphone platform businesses in order to provide more holistic understandings of one company's attempts to control a segment of the industry. Since this research conducts a case study of a dominant global smartphone manufacturer, Samsung Electronics, understanding its organizational culture can illustrate culturally contextual aspects which may not ordinarily be considered by management or political economy perspectives.

This dissertation focuses on the challenges of a global hardware maker, Samsung Electronics, in the global smartphone market in order to examine the relationships within the current global smartphone industry. Samsung Electronics eagerly entered the global smartphone industry, chasing Apple's iPhone. Considering Apple's platform services such as the App Store or iTunes as one of the major success factors of iPhones, Samsung established the unit MSC that would manage Samsung's software or platform services and scouted and recruited a number of external software or content professionals. In addition, by hurriedly entering into a partnership with Google, Samsung finally became the leading manufacturer in the global smartphone industry. This company has maintained its global leadership as a smartphone manufacturer for a decade, though fierce competition always has existed. However, MSC's platform services have struggled, and only a couple of the services are barely keeping themselves alive. The current smartphone platform market has stabilized and there is no fierce competition anymore. This research assumed that the causes of Samsung's failure in its platform businesses would be revealed if approached from the perspectives of platform management, global relations, and organizational culture.

With these aims, this study asks how Samsung's platform strategies for its app market and operating systems failed to generate network effects and establish a successful ecosystem. Second, this research inquires into how the control mechanisms and hierarchical relationships among platform owners and platform participants in the Android ecosystem influenced Samsung's platform businesses. Lastly, this study questions how Samsung's cultural characteristics, hierarchy and micromanagement affected MSC's platform performance. These three perspectives, ostensibly, seem to be independent of one another. In this study, however, they commonly come back to the issue of *power*. While the chapter on platform strategies explains how platform providers become stronger than other platform participants, the chapter on control mechanisms shows how platform owners manipulate these power discrepancies between platform owners and participants to control the entire platform ecosystem. In addition, the chapter on organizational hierarchy and micromanagement discusses the power dynamics within an organization and among organizations.

I conducted in-depth interviews with 25 former or present employees of Samsung Electronics who had planned, designed, operated, or developed Samsung's smartphone platform services in MSC. Interviews were conducted between the second half of 2018 and the first half of 2019. Face-to-face interviews were conducted for 23 interviewees, and 2 video interviews were conducted in order to provide further discussions. Since this study aimed to analyze the genuine experiences that happened in the real business circumstances, I sought to interview industry professionals who were in charge of platform businesses in a smartphone manufacturer. Since this research investigates the differences between hardware and software, the global relations between platform providers and smartphone manufacturers, and cultural aspects such as hierarchy or flexibility, interviewing Samsung MSC's employees for this case study is meaningful; though Samsung is a hardware

manufacturer with a hierarchical culture, Samsung's MSC produced software services and its organizational culture was more flexible.

ORGANIZATIONAL HIERARCHY AND CULTURAL CHANGE

Chapter 5 on organizational culture discusses how Samsung's two cultural characteristics, its hierarchical culture and its micromanaging culture, that are regarded as Samsung's success factors in the manufacturing field, influenced the platform performance of Samsung's MSC. Many previous studies insist that a flexible culture increases organizational creativeness or innovativeness, which affects the performance of organizations, especially that of software companies, positively (Cameron & Quinn, 2006; Duke II & Edet, 2012; Fekete & Bocskei, 2011). Google's flexible culture has reportedly influenced its success in the software businesses; Google, for example, used to implement a "20% rule" which allowed its employees to use 20 percent of their work hours for developing personal projects (Wright, 2017). This organizational flexibility resulted in diverse, notable services such as Gmail or Google Talk. Interviewees, especially those who came from external media or software companies, agreed with the importance of flexibility on software or platform services. However, a company that both manufactures hardware and produces software faces two dissimilar processes. While hardware manufacturing has a fixed production process and this process is completed when the devices are handed over to customers, the process of platform or software development is totally different because organizations have to keep operating and improving these services after the launch of the services based on technical defects, customers' feedback, or changing trends, which requires organizational flexibility.

Therefore, Samsung pursued the creation of heterogeneous cultures: while it maintained a hierarchical culture for its manufacturing divisions such as the Mobile

Division, it allowed MSC to set a flexible culture. MSC's flexible culture encouraged its employees to develop more creative ideas. At the early stage of MSC, employees, especially those who were recruited from external media or IT companies, were eager to design or develop new platform services for Samsung's hardware devices. However, this study found the organization of MSC had trouble securing the autonomy to make decisions and execute creative ideas in order for organizational creativity to result in organizational performance, echoing findings from Jamrog, Vickers, and Bear (2006) and McLean (2005). Samsung's MSC maintained a flexible organizational culture which motivated employees to develop innovative ideas through bottom-up communication. However, these ideas could not be realized or affect MSC's platform performance because Samsung's Mobile Division—which was on a higher layer in organizational hierarchy than MSC—intervened in MSC's decision-making processes. MSC established organizational flexibility but lacked organizational autonomy and had to depend on the Mobile Division which produces hardware devices in the decision-making processes. This dependency in decision-making depressed MSC's platform performance. Since the Mobile Division regarded MSC's services just as efficient marketing tools for its smartphones, it made decisions to enhance the promotion of smart devices. Therefore, though they contributed to the sales of Samsung's smartphones, MSC's services could not be developed in accordance with the appropriate lifespan of software. This finding adds nuance to previous studies that claim a positive relationship between a flexible culture and organizational autonomy (Amabile, 1998; McLean, 2005), but which do not grapple with the size and scope of the large players in an industry such as smartphones, where multiple endeavors are common.

Meanwhile, Samsung's micromanaging and tight controlling culture which is defined with a Korean term *Gwanri* led Samsung to control the app development processes of external platform participants very tightly. This practice was contrary to the expected

practices of ideal platforms that attract voluntary participation first from as many developers as possible and restrict abnormal participants or undesirable behaviors afterwards (Zittrain, 2009). This tight control over platform participants resulted in a decrease in platform participants for Samsung's platforms such as Samsung Apps or Samsung Hub. To sum up, though MSC's flexible culture enhanced its organizational working atmosphere, it could not improve MSC's platform performance because of the interorganizational hierarchy and the micromanagement of external participants.

Interestingly, interviewees who are still working for Samsung or worked for the company for a while after the closure of MSC indicated that MSC contributed to the long-term change of Samsung's organizational culture and Samsung's inflexible and hierarchical culture has been gradually weakening. Interviewee B, who was working at Samsung at the point of the interview, described Samsung's recent cultural changes as follows:

I think Samsung's atmosphere has really changed a lot. I mean, we really wear shorts and come to work when we want to. Employee's rights seem to be protected a lot more. I'm not sure if it affected our working processes, but, for sure, though we don't have MSC anymore, the atmosphere of Mobile or other divisions has changed a lot and it is now very similar to that of MSC. I feel that MSC might affect these changes while we worked with other divisions in MSC or when we scattered over the company after MSC's closure.

Though MSC's flexible culture could not exercise positive influences on its platform performance at that time because of Samsung's hierarchical culture and MSC's lack of autonomy in decision-making, it served as a momentum to drive the company-wide atmosphere to be more flexible. All the interviewees remaining at Samsung agreed that they clearly recognized these cultural changes. This can be a sign showing that Samsung's culture would increase its innovativeness or creativity and also contribute to the enhancement of Samsung's software or service performance in the future.

NETWORK EFFECTS AND DEPENDENCIES

Chapter 3 discusses why Samsung's platform strategies for its app market and operating systems could not generate positive network effects and establish a successful ecosystem even with its substantial user base of Galaxy phones. I found that Samsung's company-wide strategy of fast following was also applied to its smartphone platform businesses. With this strategy, Samsung founded MSC and achieved a partnership with Google in order to chase Apple faster than any other followers. Therefore, Samsung adopted Google's Android OS for its flagship devices such as Galaxy S or Note series. Though this partnership led Samsung to become the leading smartphone manufacturer in a short period of time, it sacrificed the opportunity of Samsung's operating system, Bada, to be more developed. Therefore, Samsung's operating system could not generate positive network effects or build an ecosystem.

Unlike its operating system, Samsung Apps could fulfill the criteria of generating positive network effects by executing a fast follower strategy and increasing the user base of Galaxy phones. Previous studies state that obtaining either a substantial user base or a developer base is a precondition to cross-side network effects; if a platform successfully attracts either a user-side or a developer-side, the other side will follow. This is the process of generating cross-side network effects which leads to the expansion of an ecosystem (Parker et al., 2016). Regarding Apple's App Store business model as its success goal, Samsung also launched its app market, Samsung Apps, for its smart devices such as Galaxy S series or Galaxy Tab series. In the early days of Android OS, unlike Apple's App Store, Samsung made contracts with outsourcing software developers who would imitate Apple's popular applications for Android rather than encouraging the spontaneous participation of third-party developers in order to provide more quality applications to Galaxy users. This strategy contributed to the increase in the sales of Galaxy phones and the inflow of users

into the Android ecosystem. By doing so, Samsung could increase the potential user base for Samsung Apps, which satisfied the requirements for positive cross-side network effects derived from the user-side.

However, Samsung's partnership with Google, hurriedly established in order to follow Apple, set a structural trap for Samsung Apps. While Samsung entirely relied on Android OS, Google went into partnerships with many other hardware manufacturers such as LG or Huawei, which disabled the potential for the user base of Samsung Apps to be larger than that of Android. Samsung's user base always had to be a subset of Android users. Thus, while Samsung adopted the fast follower strategy to chase Apple and successfully attracted a substantial number of users for Galaxy phones, this strategy served as a momentum for the growth of Google Play Store rather than Samsung Apps.

Despite the failed challenges of Samsung's platform services, this study insists that Samsung's strategic move of chasing Apple was a matter of choice rather than something inevitable. In the interviews, the so-called *blue-blooded* interviewees tended to justify Samsung's decision and some of them maintained that chasing Apple with Google's Android was a good choice for Samsung's overall business performance. A couple of the interviewees even thought that both Samsung's hardware and software businesses might suffer heavily if it kept pursuing its own platform services. Nevertheless, the findings also suggest that the fast follower strategy is not suitable for platform services. Since the first successful platform tends to expand at the fastest pace and become a dominant player, *chasing* a successful platform has a slim chance of success.

Previous studies on network effects have not paid sufficient attention to complex relationships among different types of platforms. Though Samsung satisfied the precondition for positive network effects for Samsung Apps, it resulted in generating the greater network effects for its competitor, the Google Play Store. This happened because

the owner of Google Play Store also owned the Android operating system, which implicates the hierarchical relationships among different types of platforms. In the case of Samsung, it had to make the potential user base for Samsung Apps as exclusive as Apple's App Store did, or it had to secure a substantial user base that did not overlap Google's user base. Though Samsung tried to benchmark Apple's model, it overlooked the most important policy of Apple which is to develop its own exclusive operating system and form its exclusive user and developer bases. This model became impossible when Samsung executed a fast follower strategy and allied with Google. The findings show that attracting one side of platforms does not always lead to the cross-side network effects, and the contexts of individual platforms should be considered.

With these structural issues in the Android ecosystem, Samsung's platforms have struggled for a long time. According to the interviewees still working for Samsung, this company does not expect its platform services such as its app market or content streaming services to attain a notable success anymore. Samsung's operating system, Tizen, is only applied to minor devices such as smart watches instead of smartphones or tablets. Samsung's app market, Samsung Apps, changed its name to Galaxy Apps and distributes a limited range of contents such as Samsung's system update files. It is not playing the role of a genuine platform now. Samsung's content streaming services are not provided to Samsung's users.

Nevertheless, Samsung still thinks that it cannot depend solely on its hardware businesses and therefore, it keeps developing software, expecting these services to become Samsung's growth engines in the future. Musing on the future, interviewee M who is managing Samsung's software services characterized Samsung's future plan as follows:

Actually, we don't think there remains enough room for hardware differentiation. So, we now agree that we need to develop software services. So, we organized

Service Business Team in Mobile Division. We just gave up our former platform services such as Samsung Hub services. We now concentrate on some specific areas. First one is gaming. That doesn't mean we would make games. We are going to bring popular games and sell them 10 percent cheaper to Galaxy users. We are going to make customers use Samsung's game distribution channel instead of Google Play Store by reducing our sales margins. ... Second one is AI. Like Alexa or Siri, Samsung also developed Bixby. In terms of technological performance, it still has problems. But, as Amazon or Apple, or Google has pushed, Samsung is pushing ahead with this in earnest. ... The third one is advertising. As we all know, Google's customized advertising has advanced a lot. Samsung can also collect a huge amount of user data as a device maker. We are thinking of how we can use our big data for advertising. ... And there are some more. Such as the IoT or e-health. Samsung is making a lot of different kinds of devices and we have smartphones which can be the center of the IoT. Also, since we have wearable devices and Samsung is doing businesses in the bioindustry, we are trying to make something with what we already got. There might be some more, but these 5 to 6 areas are what our CEO is now pushing forward.

However, in its future business areas, Samsung seems to be a late comer rather than a first mover or a fast follower. For example, the AI market has been formed and already is dominated by a small number of market leaders. The areas of voice assistant or home automation that are already broadly commercialized have been advanced by software companies such as Google, Apple or Amazon. Samsung also entered the market with its AI, Bixby. However, as Samsung experienced in the OS market with its Bada OS, it would be difficult for a late comer to chase leaders who already began to generate network effects in this AI platform market.

In addition, in the gaming industry which has become the largest market in the media industry, Samsung's approach is quite different from that of software leaders. In March 2019, Google presented its game streaming platform, Google Stadia (Al-Heeti, 2019). Stadia is a cloud-based gaming service which enables game users to play the newest video games without expensive high-end hardware devices. Though there remain some technological issues such as input delay, these problems would be solved with the advancement of 5G technologies. Playing high-end video games without high-performance

hardware is innovative. Google's gaming platform might be a threat to hardware manufacturers like Samsung that seek hardware innovation.

Samsung's strategy is very different. As interviewee M mentioned, Samsung approaches its gaming business with a traditional low-price high-volume policy by reducing its own margin. While Samsung regards its gaming business as one of the future growth engines, its approach to this future business is very old-fashioned. This strategy would be efficient only when it is executed as a short-term promotion tool for a newly launched hardware device. In the long-term, the smartphone case study suggests it would not strengthen the competitiveness of the service, but instead would weaken its profit system.

Data-driven businesses such as customized advertising are also relatively mature. Software giants such as Google or Facebook already advanced data-driven technologies and dominate the advertising market. Though Samsung can collect a substantial amount of user data from the information or behaviors of its customers, these kinds of big data must be processed with advanced algorithms, which are not one of Samsung's strengths so far. With regard to data collection, it is difficult for hardware companies to outperform software companies. Software companies like Google have manipulated this information asymmetry in order to maintain their dominance. Moreover, e-health has already been a fierce battle field among a number of hardware or software companies, and Samsung's business of the Internet of Things seems to be doubtful because it does not offer a reliable operating system. In these future industries, Samsung is following global leaders. However, Samsung might not be able to take full advantage as a fast follower.

POWER DISCREPANCIES AND CONTROL

Organizational culture or corporate management is something that can be changed or improved from inside. Though not be easily changed, organizational culture is not static, and, as interviewees stated, Samsung's organizational culture began to change. Platform strategies also can be modified or improved based on the corporate goals or directions. In contrast, the issues of hierarchical relationships between platform providers and hardware manufacturers or power discrepancies among them are systemic issues that are difficult to be solved by individual players. This research raised issues about these structural limitations encountered by Samsung in the global smartphone industry.

Chapter 4 focuses on the relational issues in the global smartphone industry and discusses how Samsung's control mechanisms struggled to obtain the authority to control or govern the ecosystem of its platforms such as Samsung Apps or Bada OS. This chapter documents how the hierarchical relations or power discrepancies between Samsung and other players such as Google, prompted by the control mechanisms in the Android ecosystem, affected Samsung's platform businesses.

While previous studies on platform governance examined the cases of homogenous platforms (e.g., comparing competing operating systems), this research reveals that heterogenous platforms (e.g., operating systems and app markets) are intertwined with one another and exchange influences. In particular, those who own the platforms on the higher layer of the architecture could control the platform providers on the lower layer. In the Android ecosystem in which Samsung participates, Google provides Android OS positioning on the top layer of the entire industry, and was strongly controlling the whole ecosystem through diverse control mechanisms.

By being a sole provider of an operating system with no replaceability, Google could strengthen its authority to control the Android ecosystem. Moreover, Google

restricted other players from entering into such beneficial platform areas as app markets or content streaming services or competing against Google in these areas. Meanwhile, due to the existence or the control of Google with Android staying on top of the industry structure, Samsung had difficulty in securing the minimal authority to activate control mechanisms for its platforms such as Samsung Apps or Media Hub.

This research found that Google limited Samsung's platform businesses in somewhat unfair ways, using their hierarchical relationship and power discrepancies in the smartphone architecture. With Google Mobile Services (GMS), which provides rules for adopting Android, Google forced software bundling as Microsoft did decades ago in the PC industry. With these rules, Google pressured Samsung to prioritize its platform services such as Google Play Store ahead of Samsung's own app market, Samsung Apps. They went through negotiation processes, but the default rules were provided by Google and it never conceded when it came to profitable platform services.

Moreover, through unofficial or confidential channels such as a conversation between the executives, Google allegedly demanded that Samsung withdraw its platform services such as its app market or streaming services in the Android ecosystem. Most interviewees in this research insisted that Google's direct or indirect controls exerted negative influences on the performance of MSC's platforms, which ended with the termination of these services and the closure of the organization itself. This research maintains that Google's control mechanisms manipulating unofficial channels or compelling unfair bundling aggravate free competition in the global smartphone industry. With these unfair control mechanisms, Google excluded competing services and monopolized its services (e.g., Google Play Store, Google Maps, etc.) that collect ever-increasing amounts of user data, which is more problematic. The value of these user data would strengthen the power of Google even more.

These structural issues based on hierarchical relationships or power discrepancies can also occur to any players or in different industries. Recently, Google decided not to provide its operating system and other popular applications to Chinese smartphone manufacturer Huawei (Talev & Wingrove, 2019). The root of this issue is the international conflicts between China and the US that claimed Huawei prepared backdoors for its 5G equipment. The US pressured its companies or other countries to boycott Huawei's equipment and cease their partnership with Huawei. In 2019, these conflicts are intensifying and show signs of causing a more extensive trade war. The current study does not directly discuss the legitimacy of this state-led boycott or trade war, but illustrates some of the vulnerabilities of platform dominance. Speculating how Huawei's crisis would influence the 5G industry or how other related players such as Samsung would benefit from Huawei's crisis is out of the scope of this research.

Nevertheless, this study suggests that globally dominant OS provider Google can unilaterally breach its partnership with manufacturers or any other players within the Android ecosystem. If Google prohibits manufacturers from using its operating system, it will fatally wound hardware makers. While Huawei was quickly reducing the gap with Samsung in the smartphone hardware market, it might suffer a huge blow with the recent event. Huawei is expected to lose a substantial market share in the global smartphone industry (Doffman, 2019). Platform monopoly or oligopoly leads to power discrepancies, which allows platform providers such as Google to limit platform participants for the sake of their benefits or for any other reasons. A political event can happen to any other hardware manufacturers whose dependency on platform providers is high.

There is some good news for Huawei. Firstly, Huawei still has the biggest domestic market. The Chinese government or people might not want to witness the collapse of Huawei because it would damage the Chinese domestic economy. Secondly, Huawei has

developed its own Ark OS and it allegedly supports Android applications. Nevertheless, the possibility is very low for this Chinese company to compete with Google since it already has established market monopoly (except for Apple) because Google would activate diverse control mechanisms in order to prevent Huawei from absorbing any of its business areas.

Google and global software giants have begun to dominate the future industries such as big data, artificial intelligence, or gaming, and Samsung is chasing them from far behind. In the short run, Huawei's crisis could provide the opportunity for Samsung to increase its market share in global smartphone or 5G equipment market. However, from Huawei's case, Samsung might reconfirm that Google is the boss and it should obey Google's control regardless of the fairness of Google's control mechanisms.

GLOBAL DIMENSIONS

Political economists insisted that technological advancement in the IT industry enabled more flexible production process and the division between software and hardware production, which resulted in the hierarchical relationship between these two (Manovich, 2013). This study confirmed the hierarchy and power discrepancies between software and hardware in the global smartphone industry using the Samsung case, and also found that platform services were at the center of these relational issues. Previous studies found that the flexibility enabled by the IT technology raised an issue of exploiting outsourcers (Qui, 2012). My research finds that smartphone platform providers such as Google possessed the authority to control not only the individual developers but also giant manufacturing companies such as Samsung with the intensified flexibility that allows modularization and standardization in the smartphone industry.

Moreover, platform businesses such as operating systems were designed to establish and maintain market oligopoly by a small number of dominant platform providers due to the expandability of platforms caused by positive network effects. In addition, the issue of scale is at work. While the largest smartphone manufacturer, such as Samsung, generally shares less than 30% of the global market, the dominant OS provider, such as Google, takes almost 90% of the market. This issue of market oligopoly itself can be problematic. This research found that these dominant platform providers can manipulate their authority as platform owners into taking other profitable or emerging service areas and preventing their competitors from entering these business areas in unfair ways, which might be more problematic. As mentioned earlier, these business areas (e.g., app markets, maps, streaming platforms, etc.) are valuable not only because they are profitable but also because they can collect user data; the information asymmetry might help platform or software companies dominate one of the most significant future businesses—big data. As Zuboff (2019) insists, IT giants, such as Google, exploit a range of user data from their core services, control human behaviors, and threaten the global free market system. These practices are debatable because they can restrict free competition which is regarded as the basis of capitalism. According to the Microsoft antitrust law case, Microsoft's practices that are similar to those of Google were unlawful because it threatened competition and impeded future innovation in order to monopolize the market (Lohr, 2019).

As we are witnessing from the 2019 case of Chinese manufacturer Huawei attempting to break into global 5G markets, when Google ceases its partnership with specific manufacturers, these companies inevitably meet with serious difficulty. The relationship between OS provider Google and smartphone manufacturers had to be hierarchical, and manufacturers should be subordinated to Google because Android is the only option for smartphone manufacturers. Moreover, the fierce competition among

manufacturers makes the status of every smartphone manufacturer unstable. Even Apple, which has always been a successful innovator in the global smartphone industry, dropped to fourth place after Samsung, Huawei, and Oppo in the second quarter of 2019 (Eadicicco, 2019). While this dissertation explored the past experiences of Samsung's MSC, the findings from the interview data were not limited to the past failures of this company. The past of Samsung and the present of Huawei demonstrate the unstable and subordinate status of hardware manufacturers.

RESEARCH SIGNIFICANCE, LIMITATION, AND FUTURE OPPORTUNITY

Research Significance

This study is significant because it provides empirical evidence by interviewing industry experts of the smartphone platform businesses. By conducting in-depth interviews, this study provided their genuine work experiences, data that live outside most existing industry studies. This study reveals the unofficial or somewhat confidential interactions between platform providers and platform participants (e.g., how Google tried to block Samsung from entering some platform businesses). It reveals how theoretical concepts such as platform governance or control mechanisms work in the real industry. This is research that cannot be discovered by quantitative or descriptive studies but by qualitative studies.

In addition, this dissertation also reveals meaningful findings from diverse perspectives. While previous studies on platform management generally explored homogenous platforms, this study revealed that heterogenous platforms within an ecosystem shape hierarchical relations, interact with one another, and exchange influences. For instance, Google's operating system was revealed to affect its own app market or its competitors' app market businesses. In addition, while previous studies on the relationship

between organizational culture and performance focused on the cultural aspects of an organization, this research found that there can exist conflicting organizational sub-cultures within an organization and these cultures also establish hierarchical relations with one another. These findings show that studies need to pay more attention to the relational issues of multiple research subjects rather than a specific platform or a narrow culture. These findings or insights can contribute to the future studies on platforms or organizational culture. Since global conglomerates produce diverse software or hardware services, understanding the influences on one another or interactions with each other might provide opportunities for future research.

Research Limitation

This dissertation has at least two limitations. Though it provided more extensive and balanced answers for the research questions by approaching platform management, global relations, and organizational culture simultaneously, the current study did not discuss the critical research area of governmental policies or regulations that can exert huge influences on platform businesses or the global smartphone industry. This might be a research limitation. As mentioned in the case of Huawei, in addition to market logics or cultural aspects, governmental policies, regulations, or political conflicts are also closely related to the smartphone industry or platform markets. For example, one of the influential factors that allowed South Korea to take a huge portion of the Japanese share in the manufacturing field was The Plaza Agreement among countries such as the US and Japan which adjusted exchange rates and lowered the competitiveness of Japanese manufacturers in exports. Though Samsung's smartphone or platform business is not free from the issues of laws, policies, or international relations, this research does not address these research areas.

Secondly, while this study could find more realistic industry mechanisms beneath the surface by conducting in-depth interviews with industry professionals, the interview data might show a limited side of a story because this research recruited the employees of a certain company as interview participants. As a case study, the interviewees of this research could provide voices of a manufacturer and platform provider as well. Nevertheless, because their ideas or opinions might have been formed from their experiences in a specific company, their perspectives may be limited. Therefore, the fact that this study did not reflect the voices from other software companies or third-party app developers might be another research limitation.

Future Research Opportunity

This research suggests opportunities for further studies on platforms. First of all, since platform technologies are relatively new and constantly advancing, more studies on regulation policies for platform services are needed. Therefore, the need for exploring laws and policies is increasing. For instance, studies can explore how the issue of market oligopoly in global OS market includes potential legal issues, how different governments are regulating platform providers differently, and how they should be regulated in the future. In addition, studies can also examine how political conflicts or agreements influence the global platform businesses. For instance, recent conflicts between Huawei and Google can be approached from this perspective.

Secondly, listening to the voices of diverse players in the platform industry might provide an opportunity for platform scholars to understand this scene more deeply. For example, by investigating employees working for dominant platform providers, studies might find different answers about platform strategies or control mechanisms. In addition, interviews with third-party app developers would help to reveal how platform providers

exploit the voluntary participation of the developers or how the mutual interactions between platform providers and app developers generate synergy effects and contribute to the market growth. For example, further studies might explore chipset manufacturers that provide semiconductors in order to investigate the global smartphone industry more in a different way.

IT technologies have constantly advanced, and the global IT industry has developed fast. For the future IT fields such as AI, the IoT, or big data, global players are competing fiercely. These emerging fields will provide research opportunities for further studies. In particular, these areas can also be approached from different perspectives such as management, global relations, organizational culture, or regulation policies. Most of all, developing better analytical frameworks for IT industry studies that can commonly address these different research perspectives might provide a timely opportunity for future researchers.

Appendix: Interview Protocol

1. Failure Case of Samsung Apps
 - How did you (and your colleagues) try to build an ecosystem around Samsung Apps?
 - How did you try to attract third-party developers? Or how did you try to attract end-users?
 - Did Samsung have specific strategies that are different from those of other platforms?
 - How did you try to control or support other participants such as app developers? How did the control of Samsung Apps (e.g., app review process) impede or enhance the participation of app developers?
 - How did other influential players such as Google or SKT that were also running app markets respond to the launch of Samsung Apps?
 - Based on your own experiences or thoughts, why did Samsung's app market project fail? Also, how did this failure influence Samsung's performance in the smartphone industry?

2. Failure Case of Operating Systems
 - Why did Samsung develop operating systems such as Bada or Tizen while Samsung was in partnership with Google? And how did you try to expand your operating systems?
 - Why did Samsung adopt Google's Android for its flagship devices even after the release of Bada or Tizen?
 - How did Samsung try to attract software or app developers to its operating systems?

- How did Samsung try to control or support other participants such as telecom companies or app developers?
 - How did other players such as Google or SKT respond to the development of Samsung's operating systems?
 - Why do you think Samsung's OS failed?
3. Organizational Culture of Samsung's MSC
- (If the interviewee is from Samsung's different division) How was the working atmosphere of MSC similar with or different from Samsung's other divisions? Was it more hierarchical? How did this atmosphere affect Samsung's platform businesses?
 - (If the interviewee is from another company) How was the working atmosphere of MSC similar with or different from your former company? Was it more hierarchical? How did this atmosphere affect Samsung's platform businesses?
 - How did you feel about the working atmosphere of MSC when you work with other divisions of Samsung such as the Mobile Division? How did this atmosphere affect MSC's businesses?
 - Have you heard about the term Samsung of Gwanli (Samsung of management)? How do you think this organizational characteristic of micromanaging affected Samsung's platform businesses?
 - People say that Samsung usually chases the leaders as fast as possible rather than leads the market. Do you agree? How do you think this strategic move influenced Samsung's platform businesses?

- Do you think that the characteristics of Samsung or MSC, such as hierarchical relationships, micromanaging, or fast following, influenced working with other partners within the platform ecosystem?

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