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An Exploratory Study on the Transition from OEM to OBM: Case Studies of SMEs in Korea

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ABSTRACT This study investigates how the transformation of latecomer small- and medium-sized enterprises (SMEs) in emerging economies from dependent or subcontracting original equipment manufacturing (OEM) firms into independent or original brand manufacturing (OBM) firms is possible to achieve a significant catch-up in their share of regional or global markets. Given that SMEs are rarely able to make such a transition, we elaborate this dynamic process by performing case studies on eight Korean SMEs. These SMEs created their own paths instead of following their forerunners. These paths are neither entirely new nor take the form of leapfrogging, but are characterized by new combinations of existing paths. We identify several risk factors, such as counterattacks and intellectual property lawsuits, that latecomer SMEs face from incumbent SMEs. In addition, we emphasize the importance of cultivating firm-specific knowledge by engaging in a continuing process of trial and error type in-house experiments.

KEY WORDS: OEM, OBM, SMEs, catch-up, emerging markets, path creation, tacit knowledge

1. Introduction

The global rise of firms from emerging countries has attracted increasing research interest on the mechanisms that lead to the international competitiveness of these firms. Many studies have investigated the role of large firms or business groups in emerging economies. The most recent investigations on this subject were conducted by Malerba and Nelson (2012) and Amann and Cantwell (2012), with the latter including a chapter from Bell and Figueiredo (2012), which discussed several challenges facing large firms, including the upgrading of production technology (Bell and Pavitt 1993; Katz 1987) and technological capability. However, these works do not shed much light on the pitfalls and challenges faced by small- and medium-sized enterprises (SMEs), a shortcoming that is unsurprising

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because only few SMEs from emerging countries have achieved global success. However, with the majority of firms in emerging markets being SMEs, a theoretical and empirical study on these firms can provide much needed understanding. This paper focuses on the SMEs from emerging economies and the upgrading of their capabilities.

One of the earliest efforts to understand the role of SMEs in developing countries was Romijn (1999), who investigated Indian firms without significant technological activities. In their statistical study of SMEs in Korea, Kim, Song, and Lee (1993) found that the global competitiveness of SMEs was different from that of large enterprises because of the severe resource shortages faced by the former. Such shortage has led several authors, such as Mathews (2002), Hobday (1995), and Bell and Figueiredo (2012), to define "latecomer firms" from emerging economies as "resource-poor late entrants." When latecomers begin their manufacturing activities, the value chain of production is already well established in the market segment they enter and already occupied by firms from advanced countries (Ernst and Guerrieri 1998; Sturgeon and Gereffi 2009).

Hobday (1994) defined original equipment manufacturing (OEM) as a form of subcontracting in which a complete and finished product is produced in accordance with the specifications of the buyer. A few OEM firms evolve into original design manufacturing (ODM) firms that conduct the majority of the product design process while allowing the firms of their customers to perform the marketing functions. A typical upgrading path for latecomer firms is from OEM to ODM, and then to original brand manufacturing (OBM). OBM firms work comprehensively on their own brands by designing and manufacturing new products, conducting R&D on their products and production process, and conducting sales and distribution. In the OEM mode, latecomer firms do not take risks and remain dependent on MNE vendors or large client firms. Although this mode leads to stable growth in the medium term, the future of firms that follow such strategy is often uncertain because new latecomer firms that offer lower wages and costs continue to emerge from the next tier of catching-up countries (Lee and Mathews 2012). The limitations of the OEM mode are discussed using examples from several countries, including Indonesia (Van Dijk and Bell 2007) and Malaysia (Rasiah 2006).

Although latecomer firms aim (but rarely achieve) to upgrade themselves into OBM firms, previous studies on SMEs from emerging economies have only focused on the transition of firms from OBM to ODM or have merely discussed the risk of adopting such strategy (Kim and Lee 2002; Berger and Lester 2005; Chu 2009). Most studies on global production networks or value chains have focused on collaborative or subcontracting relationships (Ernst and Kim 2002; Sturgeon and Lester 2004; Berry, Rodriguez, and Sandee 2002). The catching up of SMEs from emerging markets is affected by their competition and collaboration with firms from advanced economies. To date, relatively little is known about the antecedents, strategies, and mechanisms of catching up of SMEs, especially when these firms go beyond subcontracting to establish themselves as global players with their own brand and thus enter a competitive relationship with incumbent firms.

Chu (2009) listed several barriers to the transition of firms to OBM. She concluded that without an industrial policy, such as that implemented by the government of Korea or of China in the form of targeted allocation of R&D grants, subsidies, or preferential taxations, Taiwanese firms are not likely to succeed in making a transition to the OBM. In contrast, this study demonstrates that several SMEs in Korea have transitioned successfully to OBM despite the lack of an industrial policy or the existence of policies that favor larger

businesses. In its earlier industrial policies, the Korean government often used firm size as an important criterion in its decisions over the provision of privileged foreign currency loans or the licensing of foreign technologies (Amsden 1989). In contrast, numerous Korean SMEs tend to be subcontractors for *chaebol.* Therefore, Korea has often been criticized for advancing its economic success by favoring a small number of large enterprises while ignoring the majority of its SMEs (Nugent and Yhee 2002; Park 2001). The Korean government has implemented some policy measures to help SMEs, but most of these measures have been ineffective for various reasons (Kim and Lee 2008). For example, though the government wanted to see more sales and adoption of machine tools produced domestically by SMEs, large assembly firms tended to avoid using these tools because of their uncertain quality compared with imported ones.

Therefore, this study primarily investigates how SMEs can make a transition to OBM and what risks are involved in this transition process. Such transition becomes possible when the firm makes a structural break by adopting its own path creation strategy, but it is impossible if the firm stays on the path of subcontracting or collaboration. The new path (or product) created by these SMEs is not entirely new, but is often based on new combinations of existing paths (or products). This approach is different from leapfrogging into new or emerging technological areas, which is largely adopted by large businesses, as well as the approach of keep imitating the technologies of incumbent firms.

The rest of this paper is organized as follows. Section 2 reviews the literature and presents the research questions. Section 3 discusses the research methodology and the profiles of the case firms. Section 4 elaborates the dynamic transition from OEM to ODM and from ODM to OBM. Section 5 synthesizes the findings to draw a five-stage path of transition to OBM. Section 6 presents the conclusions.

2. Literature and Research Questions

Given their limited size, SMEs in developing and developed countries tend to share several characteristics, such as flexibility and narrow specialization (Tidd, Bessant, and Pavitt 2005). Various sources argue that SMEs in advanced and developing countries are heterogenous, with the latter having a limited number of resources (Mathews 2002) for acquiring domestic technologies and a great dependence on foreign sources of technology (Amsden and Chu 2003). SMEs from developing countries also enter the market at a later period and have a lower position in the global division of labor. Therefore, these enterprises have no choice but to inherit certain segments from more advanced firms in advanced economies or to start at the OEM stage, which is the lowest stage of technological development (Romijn 1999; Amsden 1989). In few developing countries, selling for large internal markets and access to world markets (via foreign direct investment or trade) is often replaced by subcontracting- or MNE-led exports (Hobday 1994). Therefore, the SMEs in these developing countries are different from those in advanced economies, which tend to initiate their own internationalization by using the valuable knowledge they accumulate from their home countries (Chaminade and Vang 2007).

Hobday (1994) tracked the evolution of latecomer firms from OEM to ODM and from ODM to OBM. The core tasks of OEM, ODM, and OBM firms are production, innovation, and marketing, respectively. A functional upgrade is observed when an SME moves to high-value-added functions. However, such upgrade rarely occurs because the value chain

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structure (or buyer–subcontractor relationship) tends to be hierarchical (Bazan and Navas-Aleman 2004). In comparison, those firms in a more market-based and cooperative cluster are argued to have a greater opportunity to upgrade their functions to the OBM stage by Gereffi, Humphrey, and Sturgeon (2005). Although they initially seem promising, the SMEs in the Chinese textile industry have become dependent on and are stuck with their OEM roles (Tang 2011). Those firms in clusters where a functional upgrade takes place, such as in Sinos Valley in Brazil, rarely upgrade themselves to the OBM stage because incumbent firms attempt to curb the growth of their competitor SMEs or the state fails to coordinate the activities of multiple firms with conflicting interests (Schmitz 1999).

Chu (2009) attributed such failed transition to various difficulties and risks related to the brand strategies of firms. SMEs are barred from entering the market because of their significantly limited size, technological capability, marketing knowledge, and brand power. The loss of subcontracting orders poses another major risk to the market entry of these firms. Chu (2009) and Chen and Lien (2013) observed that owning a brand required a business model that is fundamentally different from that of an OEM. A case study of Acer in Taiwan demonstrated the difficulty of SEMs in moving out of the OEM stage and entering the OBM stage (Khan 2002).[1]

However, we have identified several SMEs in Korea that have successfully transitioned from OEM to OBM despite the lack of an industrial policy and their exclusion from a cooperative cluster. This paper attempts to investigate the rationale behind such successful transition. Our case studies of SMEs reveal that the transition to OBM becomes possible through the adoption of a path creation strategy based on new combinations of existing paths (or products) rather than on entirely new ones. We emphasized the distinctive path creation strategies of SMEs from emerging economies, which often involve the combination of existing technologies or products.

Therefore, the path created by SMEs is different from that created by larger firms that tend to leapfrog into new or emerging technologies (Perez and Soete 1988), especially during periods of paradigm shift (Lee, Lim, and Song 2005). By emphasizing the unique path that is created by SMEs, we distinguish our study from that of Terziovski (2010), who showed that SMEs mirror the strategy and structure of large firms. By simply following the same path or footsteps of forerunning firms, latecomer SMEs will always remain behind the incumbent firms. The adoption of a different path creation strategy is also necessary because those firms that produce "new" products that are too similar to existing ones are often subject to intellectual property rights (IPR) lawsuits by incumbent firms.

However, trying a new combination of existing technologies requires a pre-built capability or absorptive capacity. Without its own design capabilities, a firm becomes stuck in its production of existing low-value-added segments or products with designs borrowed from vendor firms. Therefore, pre-built or absorptive capability is a requirement in the transition to OBM. Another key element in the transition to OBM is the ability of firms to conduct independent marketing. However, previous studies on SMEs from latecomer countries have largely ignored the marketing capability of these enterprises. These SMEs have generally focused on subcontracting, have not taken marketing tasks, and have

[1] Acer was the most representative high-tech firm from Taiwan. In the mid-1980s, Acer began to move to OBM, but had to retreat from this stage and return to OEM or ODM after suffering heavy losses between 1990 and 1993 (Khan 2002).

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traditionally relegated such tasks to vendor firms. The transition from subcontracting to independent marketing is a major challenge for firms that seek to enter the OBM stage, catch up with incumbent firms, and enter the global market. In summary, the path creation strategy of SMEs involves not only new products, but also new marketing methods.

3. Research Design and Case Profiles

3.1 Research Method

SMEs in Korea tend to lag behind large businesses in terms of their economic growth. Therefore, promoting SMEs has become a top agenda of the public. Those SMEs that succeed in the market are often reported by the mass media. We initially identified several SMEs that were featured in the media, particularly in a popular television program.[2] The firms that satisfied the following criteria were then selected. First, the firms should have an established "independent OBM" status even if they were previously considered as OEM firms, ODM firms, affiliates, or dependent subcontractors.[3] To qualify as an OBM firm, a company must sell its own brands to multiple client firms or consumers in the market. Being a subordinate supplier to a single or few client firms is insufficient. Second, these firms should be involved in all key business functions, such as R&D, production, and marketing, and should perform such functions independent from other firms. Third, these firms should have successfully caught up with incumbent firms, which could be determined based on their share of the global or regional/country markets.

Given the unique features of our sample SMEs, we identified the crucial factors behind the success of these firms through a case study method (Yin 2003, 40). Given the exploratory nature of case studies, we identified the conditions that were "necessary" rather than "sufficient" for the success of SMEs, as well as elaborated the process by which our sample SMEs achieved their distinct success.

Firms from several industrial sectors, such as household and kitchen products, specialty or preference goods, semiconductor equipment, and computerized sewing machines, were included. In 2006, we formed a research team that comprised eight members tasked to interview the target firms, collect archival data, and co-write a book on the findings that were subsequently published in the Korean language (Lee 2008). The book included a descriptive analysis of the target firms and served as the primary source of information for the present paper. However, the book lacked a theoretical orientation. This paper provides a theoretical synthesis of the cases with more updated information collected by repeating the interviews until 2011. At least two individuals from each firm were interviewed in a semi-structured manner. The main characteristic in terms of the sales, number of employees, and number of registered patents of the eight firms can be summarized as follows, while the complete data-set is available upon request.

First, with the exception of Hankook Chinaware with a bit larger size of employment in later years, all eight selected firms had approximately 53–331 employees from 1993

[2] More information is available at http://www.kbs.co.kr/end_program/1tv/sisa/sinwha/index.html.

[3] Amann and Cantwell (2012) identified OBM and other independent firms as the fourth of seven types of innovative firms.

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to 2005, but had below or equal to 300 employees in 2000. Such number of employees is reasonable considering that SMEs are defined as companies with less than 300 employees in Korea or less than 500 employees in other countries. Second, all selected SMEs had small sales volumes that ranged from 8.8 million USD to 71.1 million USD in 2000. These volumes increased over the next five years after the firms achieved success in the market. With the exception of one producer of capital goods, all selected firms had a very negligible number of patents, which indicated their lack of resources or their dependence on tacit knowledge that could not be expressed in patents. The basic profiles of the eight firms are presented in Table 1, and discussed in the following section.

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3.2 Sample Firms

Aurora World (established in 1981), Shimro Musical Instruments (established in 1986), and HJC Helmets (established in 1971) are producers of toys, musical strings, and helmets, respectively. These firms achieved OBM status after going through the OEM and ODM stages, and have caught up with the leading brands in the global market. Aurora World competes with Ty, Shimro Musical Instruments competes with Suzuki, and HJC Helmets competes with both Shoei and Bieffs. Aurora World is now ranked second in North America in terms of brand recognition,[4] Shimro Musical Instruments has gained the largest market share in the USA, and HJC Helmets is ranked as the largest firm of its kind in the world.

Cuckoo (established in 1978), Hankook Chinaware (established in 1943), and Lock & Lock (established in 1985) are producers of rice cookers, chinaware, and glassware, respectively. Cuckoo and Hankook Chinaware began as OEM firms and successfully entered the OBM stage. After failing in the OEM stage, Lock & Lock abandoned its old items, produced new items, and pursued its own branding strategy. These three firms overtook the leading international brands from developed countries operating in the Korean market (i.e., Zojirushi or Panasonic for Cuckoo, Wedgewood or Ralph Lauren for Hankook Chinaware, and Tupperware for Lock & Lock) and have now become successful players in the global market.

Established in 1995, Jusung Engineering produces atomic layer deposition devices used in semiconductor manufacturing. Established in 1986, SunStar produces a compact version of computerized automatic needlework sewing machines. After years of serving as specialized suppliers to large final goods assembly firms, Jusung Engineering and SunStar now cater to clients from all over the world. In 2011, Jusung Engineering held 33 per cent of the world market and more than 50 per cent of the global hemispherical grain (HSG) market. SunStar also recorded the largest global market share in its sector in 2005. The SWF brand of SunStar accounted for 33 per cent of the world market and outperformed Tajima from Japan, whose market share dropped from 60 per cent in 1997 to 27 per cent in 2003.

[4] This information from the chairman of the firm was part of a newspaper article published in the April 20, 2011 issue of *Sports Today* (in Korean) (accessed on February 5, 2013) at http://www.stoo.asiae.co.kr/news/stview.htm?idxno=2011041923515182537)

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Table 1. Profiles of eight Korean SMEs

Firm	Cuckoo	Hankook Chinaware	Lock & Lock
Establishment	1978	1943	1985
Products	Rice cookers	Chinaware	Glassware
Rival incumbents	Zojirushi or Panasonic (Japan)	Wedgewood (UK), Calvin Klein, or Ralph Lauren (USA)	Tupperware (USA)
Learning sources	OEM, in-house R&D	OEM, licensing, in-house R&D	In-house trial and error
Market share performance	Ranked first in Korea since 1999 (70 per cent market share as of 2005)	Ranked third in the world market	Ranked first in Koreaand third in the world market
Firm	**Aurora World**	**Shimro Musical Instruments**	**HJC Helmets**
Establishment	1981	1986	1971
Products	Toys	String instruments	Helmets
Rival incumbents	Ty (US)	Suzuki (Japan)	Shoei (Japan) or Bieffe (Italy)
Learning sources	OEM, in-house R&D	OEM, learning from foreign experts, in-house trial & error, R&D	OEM, in-house R&D
Market share performance	Ranked fourth in North America and first in Russia	Ranked first in the USA, 15 per cent market share in Japan, and 30 per cent share in the world market	Ranked first in the world market since 1992 (20 per cent market share as of 2006)

Firm	Jusung Engineering	SunStar
Establishment	1995	1986
Products	Production equipment for semiconductor and flat panels	Embroidery machinery
Rival incumbents	AKT (US)	Tajima (Japan)
Learning sources	In-house R&D, collaboration with universities, licensing	In-house R&D, licensing from Belgian firms
Market share performance	33 per cent in the world market	Ranked first in the world market

4. Dynamic Catching-Up Process: OEM–ODM–OBM

4.1 Before Crossing the OBM River

4.1.1 Learning in the OEM Mode. SMEs tend to engage in OEM mode to serve as subcontractors for their client firms that are in charge of marketing the products under their own brands and through their own distribution channels. Hobday (1994) and Kim and Lee (2002) argued that OEM facilitates technological learning because products should be made according to precise specifications, and the representatives of buyer firms tend to provide specific guidance and teaching at the production site. This learning process leads to high levels of skill and productivity. All sample firms started either as OEM firms or as subordinate suppliers to a single client.

4.1.2 Acquiring Design Capability in the ODM Mode. Lee (2005) discussed the so-called OEM trap. In this situation, although the latecomer firm can easily produce foreign-designed goods at the early stage, they subsequently face significant difficulties when the foreign firm moves its production to another site for lower wages. Unless the latecomer firm develops the ability to produce and sell its own brands and designs, it becomes stuck in low-value-added segments. We therefore posit that design capability constitutes a fundamental basis of a sustainable catch-up strategy, without which the transition to the OBM stage cannot occur. However, such capability is unavailable in the markets. Our sample cases show that the acquisition of design capability requires a combination of in-house, trial-and-error-based R&D, relevant mentors, and access to foreign technologies. All sample firms have initiated these measures by setting up in-house R&D laboratories, recruiting teachers from foreign firms, universities, or public research institutes, and arranging for access to foreign knowledge through various channels, including subcontracting, joint production, licensing, equity-based alliances, and joint R&D.

However, we noticed some variations in the process of acquiring design technologies. If the target technology is new, then learning from external sources (acquisition of explicit knowledge) becomes crucial. For example, Shimro Musical Instruments invited notable German artisans to teach the company core production techniques. Hankook Chinaware initially learned bone china technology from the Royal Doulton Group, a global manufacturer of bone china, and then established a joint venture with Miji Tech to learn the application of nanotechnology. The firm subsequently developed its own line of silver nanotechnology-based bone china products. Similarly, SunStar initially learned sewing-machine making technology from a Belgian firm before establishing its reputation as a producer of such equipment.

Meanwhile, if the target technology requires an extensive prior knowledge base, accumulating and applying tacit (internally developed) knowledge becomes essential for new product development. HJC Helmets, Lock & Lock, and Aurora World accumulated such tacit knowledge through trial and error, which helped them nurture their innovation capability. Similarly, SunStar produced the developed computerized automatic needlework sewing machine (CANEM) by accumulating tacit knowledge from several years of developing automatic sewing machines. In contrast, although Jusung developed its own products almost immediately after its establishment, its founder and CEO (Hwang) acquired the necessary tacit knowledge by working for 10 years as an after-sales repair and maintenance engineer for client firms.

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4.2. Crossing the OBM River

4.2.1 Embarking on a New Path. For the first step toward OBM, the top leader of a firm must launch the OBM as a new business model. Although we do not delve into the question surrounding which type of top leader tends to make such a bold decision, we argue that all top leaders must pay attention to specific strategies and risks if they plan to lead their firms toward an OBM mode. All sample firms managed to catch up by creating a distinctive path or by differentiating their products from those of their forerunners. A combination of existing factors often led to the creation of new products.

For example, Shimro Musical Instruments created its own hybrid technology after a long trial-and-error process. The firm was able to combine the distinct production methods of European-style custom-made technology and Japanese-style mass production technology. This strategy enabled the firm to create a new production method and products that satisfied consumer demand for both handcrafted quality and mass-production prices. Cuckoo offered its consumers new products that effectively combined gas pressure technology with old electric rice cooker technology. Therefore, the rice cookers of the firm have the convenience of an electric cooker and the quality of a gas cooker. HJC Helmets developed a new synthetic plastic by blending acrylonitrile butadiene styrene copolymers with polycarbonate plastics. The new plastic is considered a novelty by balancing hardness with shock-absorbing resilience, two properties that were previously regarded as incompatible with each other. This feature has become a significant selling point for HJC Helmets.

The two capital goods firms, Jusung and SunStar, realized that imitating the products of incumbent firms was inadequate. Client firms (such as Samsung) did not want to risk using unproven parts and supplies from unknown firms in their product assembly process because the quality of their finished products was greatly determined by the quality of their key intermediate goods. Therefore, the supplier firms had to create new products with "better quality and low prices"[5] for purchasing negotiations to take place.

Before Jusung developed the LP CVD, incumbent firms (Tokyo Electronics and Kokusai Electronics in Japan) used batch methods to process hundreds of wafers simultaneously. Although this method yielded high productivity, the precision for processing high-capacity memory chips was not guaranteed. Jusung adopted the single-wafer method, in which each wafer was separately processed without compromising the productivity levels. Although the single-wafer method was not entirely new and was already used in other applications, Jusung was the first to apply this method to the production of LP CVDs (HSG). Since then, all large memory chip assembly firms, such as Samsung and LG, have switched to the Jusung product (Eureka 2000), the only product that is compatible with large memory chips. Therefore, Eureka 2000 became the key product of Jusung, which allowed the firm to achieve an initial jump in its sales.

SunStar experienced a boost in sales after the firm developed a product that was different from that of the incumbent firm, Tajima from Japan. In the first stage, the firm developed CANEM with functions and capacities similar to those of Tajima. However, the sales of the firm only jumped after it developed a compact-sized CANEM, which targeted

[5] The CEO of Jusung Engineering (Mr Hwang) emphasized the need for latecomer firms to offer a differentiated product with high quality at low prices.

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a niche market in the USA. The sales of SunStar also dramatically increased along with its release of a dual needlework machine that could simultaneously execute two different strings of stitches.

4.2.2 Independent Marketing: Second Step for an OBM Firm. After taking a certain path and developing unique products, the firm must focus on selling such products in the market. Previous studies on SMEs from latecomer countries have not addressed the issue of independent marketing because the SMEs are generally involved in subcontracting. With independent marketing a major requirement for OBMs, we investigate how SMEs can go beyond subcontracting to enter the OBM stage.

The case studies suggest that the completion of the catch-up process entails the integration of technological know-how with independent marketing performance. However, SMEs are given few strategic options because of several constraints. Our case studies provide several examples of available strategic options. The sample firms opted to start out in the emerging markets before entering advanced economies. These firms saw the former to be less risky and less costly to enter (because of the commonalities between the markets), whereas the latter required more sophisticated marketing and direct competition. Other latecomer firms, such as SunStar, adopted a sales-on-credit strategy because they understood that their customers would not buy products made by unknown firm without such an incentive. Hiring marketing experts from the host country is essential when a latecomer (e.g., Aurora World) enters a developed country without local partners. Alternatively, a firm may consider a new and less costly marketing approach to attract customers. For example, Lock & Lock relied on TV home shopping as a marketing channel. These firms managed to penetrate their respective markets by adopting a less costly or up-to-date marketing technique that was not yet explored by their forerunners.

4.2.3 Attacks from the Incumbents: Risks in the OBM Stage. Although building independent marketing channels requires immense resources and is often a huge challenge, other risks are involved, such as interfering behavior or direct attacks from incumbent firms. The first risk pertains to the deterrence from old buyers who turn against their former suppliers (latecomer firms) to curb their growth. The aversion of former buyer firms toward their ambitious suppliers has been well documented,[6] and the transition from OEM to OBM usually entails a relational disconnection with the buyers who own the leading brands. When Aurora World started to sell its own brand in 1991, the incumbent vendors canceled and stopped their OEM/ODM orders to prevent the firm from becoming a competitor. The sales of Aurora World declined for the first time in 1991 when the firm initially took the path toward OBM, and then followed by the five-year stagnation of the firm (Figure 1(A)). This period is called the "OBM River," an obstacle that must be crossed by a firm to establish itself as an OBM firm.

The second risk involves the dumping or the charging of predatory prices by forerunners. Incumbent firms use this tactic to deter the growth of their emerging rivals. This situation is commonly observed in the history of Korean businesses, especially in the case of

[6] Refer to Giuliani, Pietrobelli, and Rabellotti (2005), Bazan and Navas–Aleman (2004), and Chu (2009).

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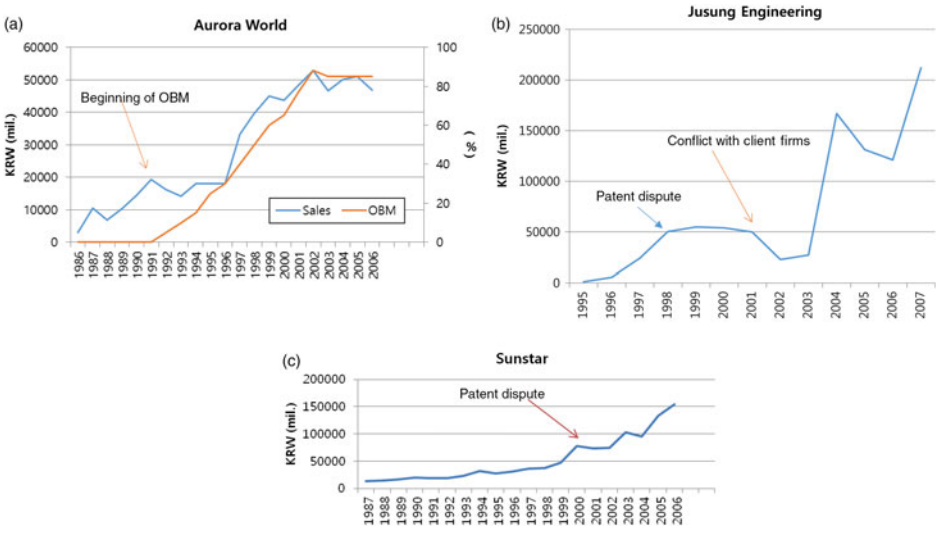


Figure 1. (A) Sales and share trends of OBM-based sales of Aurora World, (B) sales trend of Jusung Engineering, (C) sales trend of SunStar

indigenously developed capital goods (Kim and Lee 2008). If Korean suppliers successfully developed new products that substitute for those products previously imported from incumbent firms, the incumbents would substantially lower their prices and encourage their clients to stay away from the newly developed local products (Kim and Lee 2008).[7]

The third, and probably the worst, risk involves the legal action of the incumbents. Aurora World, SunStar, and Jusung Engineering all faced litigation from their competitors. After successfully developing and marketing a CVD, Jusung Engineering faced a lawsuit from AKT, which previously dominated the sales of CVDs for liquid crystal display, to curb the sale of Jusung products. Figure 1(B) shows a sharp decrease in the sales of Jusung Engineering at the time of the IPR lawsuits and the cancelation of purchase orders from client firms after they were hassled over delivery prices.

SunStar also faced a lawsuit from its rival firm, Tajima, for several years beginning from its introduction of new products in 1999. The lawsuit ended four years later after SunStar proved that the IPRs of the incumbent were not violated. The possibility of an IPR dispute emphasizes the need for a latecomer that is aiming toward independence to forge its own path and create its own product instead of imitating the products of the incumbent. Until it won the lawsuit in 2003, SunStar was forbidden by a court order to sell its products in any market, causing sales to stagnate. Figure 1(C) shows the case of SunStar.

The above experiences indicate the challenges and risks the firm may face on their catch-up track. Lack of preparation may lead to the premature end or bankruptcy of an enterprise. During its early stage toward OBM, Aurora World went incognito and registered

[7] The case of the industrial robot, which was judged as an act of anti-dumping by the Korean Trade Commission in April 2005, provides a typical example (2008).

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itself under a new name that the firm used while building its sales network in the USA. Similarly, Cuckoo never publicly disclosed its plan to develop new products. The R&D team of the firm even worked only at night to avoid the scrutiny of its rivals.

4.2.4 Consolidating the Global Production and Marketing System: The Final Task. Three further questions must be addressed, including whether or to what extent the production system should be globalized, whether the factories should be established outside of the homeland, and if this approach is an economically prudent choice. Adopting such a global manufacturing model presents a critical departure for the SME from being a single local supplier in the global production network operated by an established MNC. Such a move will make these firms similar to MNCs or to other firms with their own global production systems.

Establishing a global production and marketing network is the final step for a firm to catch up with its predecessors and achieve independence. Similar to MNCs before them, these latecomer firms must relocate or set up a few of their factories in next-tier economies to take advantage of lower wage rates and combat the wage rate hikes that tend to occur in their home countries. Notably, all the consumer goods firms in our sample have made this move toward global production systems. For example, Aurora World established its first assembly line in Indonesia as early as 1988 and transformed itself from an OEM supplier of MNCs to an MNC in its own right. Aurora World has two factories in Asia and links with several of its own subcontractors or OEM suppliers in Indonesia and China.

The upgrading of the status of a firm to OBM results in the relocation of company operations offshore. Korean OBM firms typically continue to conduct R&D in Korea while taking their production and distribution operations overseas. By going global, these firms enhance their price competitiveness and achieve global flexibility. For example, when Aurora World established its second overseas assembly factory in China in 1996, China was just opening up as a production site and offering lower wages than Indonesia. However, in recent years, wage rates in China have increased and even surpassed wages in Indonesia. This phenomenon has prompted the Korean firm to relocate much of its production in China back to Indonesia, and therefore maintain its price competitiveness and high profitability.

Our sample Korean firms appear to favor two particular strategies in their progress toward global dominance in their market categories. One strategy is product segmentation. Low-end products are manufactured and sold in Southeast Asian countries, whereas high-end products are developed and produced in advanced economies. For example, Shimro Musical Instruments produces a low-end violin called St. Antonio in China and sells the product in the local market. Simultaneously, the firm produces and sells a high-end violin brand called Karl Heinrich in Germany.

The other strategy is market segmentation. Although firms sell identical products, they often adopt different marketing strategies in emerging markets vis-à-vis advanced economies. For example, Lock & Lock exports all the glassware products manufactured in China to the USA (based on the observation that American consumers do not care whether the product is made in China or Korea). In addition, the firm imports its products made in its factory in Korea for selling in the Chinese market because Chinese consumers highly value made-in-Korea products.

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4.3. After Crossing the "River"

Once a latecomer makes a successful transition to OBM and secures substantial market share by establishing a global network of production and marketing, the firm has to focus on sustaining its current position.

Industries with high entry barriers are generally highly science-oriented or experience- and/or tacit-knowledge-based. Overcoming entry barriers in high-tech industries requires the acquisition of expensive human resources and the construction of cutting-edge research laboratories. Large enterprises, rather than small ones with financial constraints, are more likely to pursue such strategy. Even if SMEs have the required financial resources, the pursuit of engineering products with complex technologies is sometimes a dangerous strategy because these firms may lose everything if the product fails. Thus, entering more experience- or tacit-knowledge-based industries seems to be the less risky choice for an SME. Developing their own proprietary knowledge from trial and error is probably the more feasible option for SMEs than the option of creating frontier technologies based on rigorous scientific research.

All our sample firms cultivated their own firm-specific trial-and-error-based knowledge, and this initiative served as a foundation for their subsequent competitiveness and as an entry barrier for potential competitors. For example, Cuckoo experimented with 4,000 tons of rice on its factory floor before the firm found the optimal pressure for cooking rice. HJC Helmets tried several combinations before the firm was able to identify the best ratio of two different plastic materials to use in its alloy. After a long struggle, Shimro Musical Instruments finally developed the urethane mold that could overcome the weaknesses of both its wooden and iron predecessors. Similarly, Lock & Lock experimented endlessly before the firm was able to produce a new plastic glassware cap that satisfied its requirements of pliability, hardness, and durability.

These cases demonstrate that the most important type of technical knowledge is obtained through learning by doing rather than from a priori R&D. Acquiring field expertise is a formidable entry barrier that others cannot easily replicate. Such expertise is akin to traditional technological knowledge, which is described by Rosenberg (1982) as being accumulated in crude empirical ways without reliance on science. Although it might be codifiable in an ex-post sense, the knowledge is tacitly generated in a trial-and-error process (experience). As elaborated by Koskinen and Vanharanta (2002), smaller firms have an advantage in a tacit-knowledge-intensive business because these firms can disseminate such knowledge with ease given their short *lines* of interaction and few intra-firm divisions. Therefore, for SMEs to develop knowledge systems (Bell and Albu 1999) that are very different from that of large firms is more sensible.

Entry barriers can be set up in various ways, such as investing in the establishment of a strong corporate image and acquiring certification or quality standards. Corporate image often constitutes an entry barrier in a few sectors. Meanwhile, the experiences of Shimro Musical Instruments, HJC Helmets, and Cuckoo suggest that obtaining certifications and formal quality standards can be a powerful strategy to build entry barriers. Safety standards are important in helmet production, and in the case of violins, construction must satisfy the famous Stradivari specification. However, acquiring certification for the required safety standards or functional specification is extremely difficult for later entrants, thereby serving both as entry barrier and post-catch-up positioning device.

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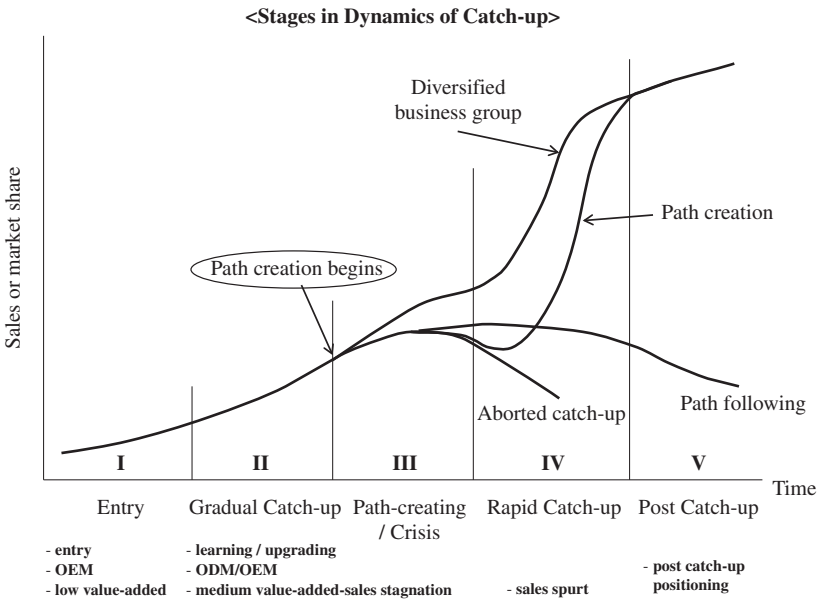


Figure 2. Dynamic path of transition toward OBM

5. Synthesis: Dynamic Path of Latecomer SMEs

In light of the elaboration of the process in the preceding section, we conceptually draw the path of latecomer SMEs from the OEM toward the OBM status. Based on Figure 2, we hypothesize five stages that are depicted as a typical S-shaped curve with a twist. The five stages include entry, gradual catch-up, path-creation/crisis, rapid catch-up, and post-catch-up.

The first stage is entry. An SME starts a business by engaging in low-value-added activities or by acting as an OEM supplier to one or several vendors. The founders usually have experience working as salespersons or as after-sales service staff in foreign firms or in firms selling imported products.[8] An important advantage of the small supplier firms at this stage is the low wage costs.

The second stage is gradual catch-up based on increased learning and productivity. New cost advantages become apparent and available as SMEs undergo the process of "learning by doing" (production). These SMEs hold on to foreign orders because of their low cost and gradually increase their market share by increasing their productivity. This initiative can be considered as an effort to catch up by following a preset path, or simply "path following" (Lee and Lim 2001). Successful firms then move toward ODM by designing a few of the products they previously manufactured. Capital goods firms may similarly transition

[8] The founders of both Aurora World and Jusung used to work for a foreign firm as a local salesperson or maintenance engineer.

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toward medium-value-added segments, particularly the production of more sophisticated parts and supplies.

The third stage begins when the SMEs attempt something new, such as developing their own products and selling them under their own brand. This effort to become independent in marketing is difficult and involves several risks, including counterattacks from incumbents, such as sudden disconnection in the supplier relationship, litigation over IPRs, the initiation of a price war, and dumping. Then, the third stage can be prolonged by a slowdown, which may lead to declining sales and possibly even to a crisis.[9] 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 (see the sales curve of large diversified firms in Figure 2). If firms fail completely, the process is classified as an aborted attempt to catch up (Figure 2). The situation where latecomers choose not to take risks and decide to stay dependent on one or more MNC vendor firms is also possible. The limitations of such a catch-up strategy of path following are well documented (Van Dijk and Bell 2007; Rasiah 2006). These latecomers may eventually face a slow decline because of the rise of next-tier entrants. The curve for such a case is drawn with a long span but a gradual decline (Figure 2).

If a latecomer firm successfully overcomes various risks associated with its transition to OBM and succeeds in launching new products, its sales will start to increase along a steep curve. This movement signals the beginning of the stage of rapid catch-up in sales and market shares. Figure 2 shows Stage 4 as the steep curve. In this stage, the SME consolidates its global system of production, marketing, and R&D. Therefore, the firm ends up having both marketing channels and production factories overseas. Once the firms have their global networks, they can enjoy even faster growth in market share and greater profitability as a result of the greater flexibility brought about by the management of its global value chains. Notably, the latecomer SME becomes a small MNC.

The final stage is post-catch-up. At this stage, the main concern of the newly established OBM firm is to sustain and defend its current position against possible challengers.

This section and Figure 2 provide a simple description of the dynamic path toward OBM. Table 2 summarizes the key findings of this study. These findings are divided into three stages of crossing the OBM river. Before starting to cross the river, and depending on the nature of target technologies, a firm has to build technological capabilities in one of the two approaches discussed in Section 4. Next, crossing the river means the firm basically creates its own path by striking a new combination of existing products or technologies and trying new marketing strategies. However, a firm is likely to encounter several difficulties in the middle of the river, such as loss of existing clients, predatory pricing, and IPR disputes. Thus, the types of risks facing SMEs are different from the risks identified by Lee, Lim, and Song (2005) in the case of large firms engaged in an effort to leapfrog.[10] The final task

[9] Almost all the sample firms experienced a period of slow-down because of counterattacks by the incumbent, except in the case of Lock & Lock, which had steady sales growth (Table 2).

[10] The risk of leapfrogging tends to be the risk of choosing the wrong technology or standard from a host of alternatives, and the risk that no demand arises for the new first-mover product the firm creates. For SMEs, their new products are less radical and often comprise a new combination of existing products. Thus, SMEs face less risk in initial market demand and the choice of technologies.

Table 2. Summary of the key findings

Before crossing the OBM river	
Initial conditions	Late entry and resource-poor
Prerequisite acquisition of the prerequisite	Learning and building design capabilities If the target technology is new, firms should learn from external sources (Shimro, Hankook Chinaware, SunStar) If the target technology requires extensive prior knowledge base, firms should build and apply tacit knowledge through a process of in-house trial and error (Cuckoo, HJC Helmet, Lock & Lock, Aurora, SunStar, Jusung)
Crossing the OBM river	
Strategy	Path creation by a new combination of existing products/technologies (Shimro, Cuckoo, and HJC Helmet) or by substantial technical differentiation utilizing existing technologies in new ways (Jusung and SunStar)
Early strength	Production skills in OEM (consumer goods) or exclusive sub-contracting (capital goods)
Scope	Specialization at the technical (all), product (Shimro), and geographic (Lock & Lock) levels, often targeting niche markets
Upgrading pattern	Upgrade into higher value-added products in the same industry
Challenges marketing strategies	Weak brands and lack of marketing expertise (all), incumbent litigation (Aurora, SunStar, and Jusung) Sales credit (SunStar), use of Internet or shopping (Lock (Lock), reinforce local marketing experts (Aurora), and target emerging country markets initially (all except Aurora)
After crossing the OBM river	
Strategy	Consolidate global system allowing flexibility in cost management and better/customized marketing (all)
Scope	Specialization (all)
Risks	Rise of new entrants with lower costs or imitation strategies (all, especially consumer goods firms)
Sustainable positioning	Firm-specific and proprietary knowledge of a narrow field (all, especially Cuckoo, HJC Helmet, and Lock & Lock)

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after crossing the river is to consolidate a globalized production and marketing system that allows flexibility in cost management in production as well as better or customized marketing.

Table 2 shows the pattern of upgrading and business scope of the SMEs. As pointed out by Tidd, Bessant, and Pavitt (2005, 196), the particular difference between SMEs and large firms is that SMEs tend to specialize. This contrast between diversification (large firms) and specialization (small firms) translates into different upgrading patterns. Large businesses diversify and make successive entries into new or high-value-added industries,

whereas SMEs upgrade into high-value-added segments in the same industry. By pursuing diversification and resource sharing, large latecomer firms (or business groups) built synergic bases across affiliates (Chang and Hong 2000). These firms also adopted a scientific R&D-based approach in the acquisition of proprietary knowledge that was facilitated by their great financial resources. Thus, large business groups tend to be involved in both types of inter- and intra-industry upgrading (Lee and Mathews 2012). In contrast, SMEs tend to be less involved in inter-industry upgrading and more in intra-industry upgrading efforts within a specialized field of business.

6. Concluding Remarks

This present study analyzes the dynamic process in which latecomer SMEs transform themselves from OME-type firms to more independent or OBM-type firms. We focused on eight SMEs that were successful in their catch-up strategies and elaborated the process of their rise.

First, these latecomer SMEs created their own paths rather than following that of their forerunners. However, the path they followed was not entirely new and was often simply a new combination of existing paths. Second, we identified several key risks involved in the process of path-creation, as well as the response to them, which has not been well noted in literature. The challenges include the marketing capability to sell products independently. Moreover, significant risks consider counterattacks by incumbent firms, including a sudden disconnection in their supplier relationships, litigation over IPRs, price wars, and dumping. Third, we find that firm-specific, often tacit, knowledge is an important source of competitiveness and an ex-post entry barrier, and that such knowledge is obtained mostly by trial-and-error-type experiments.

The main contributions of this study are as follows. First, the role and importance of a new combination of existing elements (other than leapfrogging) in the transition of SMEs into OBM firms are demonstrated. Second, the process of catching up is discussed with emphasis on several critical challenges and risks that latecomer firms should be prepared to handle. However, the limitations of this study include its focus on Korean cases and its inclusion of a limited number of sectors. A similar study on the SMEs in other countries and sectors will perhaps yield different outcomes. Thus, additional international cases are needed before the determinants of emerging market SME success can be generalized. In addition, the elements for success discussed in this study may be incomplete because other paths for success are possible. Thus, we argue that the proposed path is a plausible path but not the only path to success.

Finally, implications for public policy and firm strategies are discussed. First, for a firm that aims to achieve a similar transition toward OBM, it should be well prepared for possible risks and challenges during the journey toward OBM. This paper provides a few sample responses to such risks. Without an ex ante plan for such situations, the venture is likely to fail. However, the few serious risks may justify help from public policy. The sample cases indicate that incumbent firms tend to stay systematically in the way of latecomer firms with their market power. When these actions distort fair competition, government intervention may be justified. However, any industrial policies designed to nurture late entrants should consider sectoral differences. Otherwise, these policies will be less effective.

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While SMEs tend to have a high chance of survival and sustaining their market position in sectors with high degrees of tacit knowledge formed through learning by doing or trials and errors, many firms fail during the trial-and-error stage after they run out of money. Thus, the government may want to select such R&D grant/subsidy proposals from the SMEs that conduct trial-and-error intensive R&D, rather than randomly funding R&D projects by all types of SMEs. Another opportunity to help SMEs lies in the case of IPR disputes between late entrant SMEs and incumbent firms, especially patent trolls. The Korean government has already adopted several policy measures, such as selling commercial insurance against possible IPR lawsuits, service to conduct pre-marketing or exporting investigation of possible legal disputes, and package consulting for SMEs that have faced IPR lawsuits with foreign entities.

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