Enhancing Performability through Domestic and International Clustering: A Case Study of Samsung Electronics Corporation (SEC)

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Abstract: Clustering is a very important business strategy in enhancing a firm’s performability. Porter provided a seminal theory in this field, but it has three limitations. First, the current theory cannot explain how cluster emerges. Second, a narrow perspective on geographic configuration has limitations in explaining a variety of real business practices. Lastly, Porter’s cluster concept is domestically oriented and understates multinational activities in terms of enhancing corporate performability. Embracing these limitations, this paper extends Porter’s cluster theory and provides a more comprehensive view on the real business world. We then apply it to a successful cluster strategy used by Samsung Electronics Corporation to enhance its performability.

Keywords: Industrial cluster, international clustering, performability, Samsung Electronics Corporation (SEC)

1. Introduction

Globalization allows corporations to have an easier access to raw materials, capital, new market, information, and technology across national borders. Thereby, corporations look for strategic locations where they can benefit the most as financial services and advertising providers locate themselves in the U.S.; auto companies in southern Germany; dynamic information technology (IT) and software companies in southern India; the world-leading electronics companies in South Korea, and so on.

These geographic concentrations of firms are, according to Porter [24, 26-27], called clusters. More precisely, he defined the cluster as a geographical concentration of interconnected companies and institutions in a particular field [26]. Later, his cluster theory was upholstered with the linkage of commonalities and complementarities between firms [27]. The benefits of clusters are evident. Clusters allow companies to operate more productively in sourcing inputs; accessing information, technology, and needed institutions; coordinating with related companies; and measuring and motivating improvement [26]. Furthermore, clusters are a driving force in increasing exports and are magnets for attracting foreign investment [27]. In short, clusters increase the productivity of companies, accelerate the pace of innovation, and foster new business environments. Therefore, clusters are very important for corporate developments.

However, there are three limitations to Porter’s theory of cluster when applied to the real world: (1) the theory is static on the current status of clusters [20]; (2) the source of productivity is focused on innovation through geographical concentration as opposed to distant outsourcing; and (3) the scope of cluster is limited to the domestic, rather than the international context [18]. Clarifying some of the controversial issues and limitations, this...
paper will introduce a more comprehensive and systematic framework as an extension to Porter’s clustering theory. Furthermore, this paper will show that this extended framework can explain the real world business practices better in both developed and less developed countries. To validate, an in-depth case analysis will be conducted on how a Korean multinational corporation (MNC), Samsung Electronics Corporation (SEC), has enhanced its performability by clustering strategy.

2. Review of the Previous Studies

Marshall [15] introduced the concept of geographical cluster by identifying the concentration of localized industries which has become the heart of the theories on geographical clustering [20]. Piore and Sable [23], on the other hand, emphasized the idea of flexible specialization which laid the foundation of conceptualizing the terminology of geographical concentration [21]. Paul Krugman, the Nobel Prize winner in Economics, made a substantial contribution to linking the two fields, trade and geography, in which he called it economic geography. He explained that firms tend to locate themselves in larger markets to exploit economies of scale, and individuals tend to move to more populated regions, which would offer them higher welfare benefits coming from greater consumption diversity [10-11]. Krugman highlighted the relationship between economies of scale and transportation costs that can result in either concentration or decentralization of communities [12]. This perspective became a foundation of the cluster theory.

Porter [24-27] expanded the view on the cluster theory from Krugman’s economic geography. In fact, the key elements that Krugman proposed for geographic concentration are just a subset of the four determinants of Porter’s diamond model. Moreover, Porter’s cluster theory [26-27] is more comprehensive in terms of explaining the effects of clusters, while existing literature focuses on the knowledge and technology transfers that increase the competitiveness and efficiency of firms. However, Porter’s cluster concept is not free from criticism and has limitations as follows.

2.1 Static vs. Dynamic

Traditional studies (Marshall [15], Weber [33], Loesch [14]) that identified the benefits of geographical concentration were based on static efficiency such as the lowest input or the greatest economies of scale [20]. Porter, however, insisted that it is not the inputs or scale the firm possesses today, yet it’s the ability to innovate and upgrade its skills and technologies that can create competitive advantage through clustering [25]. He validated this perception through examples of successful industrial clusters located in advanced countries: jewelry cluster in Italy, cutlery cluster in Germany and Japan, pharmaceutical cluster in Switzerland, high-technology cluster in Silicon Valley, and the film industry in Hollywood in the U.S. These examples of cluster demonstrate how the competitive advantage through clusters emerges but they do not show the phase of cluster development [20]. A historical analysis of how clusters develop will give strategic guidelines to each stage of cluster development.

In addition, Porter said clusters can be developed due to “historical circumstances,” “unusual, sophisticated, or stringent local demand,” “prior existence of supplier industries, related industries, or even entire related clusters which can be another seed for new cluster,” “one or two innovative companies,” or “chance event” [26]. All of these

* For more details of the diamond model, see Porter [24], Moon, Rugman, and Verbeke [19], and Moon [17].
important factors for clusters, including the “chance event,” are based on existing sources and cannot be easily found in a country at the emerging stage of economic development. Porter also explicitly explained that “new industries and new clusters emerge from established ones as economies develop” [27]. Therefore, Porter’s theory remains narrow and static because he dealt mainly with the clusters of the advanced countries. It is thus difficult to apply Porter’s cluster theory in explaining the evolution path from less developed to developing and then to developed country.

For example, Porter’s cluster examples in developed countries may show how clusters develop in competitive circumstances where it is easier to cluster firms or attract firms to cluster. Yet, smaller or less developed countries, such as Singapore and South Korea in the 1960s, have no competitive advantages to create new clusters. Although he stated that national prosperity is not inherited but created, clusters, which create productivity, innovation, good business environment, and eventually prosperity of a country, are rather inherited as the study is on the developed countries. Therefore, Porter’s cluster theory faces limitations in explaining the cases of less developed countries.

Moreover, Porter’s terminology, “innovation,” mostly highlighted in explaining cluster theory, should be carefully understood. Porter clearly said that “innovation is the result of unusual effort” [24, p.75]. This means Porter’s innovation is the result which can be achieved only at the developed stage. In order to make cluster theory more dynamic, cluster should be understood not just for innovation, but also as a tool that enhances corporations’ productivity and their capacity to innovate which otherwise are hard to be acquired by firms elsewhere. In this light, corporations can increase their performability—the ability to perform better at all aspects of business—to achieve competitive advantage by participating in the cluster. To sum up, this new concept of performability-oriented cluster is more comprehensive and dynamic than innovation-oriented approach. Thus, it can be applied to all stages of economic development.

2.2 Geographic Configuration vs. Distant Outsourcing

Porter argued that what happened inside companies is important, but clusters reveal that the immediate business environment outside companies plays a vital role as well [26]. This perspective is consistent with other studies (Amin [1], Saxenian [29], Scott [30], Storper [31], Nachum [21]) yet he [26] treated business internality and externality equally important. On the other hand, Porter insisted in his 2000 article that “firms within a cluster can experiment at lower cost or delay large commitments until there is greater assurance that a new product, process, or service will pan out. By contrast, a firm relying on distant outsourcing faces greater challenges of contracting, securing delivery, obtaining associated technical and service support, and coordinating across complementary entities” [27]. Thus, he highlighted the importance of geographical concentration as opposed to distant outsourcing and explained that this was why corporations should cluster to benefit from all advantageous externalities.

However, in businesses, many products and services are designed, produced, and marketed through global supply chains that seek the best quality talent at a lower cost. Corporations balance out between internality and externality. One of the best examples is Apple’s iPhone which is “designed by Apple in California, assembled in China.” In the beginning of 2012, Apple recorded the best quarter in history for a technology company in the world [4]. This contradicts with Porter’s conclusion on cluster, “although global sourcing mitigates disadvantages, it does not create advantages” [27].

Understanding the role of distant outsourcing, Porter’s cluster also causes theoretical
problem in the field of foreign direct investment (FDI). Dunning’s eclectic, or OLI paradigm has been the core in the field of FDI. It is very comprehensive in analyzing the determinants of FDI [16]. The OLI paradigm is based on the ownership advantage. When MNCs invest in foreign countries, they must possess ownership advantages to compensate for the cost of foreignness. This perspective is useful to explain MNCs from developed countries investing in less developed countries.

However, MNCs have two types of different motivations for going global through FDI: one is to exploit their existing advantages and the other is to seek new advantages [16]. The latter type is an unconventional FDI, which is to overcome critically important ownership disadvantages of firms that cannot be obtained from home country such as technology and other resources. Indeed, by balancing out their asset portfolio through FDI, firms can find a powerful force to compensate for their own disadvantages.

Therefore, the cases such as the iPhone manufactured in China show that in some conditions distant outsourcing is better than locating in local clusters such as Silicon Valley. In this regard, Porter’s overemphasis on geographic configuration may be misleading. Porter’s misconception arises from the problems of not just geographic distance but also from nationalism of locating important activities in the home country. If we, however, extend the configuration of cluster from domestic to global scope, this confusion can be easily solved. This will be discussed in the following section.

2.3 Domestic vs. International

“A cluster is the manifestation of determinants of the diamond model at work. Proximity, arising from the co-location of companies, customers, suppliers, and other institutions, amplifies all of the pressures to innovate and upgrade” [27]. However, in Porter’s [24] single home-based diamond approach, corporate capabilities to tap into the location advantages of other nations are very narrow. This is mainly because Porter understated the effects of multinational activities in his model [19]. To overcome this problem, Moon, Rugman, and Verbeke [19] incorporated multinational activities, and developed the generalized double diamond model.

Porter’s cluster theory, which was based on his single diamond model, was basically designed in the domestic context [18]. Although he mentioned clusters across national borders and with neighboring countries such as southern Germany and German-speaking Switzerland, Porter’s geographic focus still remained in a domestic scope.

The extension to the scope of clustering was modeled by Moon and Jung [18], including an introduction of evolutionary stages of clusters (see Table 1). The first stage is the regional cluster. This is similar to the concept of Porter’s cluster, where each cluster is independent. For example, the clusters such as Silicon Valley, Cambridge, and Kista Science City are included in this stage. The second stage is the regional-linking cluster. Within a nation, a wider scope of synergy can be achieved by combining some related clusters. A good example is the entertainment cluster in the Southwest region of the U.S., which consists of Hollywood, Disneyland, and Las Vegas.
Table 1: The Cluster Stage Model

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<th>Stage</th>
<th>Domestic Cluster</th>
<th>International Cluster</th>
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<td></td>
<td>Regional Cluster</td>
<td>Regional-linking Cluster</td>
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<td></td>
<td>(Porter’s Concept)</td>
<td>Hollywood + Disneyland + Las Vegas</td>
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<td>Silicon Valley/ Cambridge/ Kista Science City</td>
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<td></td>
<td>Hollywood + Disneyland + Las Vegas</td>
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<tr>
<td>Characteristics and examples</td>
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Note: *PRD means Pearl River Delta.
Source: [18]

The third stage is the international-linking cluster. With the combination of cross-border neighboring clusters, synergy effects can be further enhanced. An example of this international cluster is the “growth triangle” of Singapore (the core economy) with Malaysia and Indonesia (the peripheral economies). Another example is Hong Kong’s linkage with Pearl River Delta (PRD) and Taiwan. “Front shop, back factor” is the main motivation for this cluster.

The final stage is the global-linking cluster. This is the connection of clusters around the globe to maximize cluster synergy and enhance performability of corporations regardless of the physical distance on the globe. A good example is the global connection between Silicon Valley (the U.S.) and Bangalore (India) in the field of IT and IT-related businesses. The global network strategy of Singapore is another good example of this global-linking cluster.

In the next section, a case analysis on Samsung Electronics Corporation (SEC) is presented to demonstrate how SEC has gained and enhanced performability by clustering domestically and linking them internationally.

3. Samsung Electronics Corporation (SEC)

Korea has been transformed from one of the world’s poorest economies (GDP per capita was only $92 in 1961) to the world’s 13th largest economy as of 2011 [2]. It is no doubt that in the process of Korea’s economic development, large conglomerates, so-called chaebol, have played a significant role. Samsung Group is one of major chaebols in Korea, and SEC was established in 1969 as an affiliate of Samsung Group.

SEC is now one of the largest companies in the world. The main business of SEC includes the following four areas: digital media, semiconductor, telecommunication network, and LCD digital appliance. It is interesting to note that one of the key success factors for SEC is its active strategy of expanding from domestic to international clusters, to obtain high-technology and sophisticated designs, as well as labor force and raw materials. The evolution of SEC’s cluster strategy can be explained stage by stage as

† SEC’s information is mostly abstracted from its website [28].
follows.

3.1 The Stage of Regional Cluster (1969-1982)

The Korean government established an electronics cluster in Gumi in 1967 to boost electronics industry and “Electronics Industry Promotion Law” was initiated by President Park in 1969 [22]. However, instead of locating its business in this proposed industrial park, SEC established its headquarters and manufacturing facilities in Suwon, a city close to Seoul, which could supply needed labor force and provide better transportation infrastructure [32].

In 1981, SEC produced more than 10 million (accumulated) black-and-white TV sets and became the number one company in the world in terms of exporting number of TV sets. As SEC consolidated its position, more firms concentrated in Suwon area and they formed a cluster. Until 1981, the company had operated manufacturing facilities mainly in Suwon area in collaboration with many other suppliers and subcontractors in the region. Once SEC gained competitiveness in Korea, the company expanded its industrial portfolio from white goods to more sophisticated goods such as fax machine and semiconductor.

The formation of Suwon cluster by SEC cannot be well explained by Porter’s theory. There were no sophisticated local demand, and no prior existence of supplier industries and related industries. More importantly, SEC was not an innovative company at this stage. SEC was an OEM contractor, producing parts and components for Japanese electronics corporations.

3.2 The Stage of Regional-linking Clusters (1983-1997)

Based on its strong competitiveness in Suwon area, SEC expanded its operation and established affiliated companies in Gumi cluster which was initiated and supported by the Korean government. At this period of fast growth, SEC started semiconductor business which was considered as a very important strategic industry for the future. However, since SEC did not have adequate technologies in this field, the firm set up R&D centers and tried to cooperate with American and Japanese technology companies such as Micron Technology, Intel, and Sharp [13].

In order to have a better access to high technology, the company formed joint ventures and acquired firms in the U.S. SEC was also very active in cross-licensing agreements with foreign firms to obtain other newly developed technologies. As a result, SEC became the third company in the world that developed the 64k DRAM following American and Japanese predecessors.

At the onset of the 1997 Asian financial crisis, most Korean companies were severely hit. However, SEC could avoid financial difficulties by restructuring its operations, particularly in cluster strategy. At this time, SEC developed and strengthened two important regional clusters for more efficient operations: Suwon area for semiconductors and home appliances, and Gumi area for telecommunication devices. The company then linked these two clusters in order to enhance synergies and performability.

3.3 The Stage of International-linking Clusters (1998-present)

In 1998, SEC first produced the 256k DRAM. Based on its semiconductor technology, SEC expanded its business portfolio to telecommunication, IT, and media sectors. Also, SEC continued to expand its operations by setting up more manufacturing facilities, especially for mobile phone sets, in foreign countries such as Brazil, China, India, Vietnam, and recently in Slovakia, and formed international-linking clusters by
connecting these clusters to Korea. Korea has strengths in technology and management skills, and foreign clusters have strengths in labor cost, market size, and other activities in the value chain. With these international linking-clusters, SEC could be more efficient compared to its rivals.

Despite its continued success, SEC remained as number two electronics company in terms of brand value. SEC knew that it did not have advantage in product designs as what Japanese rivals had. In the early 2000s, SEC decided to step up to overcome this disadvantage. SEC established seven design centers in the world’s major cities such as Milan, London, Los Angeles, San Francisco, Tokyo, Shanghai, and Seoul. The professional designers constantly monitored the latest design trends in their cities and reflected cultural and lifestyle changes to their products. At this stage, SEC successfully linked the competencies of these internationally competitive clusters to overcome the company’s major weaknesses. As a result, SEC’s operating profits recorded higher than the combined operating profits of the top fifteen Japanese major rivals in 2011[5].

3.4 The Future Stage of Global-linking Cluster

The business has become more complicated and the boundary between the software and hardware industries has been blurred. Competitiveness in hardware was not enough for SEC to compete with firms in software industries. The leaders in the IT sectors have shifted from IBM to Microsoft in the computer industry and from Nokia and Sony to Apple and Google in mobile industries. IBM, Nokia, and Sony are hardware-based companies, while Microsoft, Apple, and Google are software-based companies, which at the same time are seeking to expand their business to hardware.

In other words, strong software has become a key to IT firms. SEC is currently financing universities for software development and tries to merge and partner with promising domestic software companies. SEC also scouts the best manpower of information technicians and experts from around the world to work in Korea for software advancement. However, “if companies in a cluster are too inward looking, the whole cluster suffers from a collective inertia, making it harder for individual companies to embrace new ideas and much less perceive the need for radical innovation” [26]. Furthermore, “innovators are often outsiders from a different industry or a different country” [24, p.75].

Thus, in order to enhance performability and synergies for software development, SEC should utilize more international as well as domestic clustering. It is time for SEC to disrobe from being the Korean company. It should become more global than now, by integrating its current international clusters on a more global scale, and by coordinating its hardware and software fields to produce more globally competitive products.

4. Conclusions

Clustering is an important strategy for enhancing performability of corporations. Yet, Porter, though contributed a lot to a cluster theory, has some limitations both in theory and application to the real world business. This paper, therefore, complemented and solidified Porter’s cluster theory by redefining the main role of clusters; embracing the importance of outsourcing; extending the scope of clusters; and modeling it to a stage model, from regional to global.

This paper further presented important implications. First, by expanding the role of clusters from innovation to performability enhancement, we can explain the important role of clusters in less developed countries. Second, by acknowledging the importance of
distant outsourcing, we can better explain why exploiting and linking other clusters are important. Lastly, by expanding the scope of clusters, from regional to global, we can see how firms can enjoy synergy effects and enhance corporate performability in a larger and a more efficient scale.

The success of SEC is noteworthy. Some analysts say that it is due to the company’s technological innovation, concentration on hardware manufacturing compared to the diversification into software as what Sony did, or a unique Samsung culture. These observations may be partially right, but we need to find a more important variable to explain SEC’s tremendous success in relatively short period of time. The answer is the strategy of enhancing its performability through creating, exploiting, and linking clusters, especially in the international scope.

This paper gives useful guidelines of how a firm can dynamically develop its cluster strategy and rapidly enhance its performability. The secret to the cluster strategy is not just to develop a firm’s own skills, but to internalize others’ strengths, and combine these competencies to maximize performability. These implications will be particularly helpful for policy makers of developing countries that would want to expedite business and economic development.

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