Promoting Globally Successful (and Innovative) SMEs: Strategies by Korean Firms to become Independent Global Specialists

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Keun Lee 1*, Jooyoung Kwak 2, and Jaeyong Song 3
1Department of Economics, Seoul National University
2Yonsei School of Business, Yonsei University
3School of Business, Seoul National University

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* Correspondence to: Keun Lee. Department of Economics, Seoul National University, 599 Gwanangno, Seoul, Korea.
Email: Kenneth@snu.ac.kr; Phone: +822-880-6367.
Abstract

The paper investigates the catching up dynamics of firms from emerging markets, particularly in Korea. This work focuses on the independent small and medium-sized enterprises (SMEs) in charge of all value chains that have achieved significant catching up with incumbent companies in terms of global market shares. Our theoretical framework identifies both the commonalities and differences between successful and large enterprises and SMEs from emerging economies, such that they have a common start (resource scarcity) and end (global success owing to their own path-creation) achieved through different routes. We elaborate the different routes taken by SMEs over their life cycles, particularly in how they specialize in and face different kinds of risks from those facing large enterprises. Case studies of 10 middle-sized firms show that an important element of catching up is creating a “new path” rather than following the path of their forerunners. We analyze several risks of employing path-creation strategies, such as counterattacks and intellectual property rights lawsuits from incumbents, and discuss the ways by which to overcome them. We also find that cultivating firm-specific knowledge from continual trial-and-error in in-house experiments, and not from a priori scientific research, is important. Given the financial constraints that are typical of middle-sized firms, the latter strategy is less costly for them, while the former (large-scale lab-based R&D) is more affordable for big firms. If previous literature simply emphasizes the importance of innovation and capability building, the present research suggests that such capability should be combined with the right strategies from the beginning.

Keyword: Middle-sized firms, Catch-up, Emerging markets, Path-creation, Tacit knowledge
1. Introduction

The rapid growth of emerging markets in recent years has become the subject of growing interest among researchers. Technically referred to as the higher tier of countries in the developing world, emerging markets typically have less developed institutions and insufficient resources in the areas of technology, capital, and managerial talent. Given this situation, researchers are eager to investigate the mechanisms that enable firms in such emerging markets to rise as competitive international players. Mathews (2002) focuses on their competitive advantages associated with low costs. An important theoretical work in this regard is that of Bell and Pavitt (1994), which distinguishes “technological capability” from production capacity as examined in early works (e.g., Katz, 1987). They argue that technological capabilities have risen in only a few dynamic and catching up developing countries. Other studies seek the answer to the question of how to make the critical transition from production to technological capabilities and facilitate further learning at the same time (Hobday 1994).

Many existing studies have focused on large firms or business groups. Based on the work of Bell and Pavitt (1994), Figueiredo (2003) classifies technological capabilities by types and functions using a sample of large firms in Brazil, while Dutrenit (2000) consider a sample of Mexican firms. There is also a large volume of literature on large business groups from emerging economies since the work of Amsden and Hikino (1994), which focused on the lower level of capabilities, such as “project execution capability” in diversified entries by various business groups, rather than the technological capabilities addressed by other works on business groups (e.g., Kim, 1997; Lee and Lim, 2001; Choo et al., 2009). One of the most recent attempts at this subject is that of Malerba and Nelson (2011); however, this work does not focus on the pitfalls and challenges of smaller specialized enterprises because of the paucity of global successes achieved by smaller enterprises from emerging countries.

Given that 60% of all firms in emerging markets are small and medium-sized enterprises (SMEs) (The Economist, November 13, 2004), conducting theoretical and empirical research on SMEs from emerging economies is important. In their statistical study on SMEs in Korea, Kim, Song, and Lee (1993) find that the ability of SMEs to catch up in the context of global competition is different from those of large enterprises due to their very severe resource shortage. There are many existing works on innovative SMEs, such as those of Khan and Manopichetwattana (1989), Roper (1997), Romijn and Albaladejo (2002) and Rogers (2004). However, they mostly focus on firms in advanced economies, and are confined to statistically identification of determinants of innovative and non-innovative SMEs, but lacking in dynamic perspectives on their longer term evolution and capability building. One of the
earliest works on SMEs in developing countries is that of Romijn (1999), which is motivated by the importance of small firms in absorbing surplus labor in developing countries. The author uses the term “technological capability” and measures it using various indicators. However, the sample firms in that work are very isolated cases in Punjab, India, none of whom have reached the stage of independent in-house R&D.

There are examples of SMEs from developing countries that have successfully competed in both local and international markets. Some middle-sized firms have acquired design capabilities based on their subcontractor experiences (Berger and Lester, 2005). These successful middle-sized firms have demonstrated that, despite the initial absence of upfront technology as well as financial and human resources, competing against firms from advanced economies in the world market is possible if they implement appropriate strategies. In their statistical study of Korean SMEs during the mid-1990s, Kim and Lee (2002) report that only a small number of Korean SMEs at that time became capable of product design through technological learning. But, they did not discuss the case of SMEs emerging as their own brand owners. For researchers in the area of global production networks, most studies have focused on collaborative or subcontracting relationships (Ernst and Kim, 2002; Sturgeon and Lester, 2004; Berry, Rodriguez, and Sandee, 2002). Nonetheless, the catching up of middle-sized firms from emerging markets has been affected by competition as well as collaboration with firms in advanced countries. To date, relatively little is known about the antecedents, strategies, and mechanisms of their catch-up, especially when they go beyond sub-contracting to establish themselves as own-brand-based global players.

In summary, we see that there remain three important rooms for further contribution in SME studies. First, few existing studies deal with the more recent phenomenon, in which SMEs from emerging markets become their own-brand based producers engaging in own brand manufacturing (OBM), rather than in a subcontracting relationship with the multinational corporations (MNCs) in an own equipment manufacturing (OEM) or own design manufacturing (ODM) arrangement. OBM demonstrates a significant departure from the past because setting up an international market network

1 According to Hobday (1994), OEM is a specific form of subcontracting under which a complete, finished product is made to the exact specifications of the buyer. Some OEMs evolve into ODM, which carries out most of the detailed product design, while the ODM’s customer continues to carry out marketing functions. On the other hand, the OBM carries out all the functions of manufacturing, designing new products, R&D for materials, processing products, and conducting sales and distribution for its own brand.
takes substantial resources. The present study identifies a sequence of different challenges firms from emerging countries must face, particularly from an earlier challenge of upgrading production technology to technological capability to a new challenge of making a transition from technological to (global) marketing capabilities. The present study is unique as it deals with the new transition of SMEs from ODM to OBM, whereas existing studies only deal with the first transition from OEM to ODM.

Second, few existing studies deal with SMEs who are attaining global independence and managing their own global value chains ranging from R&D and production to marketing, thereby challenging the incumbent companies from the advanced world. This fight for global independence is risky as it invites counterattacks from the incumbent. The present research is new in the sense that it touches upon the direct risks and possible crises coming from the counterattacks of incumbents, as well as indirect risks associated with being globally independent.

Third, while there are many statistical analyses to identify the performance determinants of successful SMEs, each of them mostly remain isolated without being integrated into a theory; in addition, most of them are static without taking a dynamic perspective to explain the longer term evolution and rise of latecomer SMEs. In the current paper, we suggest a new theoretical framework to understand this new brand of SMEs. The first task involves making a comparison between these SMEs and large enterprises. For instance, SMEs cannot afford to pursue the diversification conducted by large companies, while middle-sized firms have to achieve success based on specialization. Our theoretical framework delineates the commonalities and differences between big enterprises and SMEs from emerging economies. We will also argue that both have a common start (resource scarcity) and end (global success owing to their own path creating), although these are achieved through different routes (eg. specialization vs. diversification).

In sum, our study focuses on independent, rather than affiliate or subcontracting, SMEs in charge of all value chains—from R&D and production to marketing—and asks how they have achieved a significant catching up with incumbent companies in terms of market shares in global, regional, or country markets. Although market shares are our quantitative and general indicators of catch-up, our main focus is on the qualitative indicators that are more specific to SMEs. Given that there are two types of firms in our sample firms, our criterion for measuring the successful catch-up in the consumer goods group is that they should have established themselves as OBM firms, rather than OEM or ODM ones. For the capital goods group, our criterion for the catch-up success is that they should sell to multiple numbers of client firms, rather than being a subordinate supplier to just a single client firm. The present
study examines the 10 cases of successful catching up accomplished by middle-sized firms in Korea. The choice of Korean firms is necessitated by the fact that Korea has generated such middle-sized firms in meeting our criterion of globally independent brand-owing producers, as well as successful large enterprises, which makes more sense of the comparison of SMEs and big enterprises from the same country.

If many studies simply emphasize the importance of capability building, we go beyond by touching upon more specific strategy issues. We identify specific challenges and risks that smaller firms on the catch-up track are likely to face, thereby providing a more extensive and dynamic perspective. Our present study also attempts to identify what happens after the acquisition of innovation capability (i.e., the strategies of positioning after catch-up) and the establishment of entry barriers against subsequent entrants. Finally, we argue that successful catch-up cases tend to be based on the creation of new paths (Lee and Lim, 2001), rather than on the imitation of existing paths of incumbent firms.

The present paper is organized into sections. Section 2 develops a theoretical framework. Section 3 briefly describes our methodology and profiles of the 10 firms. Section 4 discusses the key issues in the catch-up, i.e., strategic fundamentals, mid-course challenges and risks, and the post-catch-up positioning. Section 5 concludes the study.

2. Dynamics of the SME Catch-up: A Theoretical Framework

In Mathews (2002), the latecomer firm is defined as a resource-poor, late entrant with a strategic intent of catch-up as its primary goal, and with some initial competitive advantages such as low costs. We think that this definition applies equally well to big or small firms. Catch-up by the latecomers, whether big or small, has some common features, such as both started with meager resources or capabilities. However, the degree of resource shortage should be more serious in the case of SMEs, which implies the necessity of different catch-up strategies from those used by larger latecomers. We argue that they share the common success formula for catch-up, which requires the creation of different paths rather than those used by forerunning companies. They can start by following the path of forerunners at first, pursuing an aggressive catch-up, and even forging ahead of the forerunners.

For the case of business groups in Korea, several existing studies have already confirmed the importance of path creation in catching up. This idea is consistent with the leapfrogging hypothesis of Perez and Soete (1988), in which the latecomer takes advantage of the paradigm shift period in
advancing toward new technologies while saving investments into old technologies. Successful catch-up in wireless communications (i.e., mobile phones) involved going on your path (CDMA technology) rather than the existing path (TDMA technology), as analyzed in Lee and Lim (2001). The rise of Korea in the display industry also involved going to a new path (digital high-definition-TV) rather than following the forerunning Japanese path (analog-based HD TV) (Lee et al., 2005). These studies have shown that the period of paradigm shift is often a good opportunity to go for a new path and succeed with leapfrogging. This is because forerunners tend to stay longer with an old paradigm or technology, given their sunk investment and dominance with these.

Our task is to show the importance of new path creation through the case of SMEs. We know that an imitative strategy (i.e., following a path along with the OEM arrangement) had led to an unprecedented export growth in the past for Korea and Taiwan, as discussed by Hobday (1994) and Kim (1997). The imitation strategy implies that latecomers do not take risks but choose to stay dependent upon a few MNC vendor or big client firm. This strategy is not totally bad as it may lead to a stable growth for a medium or even a long period of time. Its future in the long run is often uncertain as new late entrant firms emerge from the next tier of catching up countries, offering lower wages and costs (Lee and Mathews, 2009). For example, there were more than 500 OEM toymakers in the mid-1980s in Korea. Currently, the number is almost zero because most of them either went bankrupt owing to the arrival of other rivals, such as China, or moved their factories to China (Lee, 2005). At present, Korea has about 10 ODMs and only 1 OBM toymaker (i.e., Aurora World), which is the case study discussed in the current paper. The CEO (Mr. Roh) of this company told us that he made a fortune in the 1980s via OEM, and he also saw its long-term limitations and constant squeezing of the profit margin and erosion of price competitiveness with the rising wages in Korea. This forced him to take the risk of trying to become an OBM. The limitation of path-following catch-up strategies are also discussed in the case of other countries, as in the case of the pulp and paper industry in Indonesia (Van Dijk and Bell, 2007), and even in Malaysia as emphasized in a study by Rasiah (2006). In that work, the author found that the latecomer firm achieved some catch-up in terms of sales and capital accumulation, but without technological innovation.

The inability of latecomers to simply follow the footsteps of forerunning companies and to catch-up with and surpass the incumbent companies seem somewhat logical and natural. They may start with producing and selling similar or imitative products of the incumbent; however, to rise as an independent rival company, they should develop and sell differentiated and better quality products at lower prices.
Otherwise, clients have no reason to switch and start buying products by the late entrants. Another reason for differentiation or path creation is that too similar products are often subject to IPR lawsuits by the incumbent, as will be discussed later. Using our cases, we will show how SMEs have created their own paths (or products) that are not entirely new but are often based on the new combinations of existing paths (or products).

The above discussion boils down to the statement that big and small firms from emerging economies share a common start (little resources) and end (path creation in a globalized system). Then, our hypothesis is that big and small firms go through quite different processes of catch-up and path-creating processes. This characterization of the common start and end and the different processes are consistent with the observation by Tidd, Bessant, and Pavitt (2005: 126) that both small and big firms have the same objective of developing technological competencies in order to produce goods that are difficult to imitate, but that small firms tend to have different organizational strengths (e.g., easy communication), technological weaknesses (e.g., specialized range of competencies and inability to manage complex systems), and being located in different sectors (specialized supplier and supplier-dominated sectors).

All firms are small upon inception, but in choosing a different sector (often as a later entry), they can end up either as big enterprises or SMEs if they are successful. For instance, the first firms in both the Samsung and Hyundai groups started out as small firms, but by entering sectors that are involved in chemicals, shipbuilding, and automobiles, they have ended up as big companies. Our present study deals with 10 SMEs, some of which have grown for several decades but are still small compared with firms of a similar age in other sectors. For example, Aurora World is a very successful global company marking its 30th anniversary this year; however, it is still much smaller than Samsung Electronics at its 30th year. In our sample group, SMEs have chosen different sectors and have become successful global players, although they are much smaller than the typical affiliates of business groups.

Given the success of both type of firms, what would be the difference among their success formulas? This is the starting motivation of our paper. Table 1 summarizes the differences by showing that the big and small firms have a common start and end but exist in different sectors that produce

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2 CEO of Jusung Engineering (Mr. Hwang) told this story about the latecomer firm’s need to have a differentiated product with higher quality at lower prices.

3 Figueiredo and Dantas (2009) also discuss the several stages within the knowledge accumulation process, which also involve a stage where latecomers introduce a new technology within an existing, or along new, technological trajectories. The discussion is at the system level rather than at the firm level in particular SMEs.
different products: one that is scale sensitive, and another that has less scale-sensitive products or technologies.

[Insert Table 1 here]

Given that every production involves the “economy of large production,” which Penrose differentiate from scale economy, cost-efficient size is smaller in the SME-prone sectors than in big-business-prone sectors. In Penrose’s term, the advantage of being a big firm is different across sectors. Some latecomer firms, such as today’s Chaebols, have chosen scale-sensitive sectors, in which more government support are available in the form of subsidies and privileged access to foreign exchange and bank loans. The government favored business groups and assists them in resource mobilization, such as amassing capital and making it available for investing in large-scale plants in order to reduce risks (Mathews, 2002; Kim, 1997). Government-led R&D networking, such as the CDMA consortium in Korea, has enabled business groups to leapfrog along the established technological path. They have kept entering new sectors following industrial policies and promotion by the government; thus, their initial strengths lay in their “project execution capabilities” (Amsden and Hikino, 1994) that were fully utilized by successive entries and diversification into new sectors.

In contrast, some latecomer firms that are now considered global category killers entered less scale-sensitive sectors that were not the target of national-level industrial policies. They started their enterprises as OEMs or subcontracting suppliers to foreign or local vendor firms. Thus, from the beginning until the end, they have stayed in the same sector and went through the process of specialization, which is quite the opposite to the case of diversification by big enterprises. Pavitt (1991) and Tidd, Bessant, and Pavitt (2005; 196) also point out that SMEs tend to specialize. Some Chaebols also did some OEM at the entry stages, but their sectors were different (e.g., automobiles) and they soon switched to selling their brands on world markets because of the more capable marketing networks they have developed (Lee, 2005).  

The contrast of diversification vs. specialization translates into different upgrading patterns, particularly those of successive entries into new or high-value added industries (big business) vs. upgrading into higher value-added segments or activities in the same industry (SMEs) (Table 1). Larger latecomers (or business groups) pursued diversification, and thereby built synergic bases across affiliates

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4 Hyundai Motors had only two years of experience with Ford in OEM arrangement, but soon started to export their own brand, which is independent of Ford’s assistance. Samsung also exported their own brand of radios and other consumer electronics during its early stages.
through resource sharing (Chang and Hong, 2001; Lee and He, 2009). Owing to their greater investment capacities, they adopted a scientific R&D-based approach in the acquisition of proprietary knowledge (Choo et al., 2009). Thus, it may be more correct to say that business groups are involved in both types of inter- and intra-industry upgrading, as noted by Lee and Mathews (2009), yet the contrast is still valid as inter-industry upgrading is not observed in SMEs that are doing specialization. For the latter, their first upgrading is through a transition toward becoming an ODM, but are still relying on subcontracting with, and marketing by, the leading brand-owning or final assembly firms.

Although this initial upgrading corresponds to a more gradual increase or catch-up of market shares or sales, the rapid and eventual forging ahead is triggered only when an element of path creation is involved, which implies a more direct competition with the incumbent. A momentum of breakthrough is open only when the sub-contracting-based SMEs start selling their own brand and/or developing their respective marketing networks. While it is a path-creating process for both big and small firms, they still face different risks in using the path-creating strategy. As discussed in Lee et al. (2005), the two kinds of risk that big enterprises face are the risks of choosing the right technologies or standards out of several alternatives technologies, and whether there are enough initial demands for this first-mover type products. For SMEs, their new products are less radical and often comprise a new combination of existing products (as explained later), thus facing fewer risks in terms of facing an initial market demand (demand is already there) and choosing the right or wrong technologies or standards. For them, more risks come from the response from incumbents as the latter do not want the former dependent (OEM) suppliers to become a rival OBM company or begin selling to other firms, which allows the former some bargaining power over procurement prices.

The aversion of former buyer firms toward their suppliers to becoming OBM is documented in earlier studies, such as Giuliani, Pietrobelli and Rabelloitt (2005), and Bazan and Navas-Aleman (2003). Thus, in the case of consumer goods, former vendor companies (brand owners) often stop giving OEM orders to kill the company that has begun to sell their own competing brands. In the case of capital goods, the incumbent companies suddenly charge predatory prices in the market once they realize that the latecomer firms have become successful in developing their own products, posing the threat of competition against products made by the incumbent. The incumbent sometimes react by filing lawsuits against the latecomers, saying that the latter copied their products. In other cases, the small supplier firms had trouble with the client firm over selling prices and delivery time, among others, which sometimes led to sudden halt in purchasing orders from the client to the supplier firm.
Based on the above and after comparing the catch-up processes of both types of firms, let us now focus on SMEs and discuss their dynamic transition over the process of catching up and path creation. Figure 1 describes this whole process in terms of the several steps along the typical S-shaped curve with some twist.

[Insert Figure 1: Dynamics of SME catch-up]

The first stage is that of an entry where SMEs start business in low-value added activities or goods as a supplier to one or a few OEM vendor firms located locally or overseas. The founders themselves tend to have working experiences as local salespersons or as members of the after-sale service staff in former foreign companies or those selling imported foreign products. At this stage, an important advantage of small supplier companies lies mostly on cheap wages.

The second stage is that of a gradual catch-up based on some learning and upgrading. New cost advantage may become available through some learning by doing (production). Based on low costs, these SMEs hold onto foreign orders and gradually increase their market shares following the gradual increase of productivity, which we can consider as a path-following catch-up (Lee and Lim, 2001). More successful companies then make a move toward ODM by doing some designs of the products they used to produce. In the case of capital goods companies, some of them make a transition toward medium value-added segments, particularly to more sophisticated parts and supplies.

The third stage starts with SMEs trying something new, thereby taking on associated risks. The new trials include selling their own brands (OBM) in the case of consumer goods or, in the case of capital goods, developing and selling their own products that they used to produce or provide the after-sales service for. This effort to create their own path and become independent is not easy and involves several risks, including counterattacks from incumbents. Thus, this stage can be prolonged with a slowdown, which may even lead to a decline of sales or market shares and, eventually, to a possible crisis.

For example, when Aurora World started to sell its own brand in 1991, the incumbent vendors cancelled and stopped their OEM/ODM orders in an attempt to prevent this company from rising as a new brand owner. As shown in Figure 2a, the sales of this company declined from the year 1991 when they took the road of being an OBM and then stagnated for 5 years. We call this period the “OBM river,” which must be crossed to establish oneself as an OBM company. Similar turbulence in sales is observed in other cases. Figure 2b shows the case of Jusung experiencing sudden drop when they

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5 For example, the founder of Aurora World used to work for a foreign company as a local sales person in Korea, while the founder of Jusung used to work as a local repair and maintenance engineer for capital goods made by foreign companies and are sold to big Korean assembly makers, such as Samsung or LG.
encountered IPRs lawsuits with rival companies, as well as the cancellation of purchasing orders from client firms after being hassled over delivery prices. Figure 2c shows the case of *Sunstar*, whose sales declined from 1999 resulting from the court order to hold sales in the market when its Japanese rival, *Tajima*, accused it of patent violation. It is clear if they were lost in the IPR dispute, they must have fallen into the case of ‘aborted catch-up,’ as drawn in Figure 1. In general, the performance of SMEs is subject to more turbulence compared with that of enterprises with diversified business structures and cross-subsidization among affiliates, as verified by Lee, Kim, and Lee (2010) who compare the variation of performance between large diversified group firms vs. SMEs.

The success of latecomers in launching new products and/or overcoming counterattacks from the incumbent initiates the beginning of the stage of rapid catch-up (the steep, sloped curve in the figure). If they fail completely, this is classified as aborted catch-up (Figure 1). Another possibility is that the latecomers do not take risks and choose to stay dependent on a single or a few MNC vendor firms or a single client firm. This strategy of path-following catch-up is not totally bad as it may lead to a stable growth for a while. Thus, this case is drawn with a curve with longer span in Figure 1. Its longer term destiny is often uncertain as new late entrants firms emerge from the next tier in catching up countries, offering lower wages and costs (Lee and Mathews, 2009). The limitation of path-following catch-up strategies are shown in the case of other countries reported in previous studies (Van Dijk and Bell, 2007; Rasiah, 2006).

In what follows, by elaborating several cases, we show that the successful catch-up of middle-sized firms in emerging markets are associated with path creation rather than path following; more importantly, we also show that the path (or product) is not entirely new but is often based on new combinations of existing paths (or products). In the present study, our goal is to identify not the commonly “sufficient,” but the “necessary” conditions underlying the rare and distinct successful experiences of middle-sized firms that choose to pursue strategies of specialization or their own branding, rather than diversification or subcontracting.

3. Methodology and Case Profiles
3.1. Research Design and Method

The present study examines the catch-up dynamics of SMEs from Korea. Korea was regarded and often criticized as an economic success favoring a few big enterprises and ignoring the SMEs. Therefore, promoting successful SMEs has recently been a top public agenda, and successful SMEs are
often covered by mass media, allowing them to be highly visible. In this work, we first identified many cases of successful SMEs from the media and especially from a famous television program, which introduces many globally competitive SMEs. From this list, we selected those that satisfy the following conditions: the firms must maintain an independent OBM status (not serving as affiliates or subcontractors); they must be involved in all value chains, from R&D and production to marketing; and they must have achieved meaningful success in catching up with incumbent companies in terms of market shares in global or regional/country markets.

Due to the uniqueness of our sample of globally successful SMEs, the case study method can be justified because it enables us to present more in-depth findings, and because this method “represents an extreme case or a unique case” (Yin, 2003, p.40). One major concern in this case study consists of other characteristics that may affect the course of catch-up performance. Hence, we examine multiple cases from several sectors, such as household or kitchenware goods, specialty or preference goods, cosmetics, and intermediate/capital goods.

To conduct multiple case studies, we formed a research team comprising 10 or so members who interviewed the target firms from as early as 2006 and wrote together a book (Lee, 2008) in Korean language. That work comprises descriptive analyses of the target firms and serves as the primary information source for the present paper, which is a theoretical synthesis with more updated information. In summary, data were collected through interviews and archives; the interviews began in 2006 and were repeated until March 2011 for updates further information. Interviews were semi-structured and lasted for 1.5 hours per person on average, and involved at least two persons from each company. A summary of 10 cases is presented in Table 2. In what follows, we provide the basic profiles of these firms with a specific focus on their catching up performances.

[Insert Table 2]

3.2. Case Briefing

Established in 1981, 1986 and 1971, *Aurora World*, *Shimro Musical Instruments*, and *HJC Helmets* produce toys, musical strings, and helmets as their main competitive items, respectively. They have become OBM companies by going through the stages of OEMs and ODM. They have caught up with leading brands in the global market, such as Ty for *Aurora World*, Suzuki for *Shimro Musical*

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6 For further information, please visit [http://www.kbs.co.kr/end_program/1tv/sisa/sinwha/index.html](http://www.kbs.co.kr/end_program/1tv/sisa/sinwha/index.html).
Instruments, and Shoei or Bieffs for HJC Helmets. At present, Aurora World is now ranked 2nd in North America in terms of brand recognition, Shimro Musical Instruments has gained the largest market share in U.S., and HJC Helmets is now ranked as the largest in the world market.

Established in 1978, 1943 and 1985, Cuckoo, Hankook Chinaware, and Lock&Lock produce rice cookers, chinaware and glassware as their main competitive items, respectively. Cuckoo and Hankook Chinaware started out by doing OEM but made a transition to OBM, whereas Lock&Lock had some failure experience with OEM in their old items, so they changed the items and pursued their own branding strategies. The three firms all took over the Korean market from the lead brands from developed countries (i.e., Zojirushi or Panasonic for Cuckoo, Wedgewood or Ralph Lauren for Hankook Chinaware, and Tupperware for Lock&Lock). Furthermore, they are now all successful in terms of global market competition.

In the cosmetic goods, the rivals that Amore Pacific targeted during its catch-up process were foreign lead brands (notably L’Oreal) in the Korean and global market; on the other hand, The Face Shop dealt mainly with domestic consumers, but eventually outperformed its forerunner (Missha) in the domestic market. Established in 1945, Amore Pacific constantly gained a sharp increase in the global market, such as being 4th in France. Established in 2004, the Face Shop outcompeted the incumbent (Misha) to obtain the largest market share in the Korean cosmetic brand-shop market, especially in the low or middle-end cosmetics range.

Established in 1995, Jusung Engineering produces atomic layer deposition, an innovative product for semiconductor manufacturing equipment. Established in 1986, Sunstar produces a compact version of computerized automatic needlework sewing machines as their core items. Jusung Engineering and Sunstar now sell to clients from all over the world after years of gaining experience as specialized suppliers to large final goods assembly firms. Jusung Engineering now holds 33% of the world market and, more specifically, 50% of the world hemispherical grain (HSG) market. Sunstar also recorded the largest market share in the world in this area in 2005. Its SWF brand occupied 33% of the world market share, outcompeting Tajima, whose market share fell from 60% in 1997 to 27% in 2003.

4. Key Aspects of the Catching up Process
4.1. Fundamentals Required for Achieving Successful Catch-up

Learning and Acquiring Innovation Capability: The First Fundamental Requirement
All firms in our present study that accomplished catch-up had endeavored to develop their respective innovation capabilities. For example, Aurora World’s journey up the technology ladder from OEM and eventually to OBM began with its enhanced design capability. With better product quality and design uniqueness, Aurora World, as it continues to attract foreign buyers, successfully overcame entry barriers and counterattacks by its forerunners and survived with its own brands. Although Jusung Engineering and Sunstar have been driven into a corner by foreign firms that filed IPR lawsuits, these companies coped very well owing to their innovation capability, which enabled them to develop products with their own intellectual property rights.

Therefore, we argue that product design capability constitutes the first basis of sustainable catch-up, without which catch-up cannot occur. A corollary is that, if latecomers do not possess innovation capability, they cannot introduce new or differentiated products; consequently, they cannot compete against incumbent firms. Therefore, catching up is discouraged or not even attempted in such cases. The next and more important issue is related to on how firms acquire innovation capability. The cases discussed above show that the acquisition of innovation capability requires three things, namely, relevant “teachers,” effective access to foreign technology, and continuous in-house learning from trial-and-error. All these elements are critical in determining the success of catch-up. Consistent with the literature, our sample firms had such teachers in the form of foreign firms, universities, or public research institutes, and effective access had been arranged through a variety of channels, including subcontracting, joint production, licensing, equity-based alliances, or joint R&D. Finally, the acquisition of innovation capability is complete when in-house learning from trial-and-error is present, which is based mainly on what has been learned from the “teacher” through various channels.

The balancing point between external and in-house learning varies among sectors. Although the role of science-based R&D should not be neglected, the high-tech-centered model might be too costly for SMEs or it may not be the only path toward success. Our cases show that on-site experiments from trial-and-error generate product uniqueness. The probability of catch-up increases as firms become better at connecting their (external) learning with (internal) knowledge creation. In a sense, it is a recursive process of accessing, learning, and new knowledge creation (Nonaka and Takeuchi, 1995).

For example, Shimro Musical Instruments had teachers in the form of the German artisans, from whom they learned the core skills of handmade violin production. From these teachers, the company eventually created their own hybrid technology after a long trial-and-error process. Hankook Chinaware initially learned bone china technology from the Royal Doulton Group, a global bone china brand, and
then established a joint venture with Miji Tech, a firm specializing in the application of nanotechnology to learn about it. Based on these new knowledge bases, this company developed its own Silver nanotechnology-based bone china products.

*Using Innovation Capability to Create a Unique Path: The Second Fundamental Requirement*

Although the preceding sub-section emphasizes the importance of innovation capability and stresses that the acquisition of it requires three things (i.e., teachers, access, and local learning), innovation capability has already been discussed in many literature on latecomer catching up. In this work, we want to point out that going beyond sub-contracting to become independent branding and marketing firms requires the creation of a new path or at least the addition of something different and unique rather than just simply imitating the incumbent. Successful catch-up cases in our present study created unique paths and/or differentiated their products from those of the forerunners. Indeed, path creation as a catch-up strategy not only includes the development of new products different from those of the incumbents, but also the exploration of new markets or market segments. Often, such products are the result of a combination of existing things. Let us illustrate this point by referring to the examples below.

*Shimro Musical Instruments* combined two opposite production methods in their attempt to manufacture stringed instruments: European-style custom-made technology and Japanese-style mass production technology, enabling them to create a new production method and product that can satisfy the demand of consumers for both handcrafted *quality* and mass-production *prices*. *Cuckoo*, another example of path-creating catching up, offered new products to consumers by effectively combining gas-pressure technology and old electric rice cooker technology. Thus, their cooker offers both the convenience of an electric cooker and the (cooked rice) quality of a gas cooker. Meanwhile, *HJC Helmets* developed a new synthetic plastic by blending two kinds of materials, namely, acrylonitrile butadiene styrene (ABS) copolymer and polycarbonate (PC) plastics. The new plastic is a real novelty, as it struck a critical balance between hardness and shock-absorbing resilience—two properties previously regarded as incompatible with each other. This feature has become a great selling point for *HJC Helmets*. Finally, while it used to specialize in low-end market segments, *Amore Pacific* entered the high-end cosmetics market with new internally-developed oriental herbal cosmetics rather than copying the existing cosmetic products originating from the West.
In the case of the two capital goods companies (*Jusung* and *Sunstar*), they realized that simply imitating the products of the incumbents was not enough. This was brought about by the realization that client companies doing assembly work did not want to risk using unproven products (parts and supplies) from these new companies, given that the quality of key intermediate goods determines that of the finished goods. Thus, these latecomers had to come up with new products with better quality and lower prices. Otherwise, purchasing negotiation would not even take place.

Just before *Jusung* developed the LP CVD, incumbent companies (*Tokyo Electronics* and *Kokusai Electronics* in Japan) used batch methods in processing hundreds of wafers together. While this method yielded higher productivity, it was not good in terms of precision required for high-capacity memory chips. The innovation applied by *Jusung* was to adopt the single wafer method that dealt with each wafer separately, but with comparable productivity as that of the batch methods. Actually, the single wafer method was not entirely new but was already used in other applications. However, *Jusung* was the first to adopt this existing method to LP CVD (HSG). Soon, the big memory chip assembly companies, such as *Samsung* and *LG*, all switched to the products of *Jusung* (called Eureaka 2000) because only this product was compatible with larger size memory chips. This had become the killer product of *Jusung* that enabled this company to achieve an initial jump in sales.

In the case of *Sunstar*, the sales spurt came when *Sunstar* developed a product different from, and not made, by the incumbent (*Tajiama* in Japan). At the first stage, the company developed a computerized automatic needlework sewing machine (CANEM) with a similar function (and similar capacity) as the one produced by *Tajima*. However, a big sales jump was made only when it later developed a compact size CANEM, targeting a niche market (i.e., the U.S.) with a demand for this kind of machine), as well as the dual needlework machines that can execute two different needle-works simultaneously.

Although these particular cases highlight the importance of path creation based on innovation capability, specifically in the area of product development, we noticed some differences in cultivation of new knowledge bases. If the target technology is newer, learning from external sources (acquisition of explicit knowledge) becomes crucial. *Shimro Musical Instruments*, for example, invited German artisans to teach core production techniques, and *Hankook Chinaware* learned from the *Royal Doulton Group* and *Miji Tech*. During the early days of entry into sewing machines, *Sunstar* learned initially from a Belgium company.
On the other hand, if target technology is more related to prior knowledge bases, application of tacit (internally developed) knowledge to new product development is essential in achieving a successful catch-up. The firms *HJC Helmets*, *Lock&Lock*, and *Aurora World* accumulated tacit knowledge that were developed through trial-and-error, thus helping them nurture their innovation capability. In the case of *Sunstar*, the development of the CANEM became possible owing to the tacit knowledge accumulated from the years of developing automatic sewing machines in the preceding years. *Jusung* developed its own products immediately after the establishment of the company, but the founder (Mr. Hwang) used to work as an after-sales repair and maintenance engineer for more than 10 years on client companies using such equipment.

4.2. Key Challenges and Risk in the Course of Catching Up

*From Subcontracting to Independent Marketing; The First Challenge*

If a firm develops its own products using its own path, which is differentiated enough from that made by the incumbent, it should next focus on how to sell them in the market. The existing literature on SMEs from latecomer countries has not dealt with the issue of independent marketing; this is because these SMEs have mostly been in subcontracting or OEM relations with foreign MNC vendors and thus, they did not take on the marketing tasks traditionally done by the incumbent. The present study deals with ways by which SMEs can go beyond the subcontracting to do independent marketing, which is a major requirement for OBM companies attempting to catch-up and enter into the global market. Given that independent marketing is a significant challenge and that these SMEs possess insufficient marketing skills, many firms, even those who possess innovation capability, feel frustrated in this aspect of the competition against their forerunners (Chu, 2009). Unfortunately, some SMEs fail in this key aspect.

The cases discussed in the present study suggest that the completion of the catch-up process entails that latecomers integrate technological know-how with independent marketing performance. Owing to various constraints, their strategic options are quite limited. Several precedents from our cases are worth noting. For instance, some started out in other emerging markets before entering advanced economies, because the former market is less risky and costly (due to the commonalities between markets), and the latter market takes more sophisticated marketing and direct competition. Meanwhile, others, like *Sunstar*, adopted a sales-on-credit strategy because no customer would buy emerging market products by an unknown company. When a latecomer enters a developed country without local partners, hiring several marketing experts from the host country is essential for success (e.g., *Aurora World*).
Alternatively, a firm may consider a new and less costly marketing approach to attract customers. *Lock&Lock*, for example, relied on TV home-shopping as marketing channels. By adopting an less-costly or up-to-date marketing technique that no forerunner had explored in the past, these firms successfully penetrated their respective markets.

**Attacks from the Incumbents: The Risks**

Although building independent marketing channels takes several new resources and is considered a huge challenge, there are new risks involved, including interfering behavior or even direct attacks from the incumbents. The first is the deterring actions from old buyers, who turn against their previous suppliers (latecomer firms) and attempt to curb their growth as a new rival company. We have mentioned that a transition from OEM to OBM ordinarily entails relational disconnection with the current buyers that own the lead brands. When *Aurora World* began to sell its own brand in 1991, the incumbent vendors cancelled and stopped their OEM/ODM orders in an attempt to prevent this company from rising as a new brand owner. Figure 2a shows that the sales of this company declined from the year 1991.

The second risk in the course of catching up is the attempt of forerunners to deter the growth of their emerging rivals by charging predatory prices or even engaging in dumping. As the history of Korean business illustrates, this is quite common, especially in the case of indigenously developed capital goods (Kim and Lee, 2008). Once Korean suppliers successfully develop new products that Korean client firms and consumers used to import from incumbent companies, such incumbent companies immediately lowered the prices substantially to encourage the clients to stay away from the newly developed local products (Kim and Lee, 2008).

The third, and probably the worst risk, is that the leading incumbents often file lawsuits against new entrants. *Aurora World, Sunstar* and *Jusung Engineering*, all without exception, had to go through the hardship of litigation. For example, upon the entry and successful development of CVD by *Jusung* and *AKT*, the dominant firm in the use of CVD for liquid crystal display (LCD) filed a lawsuit to curb

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7 The case of the industrial robot with a six-axe vertical multi-articulation structure judged to be an act of antidumping by the Korean Trade Commission in April 2005 is a typical example. World-class robot manufacturers, such as *Najji, Kawasaki, Yaskawa* and *Hwanak*, accounted for 53.3% of the Korean market share in 2004. These incumbent firms were selling their products to *Hyundai Motors, Kia Motors* and *GM Daewoo*, and then staged a price war to kill *Hyundai Heavy Industry* by supplying their products at dumping prices from 2003. There have been numerous cases like this, namely, dumping pricing by the incumbent firms upon news of the entry of local producers into markets. The cases filed with the Korean Trade Commission (KT) by Korean enterprises since 1988 for the investigation of dumping charges reveal this tendency of dumping by foreign firms (Table 2 of Kim and Lee, 2008).
the selling of products by Jusung Engineering in world markets. Sunstar also went through several years of patent lawsuit conflict with Tajima, its fatal rival incumbent company. The lawsuit was started in 1999 right after the launching of the new products of Sunstar, which lasted for four years until it finally won the case by proving that it did not violate the incumbent’s IPRs. The possibility of IPR dispute is another reason why a latecomer who wants to be independent rather than be dependent on the leading firms should go for a new path rather than imitate the products of the incumbent. Until it won the lawsuit in 2003, Sunstar was forbidden to sell its products in markets by court order, and its sales substantially stagnated during the period (Figure 2c).

The experiences of these companies demonstrate that firms on the catch-up track should be well aware of the potential challenges and risks that lie ahead, particularly battles over IPR. Otherwise, they may have to give up halfway or even end up being bankrupt. The strategic response of Aurora World to these challenges is noteworthy because in their preparation for any possible litigation, Aurora World got insured for manufacturing goods liability, successfully negotiating with a plaintiff when a real legal dispute occurred. As part of their catch-up preparation, the firm went incognito while working toward its OBM status; thus, while building its own sales network in the United States, Aurora World registered itself under a new name to veil its identity. Likewise, Cuckoo never publicly disclosed any plan for new product development; even its R&D team worked only at night to avoid the scrutiny of rivals.

4.3. Establishing Global Production and Marketing System: The Final Task

The preceding sub-section has identified independent marketing as the first challenge. Given that these firms are mostly export-oriented and their clients are located globally, setting up their own marketing channel means that these companies are already globalized in marketing. In this case, should the production system be globalized such as by having factories outside of their home land? This is also a critical departure because this means that they themselves have become MNCs that run global production systems, especially when they used to be local supplier companies that are part of the global production system run by overseas MNCs.

To this question, our answer is “yes,” and establishing global production and marketing network is the final step in their catching up toward being re-born as an independent company. These latecomer companies should relocate or set up some of their factories at sites offering lower wage rates. The reasons are the same as those that apply to incumbent MNCs who implement the same strategy to combat the rising wage rates in their home countries. As discussed in Lee (1994), it was not the big
business but the SMEs who initiated the first wave of outward investment by the Korean firms since the late 1980s. They started to relocate their assembly lines to Southeast Asian countries because there was a rapid rise of wage rates in Korea. Wage costs were more important and eroded the price competitiveness of the SMEs doing labor intensive production more than the big business doing capital intensive production. In relation to this, we find that all of our sample companies in consumer goods sector have been running global production systems. For example, Aurora World has already established its assembly line in Indonesia as early as 1988. Now, this company has transformed itself from an OEM supplier to MNCs into a small MNC itself, with two factories in Asia dealing with several OEM suppliers in Indonesia and China.

We find that upgrading to OBM status is accompanied by going offshore. Korean OBM firms conduct R&D in Korea (their home country) and operate overseas subsidiaries for production and distribution. By going global, the firms are able to enhance price competitiveness and achieve global flexibility. When Aurora World established its second overseas assembly factory in China in 1996, China opened and emerged as a new production site offering cheaper wages than Indonesia. When the wage rates in China increased recently to a level higher than those in Indonesia, this firm re-allocated its production volume from China back to Indonesia. As a result, Aurora World continued to maintain price competitiveness.

Furthermore, our sample firms show that these Korean firms favor two types of globalization strategy en route to becoming global category killers. One strategy is product segmentation. Low-end products are manufactured and sold in Southeast Asian countries; in contrast, high-end products are developed and produced in advanced economies. Shimro Musical Instruments, for example, produces the Saint Antonio (a low-end violin) in China and sells these in the local market. On the other hand, the firm also produces the Karl Heinlich (a high-end violin brand) in Germany and supplies it to that market as well.8

The other strategy is market segmentation. Even for an identical product, firms often adopt different marketing strategies in emerging markets vis-à-vis advanced economies. Amore Pacific, for example, has accentuated the country-of-origin (Korea) as a selling point for local marketing in emerging markets in Southeast Asia, while the importance of country-of-origin in marketing in advanced economies has varied according to time and country. In the case of Lock&Lock, all glassware products manufactured in China were exported to the United States, based on the observation that

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8 In Korea, Shimro Musical Instruments uses a gray-area strategy.
American consumers did not care whether a glassware product was made in China or Korea. On the other hand, noting that Chinese consumers thought the opposite and highly valued made-in-Korea products, the firm imported from its factory in Korea and sold these to Chinese consumers.

4.4. Sustaining the Catch-up and Building “My Own” Entry Barriers

*Continuous Innovation and Firm-specific Knowledge Cultivation*

Although developing a substantially differentiated product along a new path is a must for a latecomer to stage a radical catch-up, a firm must be able to generate continuous innovation to sustain its catch-up. Actually, SMEs having such capability are exceptions. Many of them achieved some or temporary catch-up but failed to sustain their market positions, and eventually faced serious decline or even died away. Such failures result from an underdevelopment of the in-house mechanism supporting continuous innovation and learning. If such a mechanism is not established within the firms, subsequent development of products or processes cannot be undertaken. For example, *Missa* did not establish an in-house R&D system and lost its competition against the later entrant, *The Face Shop*. This latter company continued to increase the expenditures on R&D to update its cosmetic technology and, consequently, outran its former benchmark.

In addition to continuous innovation and learning, firms may want to build their own entry barriers to strengthen their post-catch-up positions. Industries with high-entry barriers consist largely of two types: (a) high science or technology-oriented or (b) experience or tacit knowledge-based industries. Overcoming entry barriers in the high-tech industries require the acquisition of expensive human resources or construction of cutting-edge research labs, which is more possible with big enterprises rather than small ones. Thus, given the financial constraints faced by SMEs, it appears that entering (a)-type industries is beyond their capacity. Furthermore, engineering scientifically elaborate technologies is sometimes dangerous for middle-sized firms because the strategy always runs the risk of these firms losing everything. Accordingly, for SMEs, entering (b)-type industries seems to be a less risky choice. Simply put, it is practically more feasible for SMEs to develop proprietary knowledge from experiencing trial-and-error rather than creating frontier technologies based on rigorous scientific research.

We find that our sample firms have cultivated their own firm-specific, trial-and-error-based knowledge, which served as their foundation for competitiveness and subsequent entry barrier. *Cuckoo*, for example, consumed 4,000 tons of rice to find an optimal pressure for rice cooking; *HJC Helmets* also
repeated countless experiments to identify the best alloy ratio between two different plastic materials; *Shimro Musical Instruments*, after a long struggle, finally developed a new urethane mould that overcame the weaknesses of both wooden and iron moulds; and *Lock&Lock* experimented endlessly to find a new plastic glassware cap that satisfies the criteria of pliability, hardness, and durability.

These cases demonstrate that the most important type of technical knowledge is obtained through learning-by-doing rather than *a priori* R&D. Field expertise, once acquired, becomes a formidable entry barrier that others cannot easily replicate. This is something close to traditional technological knowledge that Rosenberg (1982) defines as knowledge accumulated in crude empirical ways with no reliance upon science. This is a kind of tacit knowledge generated by a process of trial-and-error (experience), although it might be codifiable in an *ex post* sense. Furthermore, as Koskinen and Vanharanta (2002) elaborate, smaller firms have advantages in tacit-knowledge-intensive business because its dissemination is easier within smaller firms with shorter lines of interaction and less intra-firm divisions. In this way, new tacit knowledge not only constitutes core technology, but also contributes to firm idiosyncrasies.

The degree of tacitness of knowledge differs across technological sectors; a higher degree of tacitness interferes with the learning of latecomers, as proven by an econometric study (Jung and Lee, 2010) that measured the explicitness (inverse of tacitness) of sectors in terms of average patent to R&D ratios of the sectors. Higher tacitness makes learning and catch-up difficult for everybody, regardless of the firm’s size. As discussed in Jung and Lee (2010), it took more time for large Korean enterprises in the automobile industry to catch-up with the Japanese firms than for Korean firms in IT. This difference comes, *ceteris paribus*, from a higher degree of tacitness in that industry than in the IT industry. Technologies in every sector consist of both tacit and explicit knowledge, but the proportion varies by sectors. Given that we cannot measure the relative amount of tacit vs. explicit knowledge, the degree of tacitness is a good proxy for the proportion of tacit knowledge in a sector. Therefore, having more tacit knowledge matters in higher tacit knowledge sectors, whereas in higher explicit knowledge sectors, having more explicit knowledge (often taking the form of patents) matters. Table 3 shows the (inverse) tacitness of technologies of sectors (the number of patents/R&D expenditure), from which we can easily note that high tacit sectors are those with smaller-sized firms, such as those engaged in manufacturing leather goods and apparel, paper and pulp products, furniture, and non-metallic products, among others. In summary, tacit knowledge matters more for the SMEs not because they are smaller firms, but because they tend to be involved in higher tacit knowledge sectors.
Branding, Corporate Image-Building, and Acquiring Certification/Quality Standards

Some firm-specific knowledge, once patented in the form of codifiable knowledge, may be disclosed to competitors, thus no longer serving as part of the so-called core technology. Filing a patent application means defining a set of claims concerning the concretization or application of an idea in exchange for patent rights that the inventor must publicly divulge, including the technical details of the new knowledge (Foray, 2004). Hence, patenting sometimes presents a tricky situation, in which the effort to protect one’s tacit knowledge results in an easier access to it.

By strategic use of patenting and not patenting, firms can sometimes better protect their tacit knowledge while maintaining both a sustainable market position and a reputation in the industry. Once tacit knowledge turns into explicit knowledge, such as in patenting an optimal level of temperature or pressure, the trade secretly loses its proprietary nature. In that case, it is recommended to translate tacit knowledge into the brand power rather than into patents. This notion has been supported by several cases. *Aurora World*, *Hankook Chinaware*, *Lock&Lock*, and *Shimro Musical Instruments* all focused on establishing and strengthening their brand power based on their high-quality products made with unique skills and tacit knowledge as they moved from OEM to OBM status. With this strategy, their post-catch-up positions have been better protected against the rise of Chinese firms.

Corporate image, similar to branding strategy, constitutes an entry barrier. The cosmetic business is a typical example that shows how important it is to build a good corporate image for sales and pricing purposes. *Amore Pacific*, for example, upgraded its oriental herbal cosmetics to the premium market after the refinement of its image. Likewise, *The Face Shop*, despite the moderate prices for its cosmetics, linked its image to the idea of natural skincare by promoting their botanical ingredients. In contrast, *Missha*, appealing only with price, did not concentrate on building its corporate image. As a result, it fell behind in the low-end cosmetics market.

Finally, the experiences of *Shimro Musical Instruments*, *HJC Helmets*, and *Cuckoo* suggest that the acquisition of some certification or formal quality standards can be a powerful strategy in building entry barriers against others. As these cases show, safety standards (the so-called SNELL specification certification) are quite important in helmets, and the construction of violins according to the famous *Stradivari* specification is also critical. Acquiring certification for the required safety standards or
functional specification is extremely difficult for later entrants. Thus, these certifications can act as entry barriers for late entrants and serve as a post-catch-up positioning device.

5. Summary and Concluding Remarks

The present study is motivated by recognizing several important rooms for further contribution in the SME studies. First, few studies deal with the more recent phenomenon, in which SMEs from emerging markets become OBM firms rather than remain in subcontracting relationships with incumbent MNCs. Second, few studies deal with the process, by which latecomer firms pursue global independence and manage the whole value chain globally. Third, despite many statistical analyses on the determinants of successful SMEs, there are a few attempts at theorizing by taking a dynamic perspective to explain the evolution of latecomer SMEs.

Thus, the present study focuses on the independent—rather than subcontracting—SMEs in charge of all the value chains that have achieved significant catching up with incumbent companies in terms of market shares in global or regional markets. We observe that big enterprises and SMEs from emerging economies have a common start (resource scarcity) and end (global success owing to their own path creating) achieved through different routes. We also developed a theory on the dynamics of catch-up by SMEs to examine several phases in their life cycles. We argue that SMEs tend to specialize rather than diversify; such SMEs also face different kinds of risk from those faced by big enterprises.

We focus on an ex-post analysis of 10 catch-up cases of middle-sized Korean firms to discover several common elements that are presumably related to their success.

First, we find that successful middle-sized latecomers have created their own paths rather than follow that of their forerunners. We further elaborate on their path-creation strategies in detail. Shimro Musical Instruments combined two opposite production methods for manufacturing string instruments: European-style customization and Japanese-style mass production. Cuckoo’s new product combined gas-pressure technology with the old electric rice-cooker technology. HJC Helmets developed new synthetic plastics by mixing two kinds of materials optimally, with the resulting hybrid plastics providing an exceptional balance between hardness and shock-absorbing resilience.

Second, given that path creation involves more risks than path following, we have identified several risks and have discussed various ways, by which to overcome these. The first challenge is to be able to sell one’s product independently, as one proceeded from a contracting manufacturer to an own-
brand firm. They often adopted the sales-on-credit strategy because no customer had been willing to purchase their products. To avoid confrontation with old customers, some firms started out in emerging markets first and entered developed countries later. The emergence of new and less costly marketing channels also served as a window of opportunity for some latecomers. Meanwhile, counterattacks from incumbent firms presented several forms of significant risk, including a sudden disconnection in supplier relationship, litigation over IPRs, and price wars or dumping. Defense tactics also varied, including purchase of insurance for manufacturing goods liability, use of a veiled identity, or closed project management for new product development. Some firms have had to face lawsuits filed by incumbent firms, reminding latecomers of the urgent need to prepare for such perils beforehand.

Third, we have also paid attention to strategies of sustaining post-catch-up positions, such as the entry barriers for future entrants. Their experiences demonstrate that the most important type of firm-specific knowledge is obtained not only from *a priori* scientific research, but also from continual trial-and-error during in-house experiments. Given the financial constraints typical of middle-sized firms, the latter strategy is less costly for them, whereas the former (large-scale lab-based R&D) is more affordable for big enterprises. We also find that safety or physical specification certifications can also be used to strengthen post-catch-up positions, as shown in the cases of helmets and violins.

If previous literature simply emphasizes the importance of innovation and capability building, our present study suggests that such capability should be combined with the right set of strategies from the beginning. The right strategy is to create a distinct path rather than use that followed by the incumbents; moreover, these SMEs must also develop their own unique products with better quality at lower prices. We also identify the risks involved in such strategies and suggest several strategies to help these companies manage the risks and maintain their positions afterwards.

However, the limitation of the present study is that, because it is based only on Korean cases and a limited number of sectors, other countries and sectors would perhaps have different outcomes, as studied in Malerba and Nelson (2011). Apparently, we need more international cases to generalize determinants of success by middle-sized firms from emerging markets. This is a topic that can be explored further in future research.
References


Table 1. Comparing SMEs and Large Firms from Latecomer Countries

<table>
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Source: By the authors, incorporating insights from Tidd, Bessant, & Pavitt (2005), Pavitt (1991), Lee and Mathews (2009), Lee and Lim (2001), and Lee et al. (2005).
Table 2. Cases: Catching-up Experiences of 10 Korean Middle-sized Firms

<table>
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<th>Shimro Musical Instruments</th>
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<td>Market Share</td>
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<td>Ranked as 1st in Korea and 3rd globally</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Firm</th>
<th>Amore Pacific</th>
<th>The Face Shop</th>
<th>Jusung Engineering</th>
<th>Sunstar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment</td>
<td>1945</td>
<td>2004</td>
<td>1995</td>
<td>1986</td>
</tr>
<tr>
<td>Products</td>
<td>Cosmetics</td>
<td>Cosmetics</td>
<td>Production equipment for semiconductor and flat panels</td>
<td>Embroidery machinery</td>
</tr>
<tr>
<td>Rival Incumbents</td>
<td>L’Oreal</td>
<td>Missha</td>
<td>AKT (U.S.)</td>
<td>Tajima (Japan)</td>
</tr>
<tr>
<td>Learning Sources</td>
<td>In-house R&amp;D; partial licensing; collaboration with universities</td>
<td>OEM; technology licensing; in-house R&amp;D</td>
<td>In-house R&amp;D; collaboration with universities; licensing from Belgian firms</td>
<td></td>
</tr>
<tr>
<td>Market Share</td>
<td>Ranked as 1st in Korea; ranked as 4th in France (in fragrance market)</td>
<td>Ranked as 1st in Korea (in brand shop segmentation)</td>
<td>33% in the world market</td>
<td>Ranked as 1st in the world market</td>
</tr>
</tbody>
</table>
Table 3: Inverse Tacitness of Knowledge at the Sectoral Level

<table>
<thead>
<tr>
<th>Industry</th>
<th>Industrial code</th>
<th>Average number of patent per R&amp;D expenditure*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture of electrical machinery and equipment</td>
<td>28</td>
<td>9.043</td>
</tr>
<tr>
<td>Manufacture of electronic components, computers, audio and video equipment, and telecommunication equipment</td>
<td>26</td>
<td>2.961</td>
</tr>
<tr>
<td>Manufacture and processing of ferrous metals</td>
<td>24</td>
<td>2.818</td>
</tr>
<tr>
<td>Manufacture of chemical materials and chemical products, excluding medicines</td>
<td>20</td>
<td>2.388</td>
</tr>
<tr>
<td>Manufacture of vehicle and trucks</td>
<td>30</td>
<td>2.064</td>
</tr>
<tr>
<td>Manufacture of rubber and plastic products</td>
<td>22</td>
<td>1.523</td>
</tr>
<tr>
<td>Manufacture of other machinery</td>
<td>29</td>
<td>1.383</td>
</tr>
<tr>
<td>Manufacture of foods and beverage</td>
<td>10</td>
<td>1.273</td>
</tr>
<tr>
<td>Manufacture of medical equipment, fine machinery, optical instrument, and clocks</td>
<td>27</td>
<td>1.054</td>
</tr>
<tr>
<td>Manufacture of furniture</td>
<td>32</td>
<td>0.952</td>
</tr>
<tr>
<td>Manufacture and processing of non-ferrous metals, excluding machinery and metallic furniture</td>
<td>25</td>
<td>0.891</td>
</tr>
<tr>
<td>Manufacture of pulp, paper, and paper products</td>
<td>17</td>
<td>0.831</td>
</tr>
<tr>
<td>Manufacture of non-metallic mineral products</td>
<td>23</td>
<td>0.814</td>
</tr>
<tr>
<td>Manufacture of other transportation equipment</td>
<td>31</td>
<td>0.709</td>
</tr>
<tr>
<td>Manufacture of tobacco</td>
<td>12</td>
<td>0.634</td>
</tr>
<tr>
<td>Manufacture of textile goods, excluding apparel</td>
<td>13</td>
<td>0.561</td>
</tr>
<tr>
<td>Manufacture of medical materials and medicines</td>
<td>21</td>
<td>0.435</td>
</tr>
<tr>
<td>Manufacture of leather, leather goods, and footwear</td>
<td>15</td>
<td>0.023</td>
</tr>
<tr>
<td>Manufacture of apparel and accessories, and fur products</td>
<td>14</td>
<td>0.129</td>
</tr>
<tr>
<td>Other manufacture</td>
<td>33</td>
<td>0.374</td>
</tr>
</tbody>
</table>

* unit of R&D expenditure is 1 million Korean won; patents registered by the largest 1,000 firms in Korea during of 1999-2009
Figure 1

<Stages in Dynamics of Catch-up>

- Entry
- Gradual Catch-up
- Path-creating
- Crisis
- Rapid Catch-up
- Post Catch-up

- entry
- learning / upgrading
- OEM
- ODM/OEM
- low value-added
- medium value-added
- sales stagnation
- sales spurt
- post catch-up
- positioning

sales or market share vs. time
Figure 2a: Trend in Sales and The Ratio of OBM-based Sales in Aurora World

Figure 2b: Trend in Sales of the Jusung Engineering

Figure 2c: Trend in Sales of the Sunstar Company