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Doctoral Thesis

Enhancing Competitiveness of
International Business Ecosystem:
From Trade to Global Value Chain (GVC)

국제 경영생태계 경쟁력 강화방안:
무역에서 글로벌 가치사슬로

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**Enhancing Competitiveness of International Business
Ecosystem: From Trade to Global Value Chain (GVC)**

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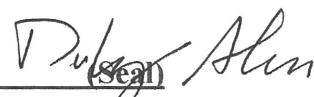
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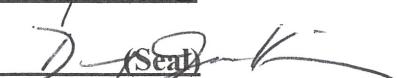
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ABSTRACT

Creating competitive advantage of a firm comes from finding strategic fit among value added activities across national borders. Firms choose the locations where they can capitalize on which may have been detrimental to national competitiveness. In this respect, the dissertation applies the concept of international business ecosystem in analyzing competitive advantages, and proves that global business is about the competition between business ecosystems where the value added activities of the firm need to be compatible and complementary with each other to enhance their connectivity and commerciality of a region. It is no more about having superior resources to make a firm or a nation more competitive in international business, but to build a platform that enhances the fit of the entire global value chain activities, through the four factors presented in this dissertation. This dissertation posits that the four criteria developed based on the platform studies and business ecosystem reconciles the issue between global activities of the firm and national competitiveness. The theoretical background to this logic is supported by the extended imbalance theory, where firms address the deficiencies at home through participating in global value chain. While the major contribution of this dissertation lies in the theoretical extensions of competitive advantage at firm, business ecosystem and national levels, the empirical analyses, were conducted to solidify the impact of global business ecosystem on both firm and national competitiveness. The findings also draw upon the legal and policy implications for economic and regional development, particularly for resource-scarce countries.

Key words: *International business ecosystem, global value chain, platform strategy, competitiveness*

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CHAPTER 1. INTRODUCTION

Existing studies on competitive advantage of firms have mainly focused on an individual firm basis in which firms need to outrival competition through either strategically positioning themselves in the industry (e.g., Porter 1985; 1996) or developing firm-specific heterogeneous and immobile attributes (e.g., Wernerfelt, 1984; Barney, 1991). The limitations of the existing studies were raised from the evolutionary perspective that competitive sources only apply to static and stable business environments.

The evolutionary or dynamic perspective started from the notion that the firm is a bundle of knowledge sets (Nelson and Winter, 1982; Kogut and Zander, 1993) that it concerns with developing superior resources (e.g., Tushman and O'Reilly, 1996) or adapting to changing environments (Teece, 2007) to through exploitation and exploration activities (Andriopoulos and Lewis, 2009). In high velocity environments, firms need to continuously develop hard-to-be-codified resources, where the role of the managerial capability became (or routines) the core aspect of the strategic management. However, firms do not survive on in isolation and their competitiveness has increasingly been dependent on firm collaboration (Moore, 1993; 2006).

Studies on firm networks, on the other hand, was largely developed as an extension to developing firm attributes (e.g., Dyer and Singh, 1998), which does not incorporate the aspects of interdependency or co-evolution from the evolutionary perspective. Thus, by adopting the business ecosystemic perspective of firm networks and the changing business landscape, where time has become one of the scarcest resources (Stalk, 1988), this dissertation presents critical resources. The sources are compatibility, complementarity, connectivity and commerciality. The key difference in the presumption from the existing studies lies in the notion that it is intricate for firms to continuously develop competitive resources within a short period of time, nor internalize firm activities to do so. Firms need to enhance collaboration to transfer competitive resources into a competitive product, which is the means to deliver final value to the customer. The

foundational logic are as follows.

While the value added activities are disaggregated to various firms, this dissertation stresses that rather than seeking monopolistic positioning, firm activities should be strategically fit with each other, through enhancing compatibility, complementarity, connectivity and commerciality with each other's value added attributes (Yim, 2013). Firms develop at a different pace and they contribute differently to entire value chain, therefore, any kind of obstructions in the streams of the entire chain may hurt the competitiveness of entire business ecosystem.

While studies on competitive advantage has focused on the input factors based on factor market failure, this business ecosystem expands the view to entire streams of value added activities, but not bounded by the industry borders, on the notion that there is a market failure in the all transactions from inbound logistics to the product market (e.g., Williamson, 1986; 1992) where transactions are taken place with end customers. Firm value and competitiveness in reality are determined by the final value created and the final demand. Periphery firms are dependent on the core firms in terms of their growth and sustainability thus it calls for an extension of analyses scope on firm competitive advantage to entire value chain activities, or the business ecosystem.

Furthermore, firm value is not only delivered through the means of a single product. They enhance their value through forming a product platform that satisfies the demand of customers. The more firms participate in the ecosystem to constitute the value chain activities, the more value is accumulated within the stream of value added activities (e.g., Katz and Shapiro, 1994). Customers have also played a significant role in adding values to products and services (e.g., Katz and Shapiro, 1985). An increase in the number of customer adds value to the products and services provided by firms, which in turn attracts more complementary firms to constitute the business ecosystem (Gawer and Cusumano, 2002). This is referred to the network effects where in multi-sided markets, connectivity or the self-reinforcing mechanism plays a key role in determining the competitive

position of firms and the business ecosystem.

On the other hand, the value of firm attributes in factor market is an *ex post* value and, therefore, may not contribute similarly to customers' experience. The customer's value does not necessarily derive from superiority or scarcity of resources but from a totality of value perceived by customers, even from just a combination of "just good enough resources" (Cusumano, 2010a; Yim, 2013; Yim, 2015 *forthcoming*). Thus, balancing out the competitive value in factor market with that in the product market has become critical.

Lastly, with the dismantled boundary between the hierarchy (firm) and the market, the dichotomous view that prevailed in analyzing firm boundary (Williamson, 1973; 1975), customers have increasingly participated in value added activities and become both the producer and consumers. They have taken a large part in the downstream activities of the firms, whereas in service industries, customers have taken a large part in the upstream activities. Whereas the value chain activities of the firm has been increasingly disaggregated to "the market" the regulatory systems and institutions have not been developed to address the issues of the changing business landscape. Uber and Airbnb are the main examples of firms that have been tackled in the business world due to the gap in the development of real business practices with institutions.

Therefore, the main contribution of this paper lies in (re)defining the factor so the competitive advantage. The business ecosystem perspective, developed from platform studies in this dissertation, presents that competitive advantage derives from strategic fitness and self-reinforcing mechanism that facilitates efficient usage of resources that do not need to conceive superiority. As firm competitiveness is determined vis-à-vis that of the ecosystem, it is critical for firms to enhance four critical factors with the ecosystem(s). From the co-evolution perspective, the four factors further give strategic implications to how the leading firms could continuously develop and evolve without falling into the growth trap or path dependency, as well as how the latecomers can grow and create competitiveness through enhancing the four critical factors with the firms that

construct the entire value chain.

The value chain activities are not limited to a national boundary. They are disaggregated to various firms and various locations. While the four critical factors were initially developed irrespective of multinationality of the value chain, they are analyzed with the multinationality in the function of competitive advantage. Although the issue of globalization became critical in understanding the intrinsic nature of business activities, the studies have analyzed the value chain activities with a limited lens (Pitelis and Teece, 2010). As firms choose locations where they can best capitalize their resources on, firms operate in certain locations that may be contradictory from the (politicians') perspective on national competitiveness. The two means of internalization are trade and foreign direct investment (FDI) but both studies were developed on the basis that competitiveness globalizes firm activities. Yet, as an extension to the imbalance theory (Moon and Roehl, 2001), this dissertation underscores that national deficiencies drive firms out of the country so that they could address imbalances in national resources through globalization activities. The extended view on international transactions, combined with the business ecosystemic perspective shows how firms need to collaborate to balance out deficiencies at home. As their increased participation in the global value chain complements the national competitiveness, firms from disadvantages would be more motivate to globalize (Moon, 2004b). Therefore, this dissertation posits that globalization enhances the national competitiveness, reversely from existing studies of international transactions.

The theoretical background is that firms engage in international activities when they have abundant resources and therefore could duplicate and exploit in foreign markets. In international trade theories, the more abundant or superior resources the nations have, the more firms will be able to utilize those resources and export abroad, and to compensate for imports (e.g., Krugman, 1989; Melitz, 2003; Porter, 1990). In FDI theories, firms with monopolistic assets (ownership advantages) will invest abroad in order to duplicate the activities abroad, and exploit monopolistic rents (Hymer,

1976[1960]); Dunning, 1958; 1979; 1981).

Through both qualitative and quantitative analyses, this dissertation validates the hypothesis that the globalization leads to the competitiveness of firms and nations. The complementary activity of firms promotes national development and, therefore, shows a positive relationship between firm globalization and national competitiveness (home and host country). While the existing studies tested largely on positive and negative impacts on host country (Blomstrom, 1986; O'Donnell and Blumentritt, 1999; Buckley, Clegg and Wang, 2007; Li,Liu, and Parker, 2001), this dissertation complements by examining home country effect along with the host country effect.

This dissertation further organizes and re-categorized firm motivation of going abroad, based on the extended imbalance theory, and presents that the national policies should be tilted towards nurturing and encouraging the growth of competitive firms to go abroad for further development of national competitiveness. The more competitive firms are connected to the global value chain, the more they will stimulate the transfer of input factors, create employment, and generate network effects in both home (e.g., Pfaffermayr, 1999; Hijzen, Inui and Todo, 1997) and host countries (e.g., Lipsey, 2004; Blomström, Globerman and Kokko, 2001).

Thus, in order for firms to be competitive, firms have to create strategic fitness with global value chain to enhance efficiency and improve value creation. They could enhance with other firms that construct the global value chain through addressing compatibility, complementarity, connectivity and commerciality. This brings back to the notion that the firm competition is no longer firm-to-firm based, or bounded by national boundary, but is the competition of business ecosystem-to-ecosystem. The more competitive international ecosystem firms build across national borders, the more competitive firms will become.

The extended imbalance theory also applies similarly to the choice of the location (national level). The attraction of the multinational firms is to address the deficiency of

national resources and environment. As there are slacks of national resources (e.g., unemployment), nations need to attract firms to enhance the efficiency of national resources. Policymakers need to expand their view on national competitiveness that the competitive sources are developed with the connection outside the national borders, even for self-sufficient countries, and therefore facilitate strategic fitness of firms with the global value chain so that the national territory could serve as the platform to connect global value chain together. This dissertation presents that such platform-based model is the case of small and competitive countries, which gives strategic implications for economic development for resource scarce countries. Similar to the logic of competitive advantages--as opposed to the development model of large and advanced nations on creating superior resources, economies with critical disadvantages or lack of superior resources could develop through becoming the platform that facilitates efficient transactions in global value chain activities. The location serve to minimize the transaction numbers, costs and time with favorable institutions, policies and regulations toward global activities of the firm. Such findings on national cooperation to balance out each other's deficiencies at home are important as it could solve the issues raised regarding the dependency theory of the economies, or comparative economics theorem.

The contribution of this dissertation is as follows. This dissertation contributes both theoretically and empirically. First, this dissertation redefines the boundary of the firm to business ecosystem, and states that the scope of competition has changed from a battle between firms to a war of business ecosystems. Second, based on the extended view on firm boundary, this paper presents new sources of competitive advantage. Competitive advantage comes from enhancing fitness among value chain activities through compatibility complementarity connectivity, and commerciality. They emphasize on both the cooperation and cooperative relations, as opposed to either cooperation or competition. However, the four factors are derived at the firm level and does not address the issues with national competitiveness. As firm activities are dispersed across national borders, this paper applies the business ecosystem perspective and the four critical

factors to enhancing national competitiveness through two means of international transactions-- trade and FDI theories. Thus, this paper further extends the imbalance theory (Yim, 2013) that the imbalance in national resources are complemented through firm activities and therefore, need to facilitate cooperation between economies for building national competitiveness. Empirically, both case studies and statistical analyses are presented to support and validate the theoretical extensions mentioned above. Based upon such contributions, this dissertation gives further implications for national policies towards economic and regional development, and legal and regulatory institutions to address the changing business landscape of firms. The importance of this study lies in providing the foundation for further studies-- particularly for firm activities in official development assistance as well as in corporate social activities to solve social and environmental problems.

The dissertation is organized as follows. This paper addresses the extended firm boundary to business ecosystem. In the following chapter, this paper presents the four critical factors for enhancing competitiveness of business ecosystem, retrieved from platform studies. Third, the multinationality of firms are incorporated in business ecosystem perspective. Thus, the fourth chapter addresses its impact on the competitiveness of firm and nations (both host and home countries) and shows the reverse relationship of globalization and competitiveness to the conventional economic thinking. Fifth, this paper extends the four criteria in building business ecosystem to the international scope, and postulates that the location (national territory) needs to serve as a platform to efficiently orchestrate the complex web of global value chain. This dissertation concludes through giving strategic implications for economic developments for small economies.

CHAPTER 2. FIRM GROWTH AND SUSTAINABILITY: TOWARDS BUSINESS ECOSYSTEM

One time hit of market dominance or performance no longer guarantees firm sustainability. The changing environment characterized by high velocity environments has led business scholars to shift their perspective from long term static analysis on firm competitiveness to the dynamic perspective in developing key resources and adapting to the environment (e.g., Teece, Pisano and Shuen, 1997; D'Aveni, Dagnino and Smith, 2010). Particularly, hyper-competition based studies postulate that the static analyses of strategic positioning in the industry (e.g., Porter, 1985), or developing heterogeneous and immobile resources (e.g., Wernerfelt, 1984; Barney, 1991) have limitations in sustaining firm growth (D'Aveni, 1994). Continuous refinement and coordination of resources leads to sustaining competitive position (Teece, 2007; Nelson and Winter, 1982), which cannot be done alone.

Firms do not develop necessary and competitive resources in isolation (Powell, 1990). In strategic management, firms were considered to create competitive advantages through outrivaling others, or mitigating competition. Yet, firm's competitiveness cannot be sustained without the cooperation with others. Firms may not have resources to continuously and rapidly develop competitive advantages, or they may not be able to internalize all the necessary value chain activities from transforming raw materials to final (consumer) goods and services. Furthermore, their competitiveness is largely dependent on the relationships with others.¹

Network theories that put emphasis on exchanging resources to generate relational rents (e.g., Dyer and Singh, 1998; Mursitama, 2006) examine how firms develop and exploit their own resources through firm cooperation. Although firm networks are researched

¹ This part will be further elaborated in Chapter 3.

from various disciplines, strategic management scholars examine resource pooling, transfer and creation have extended on the resource-based view (RBV) of the firm (e.g, Lavie, 2006; Mahoney and Pandian, 1992). The orchestration and coordination of firm networks have been an extension to dynamic perspective of the firm (i.e., dynamic capability, absorptive capacity and combinative capabilities), which focuses on (input) factors of firms (Teece, 2007).

The changing business environment, however, calls for an extension to existing studies on competitive advantage. Frequent and rapid development of competitive advantage (i.e., temporary advantage) may not provide insights to finding the sources of sustainable competitive advantage (D'Aveni, 1994). In addition to high velocity market changes, the business landscape has been characterized with industry and technology convergence. Defining the industry boundary has become increasingly difficult as firms have been redrawing and fashioning the boundaries of the competition by converging features and functions that were conventionally regarded as a different industry or market segment. Sources of competitive advantage no longer can be guaranteed through superior or heterogeneous resources. Rather, they have been built around a unique portfolio of good enough resources that can be tailored to various market segments and time frames (Cusumano, 2010).

Firm activities have also been extended beyond a certain industry. Firms collaborate to exchange and co-develop resources efficiently. Value is created in each of the value chain activities, where the activities are disaggregated and allocated to various firms from diverse industries and countries. Each of the activity needs to economize resources to create the maximum value and the streams of the activities also need to be efficient to increase the overall value of the entire activities. One value chain activity contributes differently to valuable characteristics of the product (Porter, 1985), and they build on blocs to deliver the final value to end customers (Stabell and Fjeldstad, 1998). Thus, one's competitive position in the market is determined by other's attributes to the value chain activities.

For example, Apple Inc. has been exploring competitive edge in wearable goods and have been collaborating with apparel and accessories firms such as Nike. Its targeted businesses are also not limited to electronic goods. They are extending their business scopes to other industries in collaboration with automobile or textile firms (Ballve, 2014; Leather, 2014). In terms of its performability, Apple's growth has had a large impact on the growth of suppliers' growth. Foxconn,² one of the main firms that compose the upstream activities of the value chain, has complemented Apple's competitive position in design and technology by its ability to produce at a low cost within a short period of time. However, Foxconn has been experiencing a drop in revenue due to disappointing demand of Apple's iPhone after 2013 as well as from Apple's divergence from the company (Greenfield, 2013). Apple decided to increase its manufacturing contract with Foxconn from 2014 due to quality control issues.

With increasing interdependence of firm activities, competitiveness is no more about how one firm can outpace another firm (Dyer and Singh, 1998). Competitiveness comes from building competitive value chain activities that can outrival other's value chain activities. Firms can no longer create and sustain competitive sources that are heterogeneous and immobile. Neither can firms survive through setting high barrier to entry or limiting the supply of resources to seek monopolistic rents. Rather, it is critical to implement the most efficient flow of business activities through sharing and co-developing resources with other firms.

In this respect, firm boundary should not be limited to a single firm or direct networks of firms but needs to be extended to cover the entire value chain activities and firm networks that are related to the activities. The strategic fit of the value chain activities or the business ecosystem will lead the cooperating firms to gain competitiveness against other firms in competing business ecosystems. Thus, it is not only about winning the competition, but also about how efficient streams of value chain activities firms could

² Hon Hai Precision Industry Co., Ltd., is traded as Foxconn Technology Group.

build against other network of firms.

There are numerous and various studies in analyzing the firm boundary, but they are boiled down to two: efficiency-based and monopolistic asset-based. The former aspect concerns with internalizing firm transactions under a common governance to reduce market failure and increase efficiency. This is explained by transaction cost-based internalization theory (e.g., Coase, 1937; Williamson, 1973; 1975; Teece, 1986b). The latter aspect concerns with resource-dependency where firms are viewed as a bundle of resources that are either bought or developed through a long period of time. Firms grow in terms of scale and scope, through acquiring and developing superior resources (e.g., Wernerfelt, 1984; Barney 1991). In order to prevent others from acquiring similar resources, firms take defensive actions to sustain their position and benefit from the exploitation of monopolistic rents (e.g., Peteraf, 1993; Porter, 1980). In international business, this is related to the structural market failure-based view which has developed into ownership advantage in international business (e.g., Dunning, 1979; Dunning and Lundan, 2008), and valuable, rare, inimitable and non-substitutable (VRIN) resources (resource-based view) in strategic management (e.g., Wernerfelt, 1984; Barney, 1986; 1991).

By taking a holistic approach, this chapter first reviews the evolution of firms and how theories have developed around the two aspects of efficiency and monopoly. Firm boundary has extended from an individual firm to firm networks, where firm alliances play a significant role in terms of enhancing firm competitiveness (e.g., Gulati, 1998). However, studies on firm alliances have two limitations: they focus on 1) maximizing an individual firm's competitiveness vis-à-vis other collaborating firms, and 2) firm alliances formed around technology related activities (e.g., Gay and Dousset, 2005), or supplier and manufacturing activities (supply chain management) which are only a partial of Porter's (1990) nine value added activities of the firm.

In order to overcome such limitations, this chapter adopts the business ecosystem

concept to analyze not only specific field of firm alliances but also those that form around the entire value chain activities. Moore (1993; 1996) sees firms as a member of a business ecosystem that co-evolve with other firms or surrounding stakeholders. The business ecosystem (firm networks that are formed around the entire value chain activities) is redefined in this chapter as the newly set firm boundary to analyze the competitiveness of a firm. Building on the concept provided by Moore (1993; 1996) this chapter extends internalization or asset co-specialization (Pitelis and Teece, 2010) to solidify the importance of co-evolution among firms for enhancing competitiveness.

The boundary is also not limited to domestic scope. Firm networks are formed across national borders and business activities are dispersed around the world. Taking into account of global production and sales, value chain activities should be analyzed in a global scope. This part will be further elaborated in Chapter 4.

This chapter is organized as follows. First, this chapter delves into theoretical background in finding the role of the firm in extended firm networks. This part illustrates that the conventional boundary of industries, countries and markets has become less important. The ecosystem stretches beyond the conventional boundaries. Second, this chapter categorizes and lists different types of firm networks and alliances and re-categorizes the boundary of the firm to firm alliances constructing the entire nine value added activities. Third, the platform firms have evolved as a new kind of firms that connect both suppliers and customers together. The network effect provides an important implication for building business ecosystem that portrays coopetition relationships of firm networks and customers.

2.1. The Two Forces in Economic Activity

Determining firm boundary was specified in transaction cost economics to determine which economic activities needs to be internalized an organizational boundary or which needs to be outsourced (Coase, 1937; Williamson, 1975). Before the 19th century, market

transactions were rather simple exchanges between individuals or small groups, where the productions were limited in size by personal wealth of the individuals in control (Berle and Means, 1932). As the market grew in size and the transactions have become complex, transaction costs started to arise, making the market inefficient.

Transaction cost is a conciliatory terminology to oppose rationality-based economic theories. Sellers and buyers are driven by bounded rationality and opportunism, and these turn on transactional factors such as uncertainty and information asymmetry in market transactions (Williamson, 1973; Hennart, 1982). As the market grows, a number of different parties opportunistically seeking quasi-rents lead individuals to face frictions and be beset by transaction costs and accumulated inefficiencies throughout production processes (Alston and Gillespie, 1989).³

To reduce and internalize costs of market transactions, the sellers come together to form what is known as the firm or the “hierarchy”—the stream of seller attributes (activities) that work together to serve the end market (Teece, 1986b; Williamson, 1975). The hierarchy has different features from that of (the initial form of) the “market”. Whereas the transactions in the market are made flexibly by competition and the price mechanism, the firm functions through hierarchical streams of activities where the transactions are done in a formal and bureaucratic routine (Williamson, 1975).⁴ Internalization of transaction costs and market exchanges became the foundations to transaction cost economics and internalization theory.

However, firm growth in size and scope is limited by the accumulated inefficiencies

³ Market inefficiencies regard the production costs as well as transaction costs associated in information searching, bargaining and enforcing. Transaction costs are explained in various aspects, including negotiation, governing and monitoring costs necessary to assure that contracted goods and services between and within firms are forthcoming (Alston and Gillespie, 1989).

⁴ The choices are made dependently under manager’s supervisions due to possible inefficiencies that arise within the firm that Coase (1937) explains that the entrepreneurial coordination is more economical than a series of exchanges negotiated in the market. In other words, as opposed to our common sense, capitalism brings the undisputed authority over men (authority over workers) whereas in communism, or the perspective of Karl Marx, the division of labor within the society is determined by competition, not the authority (Kroszner and Putterman, 2009).

deriving from resource management and the complexity of transactions both within the firm and in the market system (e.g., Penrose, 1959). Within the corporation, the coordinating and monitoring costs occur and lead to decreasing returns to the coordinator's attention. The coordinating and management costs may exceed the economic activities that could be done through market exchanges.

The supersize also entails the increasing possibility of making cataclysmic mistakes. It is because that the authority, or the entrepreneur has to make the decision assuming that he has acknowledged all the information that there is to know. In most cases, managers are not well informed or are limited by their bounded rationality, or make the biased choices despite the available information (Williamson, 1985). Sometimes, they are even manipulated by others to make not the best choices of the firm (Milgrom and Roberts, 1990). Such cases hinder managers from directing or allocating resources to the most efficient division.

According to Coase (1937), even though the resources are directed at the expense of other marketing costs, there are always decreased inefficiencies with the growth in size—costs of organizing additional transactions within the firm, costs from a failure to make the best use of the factors of the production, or there may be other advantages coming from transactions in small numbers than in a big organization. An increase in the number of managers also causes conflicts and inefficiencies within the system (e.g., McAfee and McMilan, 1991). The complex set of constraints also grows, and they “shape the *ex post* bargaining power over the quasi-rents generated in the course of a relationship” (Williamson, 1985: 70). Thus, there needs the governance system to ease the inefficiencies that arises within the firm, as opposed to the purposes to make the most efficient usages of the resources and minimize the inefficiencies arising from the external market.

On the other hand, in the market system, as firms grow and dominate the market, the super-firm increases inefficiencies and the gap of the utility, between the sellers and

buyers. This is referred to as the monopolistic or oligopolistic market structure (failure). Although many industries have the features of a few firms dominating and leading the market where other small and medium sized enterprises (SMEs) support and complement their competitive structure, these structures are in theory uncompetitive. The rise of the anti-trust law has been the exemplary to the perceptions of the market in the US before the 1980s. The reasoning behind the anti-trust law is that the producers become the price takers, and manipulate the market by enlarging information asymmetry between the producers and consumers. Internal inefficiency of resource allocation within the firm also translates to and enlarges inefficiencies in overall market system (as mentioned above).

Whereas some resources are by nature scarce, firms also try to make them scarce by protecting them or limiting the supply. In this sense, firms arise to create market inefficiencies, as opposed to transaction cost economics. Firms' main concern is to maximize their profit (Friedman, 1970) so they set higher entry barriers (Porter, 1980) and limit the supply of resources to be not replicated by others (Peteraf, 1993). Firms strive to protect their assets through formal and informal means.⁵

Once attained the competitive position, firms strive to maintain the stable status of their businesses, both internally and externally. Internally they try to form what is called as

⁵The establishment of intellectual property (IP) regulations and laws also supports such activities. The purpose of IP regulations is not only to compensate for those firms to develop superior resources but also to give incentives to developers to sustain newly created market inefficiencies in allocation and availability of the resources to others. As there are parties that take opportunistic behaviors to imitate and free ride on the development of others, without such incentives or regulations, firms will not strive to develop superior resources which is critical to the growth of technologies and industries. On the other hand, the IP has been important in promoting subsequent innovation by effectively promoting the knowledge spillover and increasing benefits for all. IP promotes much faster development of the industries in the developing countries (e.g., Maskus, 1990), promotes economic growth (e.g., Boldrin and Levine, 2002) as well as their technological development. Countries with stricter IP protections showed a higher growth rate, particularly in the developing countries (Maskus, 1990; Helpman, 1993) as they attracted more firms' investment and transfer of knowledge (Lee and Mansfield, 1996). There are counter-arguments with regard to the innovation rate and knowledge transfer particularly to countries that do not have the technological capabilities (e.g., Kumar, 2003) and the level of IP regulations should vary depending on the level of technological capabilities of the nations (e.g. Falvey and Foster, 2006). IP is thus important and essential for firms to compensate for their contributions and maintain their position in the market.

the “routine” to make the firm operate as it has done repeatedly in the past--a stable operating status (Nelson and Winter, 1982). Externally, firms want to grow until they are “compensated” for their monopolistic position where they do not have to strive “as hard as” when they were striving to reach that position in the market. Once they reach the stable status inside and out, it becomes very difficult to break the stable status of the firm where they hold onto the resisting force to remain “still”. This is known as the path-dependency trap or growth trap.

Maintaining their position comes from reducing the external forces that can possibly break their stability in the market, setting entry barriers and structuring the existing forces in firm relations in favor of their own interests (Porter, 1980). Internally, this can be explained with path dependency and (active) inertia, where good firms go bad due to the tendency of an organization to follow established patterns of behavior – even in response to dramatic environmental shifts (Sull, 2005). Thus, monopolistic behaviors should not be criticized for their dominance in the market if they are doing efficiently than the market system in allocating and utilizing resources. Yet, monopolistic behaviors should be regulated if they are not utilizing the resources efficiently (accumulated inefficiencies within the firm) or are using illegitimate methods to stay in power. If firms could maintain the most efficient within the boundary of legality, they should be perceived as the helper to achieve the purpose of capitalism, to make market transactions more efficient, rather than as the villain of the market system (Dunning and Rugman, 1985).⁶

In short, firms grow as long as their transactional activities are more efficient than in the market system or pass the most efficient optimality point in size. Even with the most efficient organizational structure or the coordinating mechanism of the firm, the nature

⁶ At the developing stage of economic development, there is a high market failure in the market. It is more efficient to concentrate resources to a few firms to transfer and generate economic value (Khanna and Palepu, 1997; Ghemawat and Khanna, 1998). In economies such as Japan, South Korea, Singapore and China, there were developments of conglomerate type of firms.

of “indivisibility” of the resources makes firms to incur slack of resources within the system (Penrose, 1959). When the slack of the resources is used in other businesses, this becomes the source of firm growth in scope (diversification strategy); if the resources are not fully utilized then the slack translates to the inefficiency of the firm.

Either by internalizing external market failures or increasing market failure, firm growth requires efficient management of the resources within the firm. What firms do is they acquire necessary resources and allocate them accordingly to the activities of the firm that can add the maximum value to the final output of the firm. Penrose (1959) explains that it is not about which resources to possess, but it is about the dynamic process in managing and interacting with the resources well, producing opportunities and devising diversification strategy for the process of firm growth.

This logic has led resource management in recent years to focus on firm specific managerial experiences. Penrose (1959) explains that compared to managers who are relatively new to a firm, managers with tacit knowledge of organizational routines may envision a superior subjective productive opportunity set for the firm. Kor and Mahoney (2000) further elaborate that proper matching of the resources to the most productive value added activities will allow firms to create competitive advantage and enhance their performability in the market.

Thus, from the two forces of increasing efficiency and sustaining one’s position through setting high barriers to entry, to coordinating and managing resources across firm boundaries, the organizational form has evolved similarly. The following section illustrates how firms have grown and extended to firm networks, which were conventionally considered as a symptom of market failure. The next section also extends on the theory of the firm, to introduce a new kind of firm function as an extension to Penrose’s (1959) managerial capabilities—the orchestration of firm networks.

2.2. The Extended Boundary of a Firm: Different Forms of Capitalism

The root of capitalism or the market economy lies in the economics of specialization. Firms focus on what they are good at and trade through market transactions. However, in business, there is a certain level of market failure in the market system that firms become the efficiency facilitator of market inefficiencies. In order to do so they integrate various transaction. In this fashion, industrial economics has long been concerned with the issues of building vertical or horizontal integration (Grandori and Soda, 1995). Vertical integration is the multiple stages of activities that have been internalized and integrated under the common coordinating governance from raw materials, to processing, manufacturing, packaging and to marketing where the outcome reaches the end consumers. Horizontal integration is regarded as similar level of activities or products that are integrated together that are either complementary or competitive to seek both economies of scale and scope. A good example of vertical integration is Ford Motor Company that has internalized activities from acquiring raw materials to stalled assembly lines. With frequent and deep economic downturns in the beginning of the 20th century, the raw materials were in shortage, where the industry's supplier network was too small to keep the pace with the demand (The Economist, 2009b). The solution was going from bearing the inventory cost to owning the whole supply chain and having a total control over them. An example for horizontal integration is Honda Motor Company from Japan do not only produce vehicles and motorcycles, but with its core competency of producing small and reliable engines, it also produces engines for portable electric generators, lawn mowers, marine outboard engines, snow blowers and household gas engine co-generation unites. It has entered into the aircraft industry (HA-420 Honda Jet) as an extension to develop upon fuel efficiency based competencies for light business jet market in a new joint venture relationship with General Electric Co.– GE Honda Aero Engines LLC (Jet Auto, 2004).

Whether firm activities are vertically and horizontally integrated, the strategic choices on firm activities are subsets of the nine value chain activities, presented by Porter (1985).

The nine activities are composed of five primary activities and four supporting activities. Five primary activities are inbound logistics, operations, outbound logistics, marketing and sales, and service, which are directly involved in creating and bringing value to the customer through physical products (Porter, 1985; Stabell and Fjeldstad, 1998). The four supporting activities are procurement, technology development, human resources management, and firm infrastructure, which support and improve the performance of primary activities (Stabell and Fjeldstad, 1998).⁷

Inbound logistics are activities associated with receiving, storing and disseminating inputs to the product, such as material handling, inventory controlling, vehicle scheduling and returns to suppliers. Operations are activities associated with transforming inputs into the final product form, such as machining, packaging assembly, equipment maintenance, testing, painting and facility operations. Outbound logistics are activities of collecting, storing and distributing to goods warehousing, warehousing, order processing and scheduling. Marketing and sales are associated with providing ways for consumers to consume the products through advertisements, promotion, sales forces, channel selection, relations and pricing. Service is the end activities that provide services to enhance or maintain the value of the product, such as installation, repair, training, parts and supply and product adjustments.

The supporting activities are tailored to each of the primary activities, except infrastructure. Infrastructure includes general management, planning, financing, accounting, legal services and government affairs as well as quality control that support the entire value chain activities. Procurement is the function where purchased inputs (raw materials, supplies, machinery, laboratory equipment, office equipment to buildings) affect the cost and quality of purchased inputs and other activities associated with receiving and using inputs as well as interacting with suppliers (Moon, 2010).

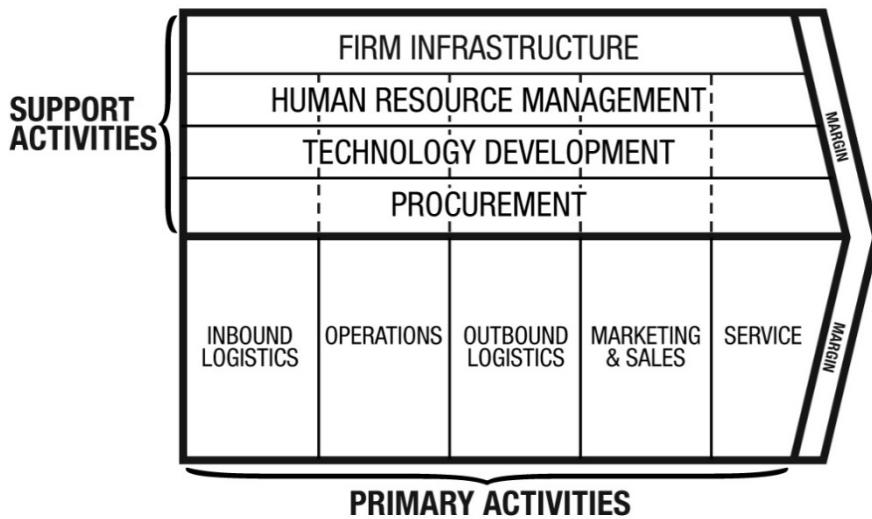
⁷ The following section on value chain activities are the summary version of explanation provided by Porter (1985) and Moon (2010).

Technology development refers to how every value activity embodies technology, know-how, procedures and process. This activity goes beyond the narrow definition of research and development (R&D); it is related directly to the end product and the basic research product design, media research and process equipment. Human resources refer to activities such as recruiting, hiring, training, developing and compensating all types of personnel as well as dealing with labor negotiations. Dealing with human resources is associated with enhancing skills and motivation of employees and economizing these resources for cost reduction.

The nine value added value activities are sub-categorized based on industry, businesses, firm structure or resources (Moon, 2010), yet, these nine activities are the fundamental and main economic activities of the firm from translating input resources to valuable products to end consumers. For each activity to contribute economic value, it needs to be in cost and differentiation parity (Porter, 1985). The activities also need to be configured in a way that economize the transactions and maximize the value creation, across business units and geographical boundaries. If the activities can be shared among different units of businesses and locations, they can enhance cost position. If these activities are configured to be interactive, they will create a higher value through knowledge exchanges and reconfiguration of the knowledge sets (Kogut and Zander, 1993).

Particularly, in the case where knowledge is tacit (hard to be codified), complex, and hard to be transferred, these activities need to build strong relationships to transfer and create knowledge. At the same time, they need to adapt to the changing environments and constantly develop new resources that meet the changing needs of consumers and pace with other competitors and suppliers. In this respect, firms are analyzed as an economizer of the resources, finding ways to reduce inefficiencies and build value to enhance the welfare of the economies as a whole.

Figure 2.1. Value Chain Activities



Source: Porter (1985).

However, with the blurring effect of the conventional boundaries (industry, firm, and products), it is a matter of how firms can economize and address imbalances throughout the entire value chain activities. They are constantly faced with diverse threats and frictions from direct or indirect firm relationships (Gulati, 1998), from market reactions as well as uncontrollable chance events such as natural disasters or human casualties. The government regulations and cultural factors which are regarded as exogenous factors do create or diminish market frictions. Thus, they are considered as one of the institutional and market failures that could affect any kind of business transactions. In fact, governmental regulations cannot be totally separated from business activities (e.g., Bodewyn, 1988). The role of the government and public administration should regulate the misdeeds of businesses and foster a more favorable and efficient business environments.

Moreover, resources are limited in amount and to certain firms. It is impossible for firms

to obtain all resources necessary to compete in rapidly changing environments. Firm operations are a matter of strategic choice between “make” or “buy”. Developing internally may incur high costs and may be less effective, while acquiring another firm or buying resources from other parties may be risky as they may be not compatible or complementary with existing resources. In short, a unique configuration of the resources to create a higher value (Schumpeter, 1937; Barney, 1991) or activities (Porter, 1980).

Thus, firms need to ally with other firms, allocating the activities to complementary firms that balance out the entire activities of the value chain. Value activities are inter-related linkages where the performance of one value activity affects that of another (Moon, 2010). It has become intricate to determine firm boundary but defining the boundary is important. The following section elaborates on the evolution and extension of firm boundary.

2.2.1. The Hierarchical Capitalism

As an alternate to Adam Smith’s arm’s length capitalism where transactions were taken place under invisible hand, the hierarchical or managerial capitalism coordinates and allocates resources (Coase, 1937; Chandler, 1977). If the invisible market system is based on small and personally owned enterprise (single unit business enterprise) that “handled only a single economic function, dealt only in a single production line, and operated in one geographic area” (Chandler, 1977: 79), the initial stage of the firms was considered to be in a unitary form (u-form). This means that, as it was in Fordism, the division of works/functions is clear, distinguished and are in inter-dependent relationships. The resources are allocated to each functional divisions according to the bargaining process, with each function striving to maximize the funds allocated to its particular activities (Williamson, 1975). Specializing on certain tasks and businesses under a single administrative coordination, workers could reduce and share transaction costs and increase productivity, and not to mention, the speed of delivering tasks. The functional divisions are put in the relationship of competition that when there is a slack

in resources, particularly in staff numbers, managerial capability, and some discretionary investments, this will lead to the growth of the firm, or the creation of new investment projects. They were the most common form of the firm to exploit economies of scale before the 1930s in the US, which prohibited the growth in scope (Hill, 1985).

However, from the 1930s, as the size of the firms grew, not only the number of middle managers grew but the divisions had to separate where the divisions have grown to functionally self-constraining. Firms grew by producing diverse products, in different geographical locations and were even sub-divided into brand divisions, where each of the divisions can be scaled down to the U-form structure (Williamson, 1973). The combination of the U-form divisions have grown under the corporate head office that does strategic decisions involving planning, appraisal and control, with a number of elite staff members to audit and advise the corporate head office. The divisions are put into competition to maximize their own divisional profits and the head office gets to intervene at a much lower price in their relationships, if they go bad than the costs of external intervention (Hill, 1985). They together provide the information needed to the head office where Williamson (1973) sees that multidivisional firms (M-form) have evolved as a response to the limits of capital market experiences by internalizing market relationships within the firm and at the same time maximizing profits by disciplining firms that are not maximizing profits. M-form means that firms can exploit economies of scope from firm diversification. Yet, M-form has some limitations where it introduces another level of hierarchy and at the same time emphasizes the competition rather than the cooperation among divisions that may result in each division making myopic decisions and transfer price competition. M-form became the central form of firm structure in the US particularly from the 1960s to the 1990s.

The background to the increase of M-form was largely associated with the industry structure, mainly in the US. A clear boundary of centralized operations were atypical in reality where there is a large businesses that are in the forms of family businesses, guilds, cartels and extended trading companies that are either loosely or highly coupled

relationships (Powell, 1990). Many of the industries are also built around a large number of subcontracting relationships where one firm serves as a principal and there are various satellite firms, typically in heavy manufacturing projects such as aerospace, metallurgy, mining and marine engines (Powell, 1990). Thus, as an extension to the M-form, there evolved a holding-form (H-form) where firms conglomerated with other firms. H-form had small headquarter offices to organize a “holding” firms where each of the business units is fully separate from one another. It is difficult to clearly distinguish between an M-form and an H-form, because among the subsidiaries some are in the M or H form.

The rise of these firms were prevalent in newly emerging economies such as East Asian countries and part of the Latin-based firms. Because of the rise on network forms of organizations, scholars and practitioners started to pay attention to what made these firms competitive in the market aside from the unitary form of firms (Gerlach, 1992; Podolny and Page, 1998) where Williamson (1985) initially interpreted this as an intermediate or hybrid forms, combining elements of market and hierarchies (Williamson, 1992). A good example of conglomerates or an H-form is the relationship Toyota has built with its suppliers to create a supply chain with the stability and efficiency of vertical integration but with some flexibility with looser networks of suppliers, by investing minor stakes (The Economist, 2009b). Toyota screens the suppliers for quality and financial health and ensures the balance in the streams of the value chain activates.

The reason with regard to the evolution of the alliance form or an extended form of the hierarchy was considered to be a symptom of market or institutional failure. These firms have evolved from emerging economies that have high institutional voids in the home market, by forming a hybrid version to internalize the voids of the exogenous market and the institutional system. Khanna and Palepu (2010) explains the terminology of institutional voids to a lack of intermediary markets and contract enforcing mechanisms such as market research firms or credit card systems, to efficiently connect buyers and sellers. The absence of developed infrastructure or constraining informal institutions impeded efficient businesses operations and full market participation (Easterly, 2001).

Large conglomerates in these firms grew, with the government support to fill and complement the voids and provide the basic infrastructure of essential industries to grow. The most effective way to do is having a few firms to surrogate the work to fill in the voids that were taken for granted in the developed countries. In short, the complicated forms of the governance system have evolved to address imbalances throughout the value chain activities (supporting activities). In doing so, firms take either the hybrid form of the markets and the hierarchies that cannot be fully categorized under the two. The following section describes alternate forms of firm alliances.

2.2.2. Alliance Capitalism

The dichotomous view of markets and hierarchies (Williamson, 1975) was based on the governance structures that provided profound insights to the fields of law, organization theory and business history as well as in management practices. Other forms of firm structure, firm networks, were conventionally regarded as a symptom of market failure or a hybrid form (combining elements of markets and hierarchies) even though firm alliance have been prevalent throughout the history (e.g., Clawson, 1980; Granovetter, 1995). Part of the reasons was that firms were merely considered as black box—a production function converting inputs to outputs (Podolny and Page, 1998), where resource (knowledge) transfer was possible without creating frictions. Fundamentally, the transaction cost perspective did not incorporate trusting or altruistic behavior.

Firm networks have been analyzed from diverse research backgrounds. The industrial economics highlighted on the equity and non-equity networks, where the organizational research analyzed firm specific traits and internal variations of firms. Firms chose various types of firm alliances (strategic alliances, joint ventures business groups, franchises, research consortia, relational contracts and outsourcing agreements) depending on their needs, purposes as well as their business environments such as institution and regulations, or cultural and legal differences across countries (Dore

1983).⁸ Sociological perspective helped identifying socially controlled and informal cooperation as well as horizontal coordination among similar forms as they focused on social and behavioral exchanges rather than on transaction of goods and services (Grandori and Soda, 1995).

Firms have changed in significant ways and lured their boundaries by engaging in forms of collaboration that resemble neither the arms' length market contracting nor the vertical integration (Teece, 1986a). They are also not necessarily the form situating in between the markets and the hierarchy. If in the hierarchical system, transactions are taken place under the authority (administrative fiat) where heterogeneous resources are traded freely within the system, in firm alliances, transactions are taken place in a more social form—by reciprocity, collaboration, mutual interest and also by social structure because differential social access results in information asymmetries and bottleneck. Thus, firm networks have increasingly become critical and those without engaging in collaboration may be left out, disadvantaged compared to those that are highly engaged in networks (e.g., Granovetter, 1985).

In cooperation, parties forgo the right to pursue their own interest at the expense of others, which reputation, friendship, interdependence and altruism can become integral parts of the relationship (Macneil, 1974). Cooperation also takes place not only to exploit its advantages, complement their deficiencies and coordinate resources. For example, Dore (1983) pointed out to the spirit-of-goodwill between Japanese firms and their suppliers. They do business and resolve disputes based on a high level of trust between parties, where opportunism is foregone (Granovetter, 1995). Uzzi (1997) refers such kind of a relationship to an “embedded tie”, the strong enduring relationship that is built between manufacturers and suppliers.

Networks takes place between the parties that can make the most reliable information

⁸For example, tax laws in Italy is in favor of small employers that it encourages the formation of small firm networks over the formation of large ones (Podolny and Page, 1998)

flow efficiently, for particularly that is more complex or hard to be codified or taught (Kogut and Zander, 1993; Dore, 1983). As these sticky information or knowledge is hard to be exchanged only with the price mechanism, they need a certain level of commitment and time frame to exchange and learn new knowledge (Granovetter, 1973). Firm networks become the conduits or channels of information transfer while at the same time preserving greater diversity of search routines and encouraging novel syntheses of information than the hierarchies (Powell and Brantley, 1992).

Despite the contributions of sociological perspective on collaboration, the transaction cost perspective or the economic benefits should not be downplayed in the formation of firm alliances. Firms pool and share resources and enhance resource utilization. Firms also reduce transaction costs as well as risks associated in doing business in locations or with partners in information asymmetry. Hill, Hwang and Kim (1990) explained that firms choose different alliance formations (entry modes) depending on control, resource commitments, and dissemination risks associated with strategic and environmental variables as well as transaction variables.⁹ Sociologists have also claimed on the economic benefits as well. They focus on reducing risks from environmental or legal changes as well as benefits via the formation of a higher quality relationships between firms from richer communication and exchanges of knowledge (Uzzi, 1997). Additionally, a wide variety of firm networks enhances the status of the firm which, in turn, has positive economic benefits for the firm (Podolny, 1993). Similarly, other benefits include legitimization and status (e.g., Podolny and Phillips, 1996).

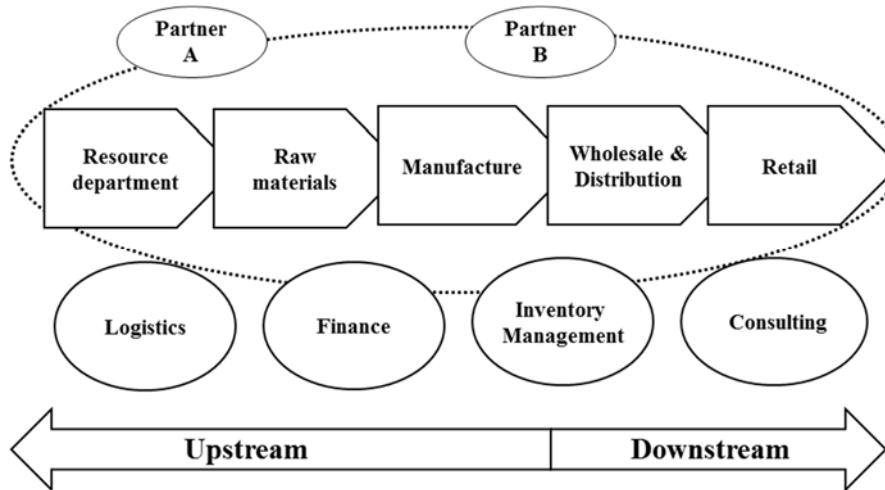
Defining the boundary of firm networks has been intrinsically difficult. Economically,

⁹According to the authors, resource commitments are dedicated assets that cannot be redeployed to alternative uses without cost (loss of value) and thus serve to limit the strategic flexibility of the firm. Dissemination risk comes from partnering party's potential to expropriate firm specific advantage in knowhow. Strategic variables are composed of the extent of national differences and scale economies and global concentration. Environmental variables refer to country risk, location familiarity, demand conditions, and volatility of competition. Transaction variables refer to value of firm-specific knowhow and tacit nature of knowhow.

firm networks are formed around direct transaction between parties. From the organization structure point of view, firms form alliances without much direct transaction of goods and services; they may have less direct transactions but only share few resources such as brands (Schmid and Grosche, 2013). Firm networks are also formed through informal relationships, where the exchange of knowledge between firms are done through inter-personal linkages (of managers). Indirect networks also play a significant role in knowledge exchanges. Clustered firms and organizations share knowledge through intermediary organizations, events (e.g., conferences, lectures and so on), or personal networking places. The geographical concentration of firms indeed, have increasingly gained critical importance in studies of economic, firm development as well as innovation. There has been a dramatic increase of industrial districts and they have evolved from the Marshallian district to specialized districts such as high-tech districts or R&D poles became prevalent (Saxenian, 1990; Grandori and Soda, 1995). However, firms form networks around the value chain activities of the firm, in order to create and add value to their own activities.

The figure below shows an illustration of the boundary of firm alliance that is slightly modified based on Porter's (1985) generic value chain. Firms constitute the stream of activities from inbound activities to marketing and after/service as well as supporting activities of financing, R&D development, as well as consulting and human resource managements. Whether they are outsourced or coordinated under a certain level of control or ownership, each activities create value and contribute differently to the entire value chain. The aggregated activities determine the fate of the entire value chain, as each of the activities are interdependent with each other, particularly with their competitiveness and performability.

Figure 2.2. The Boundary of Firm Networks



Note: The picture only depicts two firms (partner A and partner B). In reality, there are many firms that are connected and they constitute the entire value chain activities. Moon (2010) named this as the industry value chain activities.

Source: Moon (2010).

Moreover, whether firms are networked through informal personal networks or by physical closeness, information travels through the firms which may be helpful or utilized by the firm. Absorption of knowledge and information is not only determined by the sender but also by the receiver where without the recipients' motivation or the level of prior knowledge, knowledge transfer may be limited (Minbaeva, Pedersen, Bjorkman, Fey, and Park, 2003). Lane and Lubatkin (1998) also explains that it is determined by demand, appropriability and technological opportunity which are directly related to commercial activities of the firm. The absorptive capacity, defined as the “ability to recognize the value of new, external knowledge, assimilate it and apply it commercial ends” (Cohen and Levinthal, 1990: 128), succinctly capture the steps involved for inter-organizational learning and the motivation for firms to engage in knowledge exchange with others. Thus, firm networks are formed around the value chain activities of the firm, where this dissertation redefines the boundary of firm networks to aggregation of firms that form the entire value chain activities (primary and supporting

activities), whether they are formally or informally connected. However, there are different forms of networks that firms, depending on their status of complementarity, market failure and location (Moon, 1997; Yim, 2015, *forthcoming*) that constructs the entire value chain. The following is the illustration of different forms of firm alliances.

2.2.2.1. *Joint venture, Strategic Alliance (minority stakes), Licensing and Outsourcing*¹⁰

Strategic alliances and joint ventures are commonly chosen in terms of forming firm networks where their relationships are more committed to each other than clustered firms in a specific location. The difference between strategic alliance and joint venture is blurry, as their terminologies are used interchangeably. Strategic alliances construe a broader sense of relationship than joint venture, in terms of equity investments or control over another firm. Moon (1997) defined strategic alliance as an investment that has few equity ownership and control over another firm, and joint venture to be in a higher level of ownership and equity. Despite a definitional obscurity, they are formed in order to enhance their strengths and complement their disadvantages. Firms cooperate in terms of exchanging, sharing and co-developing products, technologies and services (Gulati, 1998).

On the other hand, it is also used in a unilateral and hierarchical management of the investing firm as in the relationship of one firm holding a minority stakes over another. Minority stakes are when a firm is holding not large but just a certain level of ownership and control over another firm (Schmid and Grosche, 2013). As the investing firm holds some equity, this accompanies risks to the level of the equity ownership. Holding minority stakes is often preferred in the cases where the two competing firms need to strengthen their cooperation on operational issues and strategy (Schmid and Grosche, 2013; Yim, 2015 *forthcoming*).

¹⁰ This section is abstracted and slightly modified from Yim (2015, *forthcoming*).

Joint ventures between firms are found in high tech industries where firms have to gain fast access to new technologies and new markets, or benefit from economies of scale or scope. It is defined as a contractual agreement in which the participating parties agree to share major decision-making. The profits and losses are dependent on their equity investment range. The distinction between minority stakes and joint ventures was considered to be a matter of the amount of equity involvement which has become less compelling, as equity investments can be carried out in a very complex ways and their actual control and management involvement may differ from their actual stake holdings (Schmid and Grosche, 2013; Yim, 2015 *forthcoming*). Thus, minority stakes and strategic alliances can be considered in a similar logic.

As joint venture and strategic alliance hold a certain level of control or ownership, it is considered separately from arm's length transactions which does not require any ownership or control over another firm. Outsourcing is a form of engaging in a partnership with other that can do the work better. This can be understood as the division of labor between firms depending on firm's competitive advantages. Outsourcing does not require any transfer of firm assets or resources, yet, for supply management and quality control, firms are required to have a certain level of commitments towards standardized coordination and management over other firms. Particularly, focal firms tend to form a relationship with suppliers that meet their quality and business standards or code of conducts. Licensing is a transfer or a sale of knowledge and knowhow to other firms so that they have the right to engage in value activities in exchange of a lump sum payment or royalty fee per unit sales (this vary depending on a licensor and licensee contract). In international transactions, outsourcing and licensing are referred to as the externalization type of firm transactions where joint venture and strategic alliances are considered as internalization type of firm transactions (Yim, 2015 *forthcoming*).

2.2.2.2.. R&D consortium, patent pooling and open innovation

The consortia has been prevalent in industries such as automobiles, computers, energy, raw materials and telecommunications. Mothe and Quelin defines R&D consortium as “a specific organizational form that comprises a contract between companies, public laboratories and/or universities for mutual interest” (1999:13). R&D consortium is considered as one form of a joint venture yet there are differences. For one thing, R&D consortia exists to control “leaky intellectual property” (Ouchi and Bolton, 1988), or technology (IP) that cannot be controlled by one company in terms of scale or scope. In this case, multiple partners come together with comparable or distinctive resources to invest together to achieve scale economies or scope economies respectively (Hennart, 1988). Second, the benefits of R&D consortia is to pool resources to reduce duplication, increase efficiency, spread knowledge spillover, and set the dominant design for the industry (Doz, Olk and Ring, 1999). R&D consortia is initiated by several companies to overcome major obstacles that they face in the industry which has been justified by the government’s support (subsidy). For example, the Institute of New Generation Computer Technology (ICOT) formed the Fifth Generation Computer Systems Project in Japan under the guidance of MITI to investigate the viability of the project and gather enough support to politically justify funding the research (Kurozumi, 1992).

With various members and interests to constitute R&D consortia, both conflicts and cooperation occur based on “the decision to enter an alliance, the choice of an appropriate partner, the choice of structure for the alliance, and the dynamic evolution of the alliance as the relationship develops over time” (Gulati, 1998: 293). The motivation for R&D consortium is related to both complementary and exploitative motivations of assets (Doz, Olk and Ring, 1999).

In relation to R&D consortia, there is patent pooling of firms with regard to complex technologies as many technologies consist of multiple substitutable or complementary components to provide efficient technical solutions (Lerner and Tirole, 2002). Instead of

negotiating separately with each of the firms to set licensing terms that are cumbersome and time-consuming, patent pooling is when two or more parties agree “to pool their respective technologies and license them as a package” (Lampe and Moser, 2010: 899). Moreover, patent pooling increases the welfare as the pool avoid double marginalization associated with independent licensing (Jeitschko and Zhang, 2013). This is seen from the Manufacturers’ Aircraft Association that combined all patents that were needed to build an aircraft--the patents are sold in a package for licensing (Lampe and Moser, 2010). Patent pools also provide procompetitive benefits by integrating complementary technologies, reducing transaction costs, clearing blocking positions and avoiding costly infringement litigations and appropriating reasonable return (Baron and Pohlmann, 2011).

Patent pooling proponents presume that the innovation will be further accelerated due to an interactive exchange of knowledge at a lower cost among the patent poolers, yet there are mixed findings to this. Lampe and Moser (2009) find that there is a lesser degree of new patent issue or new inventions among member firms of patent pooling, whereas for non-member firms it increased. It is because for member firms, they reach at the similar knowledge level that there are a few new information exchanges among the parties (Vermeulen, 2013). Yet, for non-member firms, the accessibility matters. Helpman (1993), by analyzing the patent pool of MPEG-2, averred that the innovation of a technology alone is not enough to ensure progress; accessibility, for anyone who wants to use the new technology in one of its products, has to be organized explicitly too. Other authors have argued that it is determined by complementary or substitutable patents (e.g., Shapiro, 2001; Lerner and Tirole, 2004). This shows that patent pooling is used as a method for protection, than as an efficient means for knowledge exchanges and development among non-member firms.

On a similar note, open innovation is about sharing IPs among any complementary or competing firms than hoarding them (Grassman, Enkel and Chesbrough, 2010). The purpose is to disperse and stimulate technological development and lower the transaction

costs down and corner the competition (Chesbrough, 2003; 2013). This is different from patent pooling as there are usually the patent releaser that can direct others to develop certain ways and establish dominant design in the industry. Moreover, it is to even further lower the transaction costs of licensing the technology and promote a rapid innovation around the open source technology.

In defining openness, Chesbrough argues that “open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology” (2003: 24). His definition, used most commonly in literatures, underscore that innovation takes place form inside and outside the firm.

The conventional notion of property is the right to exclude the others from using similar technologies to reap monopolistic rents to the IP holder. The property in open source is defined differently. It is the right to distribute, than the right to exclude. Open source is a new kind of a system for sustainable value creation under a governance mechanism that holds together a community of producers that renders a greater innovation opportunities. Johnson (2009) explains that in open systems, teams of coders spread out around the disparate parts of the world. They come as a marriage of convenience at first but turn themselves into a symbiotic relationship.

The battle between the Microsoft and Linux shows the innovation and business development has been heading towards an open source. The CEO of Microsoft Company, Steve Ballmer called Linux’s open source as the cancer as the innovators will shoot at each other while the man of Linux, Linus Torvalds said that open source will destroy Microsoft without even trying (Johnson, 2009). In recent years, high tech companies have been heading towards the open sources systems where Microsoft has also unveiled is new Patent Tracker, a tool to reveal every single patent that the companies owns, has acquired or owned historically (Koetsier, 2013). The most representative company to pledge on open source in software is Google, and in manufacturing, Tesler which allows

the free use of its patents to promote further innovation (Voyles, 2014; Susteren, 2014).

Weber (2004) explains that the open source has brought the groups of computer programmers and suppliers separated by geography, corporate boundaries, culture, and language. Their work together over time and build complex software systems both inside and outside the boundaries with a much faster, better and cheaper means. In fact, it has been critical for commercial software solutions, in an attempt to make the information free again, as it is in the perfect market system.

In open source developments, there is usually a central entity or a body that selects some subset of the developed code for the official releases and makes it widely available for distribution (Mockus, Fielding and Herbesleb, 2002). Source code is like the protected recipe for the binaries and it has been used as the IP regime for computer software. This is how Microsoft and Oracle made huge assets by selling the Windows and System 8, respectively. Yet, in open system, the proprietary source code is distributed to the programmers and give them the incentives to develop around them. Open source captures three characteristics which are 1) the source code must be available to everyone at the cost no more than the distribution cost, 2) the source code may be redistributed for free, without royalties or licensing fees to the other and 3) open source may be replicated and modified under the same terms.

The developers, on the other hand, do not have to be scheduled or planned to develop by the central entity; they form a loosely coupled relationships where they can work arbitrarily in any locations where they have to not meet face to face but can coordinate their activities exclusively on the Internet without necessarily being employed or paid by the central entity. In other words, as opposed to the hierarchical system, the open source software development is based on the bazaar style which brings the system closer to the perfect market system that neoclassical economists assume. The benefits of open system goes far beyond the promotion of innovation, and their systemic approach towards building a perfect market system can be reached and managed by selfishly

interested parties but for the common interest as well.

The application of the open source can be seen from the Linux and Apache. Linux is the non-rival and non-excludable operating system for web servers that is described as “the impossible public good” that allows word processors, spreadsheets, databases, or anything else to run and sit (Hertel, Niedner and Herrmann, 2003). Sun Microsystems has been one of the forerunner in the open system industries that has developed Java, a cross platform runtime that allows Java applications to run on a variety of PCs and devices.

While the R&D consortium, patent pooling and open innovation share similar features on sharing resources together for mutual growth and innovation as well as setting the technological standard, R&D consortium is prevalent in the co-development of technologies, patent pooling for packaging, protecting and licensing them, and open innovation for facilitating the further development of the core technology. As opposed R&D consortium and patent pooling, open innovation does not have a fixed boundary of members and the sellers (protectors).

2.2.2.3. Industrial / regional districts: Clusters

The interaction of firms is facilitated by the location. The geographical proximity or “critical masses in one place” provides unusual benefits that distant firms cannot easily acquire (Marshall, 1920[1890]; Krugman, 1991). If alliance capitalism refers to formal relationships between firms that are directly involved in forming a network, the cluster, by Porter’s (1998) definition is, setting the boundary of interlinked (loosely coupled) or clustered organizations by special organizational form in between arm’s length markets and hierarchies (the vertically interlinked firms), with increased economies of scale, scope and flexibilities as if they had joined with other formally. The proximity of organizations makes firms to be aware of competition, increasing productivity of the

growth and directing the innovation path (Porter, 1990; 1998). Firms will be able to have better access to employees and suppliers and specialized inputs which reduce the transaction costs.

Clusters are defined as a constellation of interconnected firms and institutions (Porter, 1998). Firms experience a stronger growth and rapid innovation together than remotely (Baptista and Swann, 1998; Swann, Prevezer, and Stout, 1998). For instance, clustered networks of firms and institutions benefit from having easier access to information through creating collective knowledge (Dosi, 1988; Krugman, 1991). Firms can also benefit from keeping eyes on their competitors (Burt, 1987) and potential collaborators (Saxenian, 1990) while collaborating with other firms to attain efficient scale (Scott, and Stoper, 2007). They in return strengthen the domestic institutions by having the relationships with local government, universities and exchange ideas through forums and seminars which have become the asset to the region that cannot be replicated elsewhere (Porter, 1998).

In neoclassical thinking, the location played a significant role only because the national wealth was strongly bounded by the borders and the production of firms were rather done domestically. Firms engaged in outside of the national borders were merely market seekers. However, with the introduction of the market failure and FDI theories, the multinationals were moving their productions outside the national borders, transferring input factors across borders. Much of the earlier studies based on comparative advantage considered FDI only for a cost reduction whereas studies based on competitive advantage sought for making more productive use of inputs which requires continual innovation that comes from direct environment of firms (Porter, 1998).

Clusters, on the other hand, do not necessarily account of low cost labor or natural resources, which are inherited assets. The advantage of the location can be deliberately created and the created assets promotes more cost effective and differentiated value (Porter, 1990; 1998). The four factors that determine the advantage of the locations or

the clusters are factor conditions, demand conditions, related and supporting sectors as well as structure, strategy and rivalry (Porter, 1990).¹¹ These factors are interactive and inter-related factors that shape the competitive advantage of the firms and the location.¹² Clustered firms and institutions provide cost savings, networking opportunities and attract new firms leading to the agglomeration of the region and further enhances the regional competitive advantage (Barkley and Henry, 1997).

Clusters, point on the importance of location as there are sticky resources that are available in certain locations, but do not necessarily bound by the national borders. Clusters also tend to specialize on certain activities of the value chain, and collaborate with external clusters that may be geographically close to or farther from each other. Moon and Jung (2008) presented four typologies in terms of cluster stage model, extending the scope of clusters from domestic clusters to regional, international and global clusters. Global cluster linkages show the connection between Silicon Valley and Bangalore

Though the concept of clusters has been expanded to firm network that may be not geographically close to each other (Markusen, 1996), the core aspect in cluster holds the same: interconnected firms that co-create economic values. As different networks of firms are beneficial in different ways (i.e., Granovetter, 1973), it is important to have an optimized portfolio of firm networks that firms can flexibly utilize based on their needs and imbalances. Thus, here, we apply the extended concepts of platform (business ecosystem) firms located geographically close to each other and firm network portfolios

¹¹ Some of the most competitive clusters in the US are Hollywood for film and entertainment industries, Silicon Valley for IT, New York (Wall Street) for banking and finance, West Virginia for coal mining, Michigan for automotive cluster and South Carolina for biomedical device clusters. A good example of clusters provided by Porter (2008) is the California wine cluster that includes 680 wineries, several thousand independent wine grape growers, supplier of grape stock, irrigation and harvesting equipment, barrels and labels, as well as specialized public relations and advertising firms and numerous wine publications aimed at consumers and trade audiences. They together are inter-linked with the renowned universities and the research centers and they perform weaker linkages to other clusters in agriculture, food and restaurants and wine country tourism.

¹²This will be further elaborated in Chapter 4.

(thematic networks).

2.2.3. Platform Capitalism (*Multi-sided Markets*)

With sophisticated logistics and the rise of information technologies intermediaries and market platforms have become ubiquitous and important agents (Hagiu, 2009). Platform, largely studied in product manufacturing, is defined as “a relatively large set of product components that are physically connected as a stable sub-assembly” (Meyer and Lehnerd, 1997). Wheelwright and Clark (1992) also described the platform as a collection of assets shared by a set of products.

The parts and components that make up the (hardware) devices are called the modules whereas the device that holds these packages together is called the architecture (Cusumano and Suarez, 2008). In recent years, the architecture is used as a broad and an abstract term. In software industries, architecture is referred to as the rule that defines geometrical, mechanical, electrical and software interfaces between platform elements that enables a set of planned product offerings (Bowman, 2005; Simpson, Marion, de Weck, Holtta-Otto, Kokkolaras and Shooter, 2006). In service sectors, the platform becomes the business ecosystem where direct exchanges or coordination efforts between sellers and buyers take place (Gawer and Cusumano, 2007; Quaadgras, 2005). An example is App Store where the virtual market place became the platform (architectural boundary) and the app providers become the (virtual) modules that make up the (industry) platform. Platform has been actively adopted in sectors such as entertainment, tourism, banking, food and drug industries (Simpson *et al.*, 2006).

Thus, a module does not necessarily refer to just tangible parts and components; it can be extended to any components, resources or a function that come together to form various yet an integrated system, product or experience. The key features of modules are easy upgradability, substitution and flexibility to changing environments. Their features stretch to modularity (e.g., Baldwin and Clark, 2000). Architecture, on a similar note,

refers to tangible or intangible, concrete or abstract system, which holds and coordinates these modules to constantly develop and adapt to market changes. Architecture facilitates standardization with the modules that come together to constitute the entire package (e.g., Karandikar and Nidamarthi, 2007).

The term of platform is applied to various levels of analysis (e.g., Meyer and Dalal, 2002; Mahmoud-Jouini and Lenfle, 2010, Sawney, 1998). For example, it has been used in terms of technology platform (Kogut and Kim, 1996). It is also used at the product development process level where different departments or tasks that form the stream of manufacturing process, from inbound logistics, to operation and sales, are viewed as modules that constitute the platform of product development processes. Organization aspects (i.e., production scheduling and planning processes) have also been analyzed from platform perspective for successful new product development (Robertson and Wilhelm, 1998). Platform is also applied to a relationship between the corporate brands and sub-brands, product line brands and the range brands (Sawney, 1998).

Even though Hagi (2009) and other scholars distinguish conventional type of merchants from platform firms, applying the extended definition of platform firms (the relationship between architectures and modules), conventional type of merchants could be analyzed similarly. This is critically important because first it holds value of the extended definition and second, it could be applied to various levels of firms and firm networks to give strategic implications for understanding the business activities in a rapidly changing environment. Walmart is the case of the offline merchant and Amazon the online one. Walmart has increased its competitiveness in the market through adopting the integrated logistics and bar system that maximized efficiency and optimized the process to reduce distance, transportation costs and lead time. If any shortages occur in safety inventory, replenishment is done readily and quickly as stores receive daily deliveries from distribution center (Comm and Mathaisel, 2008). The efficient transactions with the suppliers helped Walmart to offer products at the lowest price (“everyday low price”). The transaction costs are reduced in the consumer’s side because it reduces the time and

the efforts in looking for products, transportation costs and a lower price of the products. This has made consumers to buy consume at Walmart than going to other retail shops in the area. Amazon on the other hand has started business as online bookstore with the growth of e-commerce. It quickly expanded product lines that represented as a low risk and informational, such as music (June 1988), DVD/video (November 1998), Toys and electronics (July 1999) and home improvement, software and video games (November 1999). With the established software platform that links the merchants and suppliers together with a platform of consumer base, it was relatively easy and cheaper for Amazon to add alternative product lines while at the same time could reduce the transaction costs for consumers by linking them directly to the suppliers.

Linking the concept of the platform with the evolution and the growth of the firm, the platform provider is the coordinator of multiple firms that are connected together which reduces the transaction costs by linking them together in a common architectural firm. As seen from the value chain analysis, products are not produced by one firm. As products are interconnected with other services and devices, the complex web of products and complementary goods are produced by diverse firms. As firms provide goods in a portfolio, or the product portfolio is chosen by (end) consumers, firm performability is determined by the fit between their offerings and the portfolio. Even if a firm provided a superior technology-based product, it would not be able to survive and gain competitiveness without taking into consideration of the fit between the firms' activities, and their offerings.

While firms may be directly or indirectly cooperating with each other, in platform products, the focal firms play the architectural role. Hagiu (2009), augmenting on the concept of Rochet and Tirole (2006), termed this as the two sided markets, which allows the affiliated sellers to sell directly to affiliated buyers.¹³ This is different from the

¹³ This type of firms has the ability to combine the most competitive suppliers to the market. The more competitive suppliers they have the more competitive the platform firm gets. The self-reinforcing mechanism is created with the market side, as the firm gets more competitive, the number of consumers

conventional type of merchants where they purchase goods from the suppliers and sell them to the consumers. In multi-sided markets, the platform firm does not necessarily take into any possession of sellers' goods, or control over their sales to consumers. Rather, they are the facilitator or the designated market place where both sellers and buyers can reduce their transactional costs.¹⁴

The marketplace they provide are taken place between the two activities of value chain activities. For example, the platform firm provides the marketplace between the product producers and the consumers, like the merchants. Yet, merchants did not reduce transaction costs for consumers. The merchants entail higher costs per seller, from inventory, risk management and so on (Hagiu, 2009). On the other hand, the platform firm helps both sellers and buyers to reduce transaction cost and time as well as the transaction number. Among the transaction costs of information search costs, bargaining and enforcement costs, the search and bargaining costs have reduced as the platform firms gives the list of the firms and consumers, with comparable information on products and firms. Through standardized selling and buying processes, both sellers and consumers can share information and reduce information asymmetry with each other, while keeping the market efficient.

Thus, the emergence of platform firms gives critical implications for modern businesses today. With increasing complexity in global business and with the emergence of multiple firms from various locations, platform firms help other (small and medium sized) firms to be connected with each other. For example, Alibaba that has recorded the highest IPO in the US history, has exponentially grew from linking the mom and pop stores in China that did not have the capability to do business in domestic or foreign markets. With

are likely to increase which encourages more suppliers to offer products through the platform provider.

¹⁴ Hagiu (2009) differentiated a pure two sided markets from intermediary type of firms where the intermediary does not take physical or full legal possession of another firm's offerings, it does obtain the right to repackage and price them depending on the fit in the market. For example, Apple's iTunes prices the songs and repackages them to sell to consumers. The conventional type of intermediaries

Alibaba's infrastructure and logistics, these firms were able to do business more readily, where Alibaba helped to reduce transaction costs for Chinese businesses and foreign firms that are willing to do business with Chinese firms. Taobao, the customer to customer based firm under the Alibaba group, serves as the platform that reduces transaction costs among the customers as well.

Another critical aspect different from the conventional type of organizations is that platform firms has dismantled the boundary between the hierarchy and the market. Even firm alliances also had a clear boundary between the markets. In platform firms or industries, the concept of prosumer has been increasingly incorporated. While consumers also take a part in the value chain activities, particularly the marketing, they have increasingly taken part in supporting activities such as designs and technology development. On the other hand, platform firms do not only have to attract and serve consumers (buyers) but they also have to serve the suppliers similarly. Leschly, Roberts and Sahlman (2002) explained that the sellers are equally important and they need to be attracted to provide a differentiated or cost effective product portfolio to various customer targets. Thus, this extends the firm boundary beyond the firm networks and create network effects on expanding the scope of firms (firms connected to the platform firm). The reinforcing mechanism, thus, continuously expands the firm boundary as the more the customers there are, the more suppliers there will be, and vice versa (Parker and Van Alstyne, 2005).

2.2.4. The Extended Firm Boundary: Towards Business Ecosystem

Business ecosystem was first conceptualized by Moore (1993)¹⁵ who explained that it has evolved from a random collection of elements (modules) to a more structured

¹⁵For economy as an ecosystem, Rothschild states that “a capitalist economy can best be comprehended as a living ecosystem – competition, specialization, co-operation, exploitation, learning, growth and several other- are also central at business life” (1990: 11).

community where firms, institutions and business environments co-exist and co-evolve together to rapidly address changes that come from each other. Business ecosystem is a relatively new concept in the field of business research, and there has not been a concrete definition for business ecosystem (Peltoniemi and Vuori, 2004). Business ecosystem was used in either of the two ways, the clusters in a certain location where they do not necessarily have to be in legally contractual relationships, or the composition of firms (extended firms) that come together to provide sets of products and services to the markets.¹⁶ Moore (2006) averred that it should be regarded as the third pillar to the hierarchy and the markets, yet this should be distinguished from the third pillar of firm networks, averred by Powell (1990).

Moore's definition of business ecosystem comprises of the networks of firms throughout the value chain activities and external factors that affect the value chain activities "an economic community supported by a foundation of interacting organizations and individuals [...] including suppliers, lead producers, competitors and other stakeholders [...] and they coevolve their capabilities and roles and tend to align themselves with the directions set by one or more central companies [...] toward shared visions to align their investments and to find mutually supportive roles" (1996: 26). The boundary of ecosystem starts from the streams of activities that "suppliers of my suppliers" to "customers of my direct customers".¹⁷ They are affected largely by actors that influences the practices of the business environments that include government agencies, quasi-governmental regulatory organization, investors, owners, trade association, labor unions as well as competing organizations having shared product and service attributes, business processes and organizational arrangements. Business ecosystem is an extended version that addresses laws, regulations and competition policies affect firm activities.

¹⁶Ecosystem is used broadly in industrial ecosystem, economy as an ecosystem, digital business ecosystem and social ecosystem (Peltoniemi and Vuori, 2004).

¹⁷This could be reinterpreted as the value chain activities.

Table 2.1. Literature Review on Business Ecosystem

Authors	Features	Level of Analysis
Moore (1993)	Co-evolution of firms	Business environment and firm networks
Moore (1996)	An economic community of shared vision and mutual supportive roles	Social and environmental context
Kandiah and Gossain (1998)	Package of value creation for consumers	Firm relationship with consumer markets
Li (2009)	Ecosystem health for higher performance	Cisco Systems' technological performance
Iansiti and Levien (2004)	Dynamics of integration and niche formation for ecosystem health	Managing operations and innovations in loosely Interconnected firms
Hearn and Pace (2006)	Value creating ecology through coopetition	Creativity related industries
Chituc, Toscano and Azevedo (2007)	Business collaborative environment	Digital business ecosystem for shoe manufacturing domain
Vuori (2005)	Cooperation, competition, coopetition	Knowledge intensive service organizations
Rothschild (1990)	Competition, specialization, co-operation, exploitation, learning, growth and speed.	Economy
Farhoomand, Ng, and Yue (2001)	Mutual reinforcing mechanism	Public and private sector relationship

Business ecosystem emphasizes on the co-existence and the co-evolution. Co-evolution means that interdependent firms and institutions evolve in an endless reciprocal cycle, where a change in one firm can affect and change the status of another, and across a variety of industries. Within the boundary of a business ecosystem, firms cooperate and compete against each other, forming competitive relationships “to support new products, satisfy customer needs, and eventually incorporate the next round of innovations [...] while developing crucial elements of value to maintain leadership, or incorporating new innovations to fend off obsolescence” (Moore, 1993: 76). Co-evolution is the self-reinforcing relationships of firms where they become inter-dependent and remain as mutually beneficial relationships. They evolve together and form organically stabilized relationships, whereas when their balance breaks down to a large degree, the impact spreads to the related parties. However, the new comer can bring diversity to the ecosystem, opening a change and disruptions in the business ecosystem. As an ecosystem needs to be ready to answer to changes outside and inside it, it must have a variety of distinct species to deal with the changes.

To redefine, firm boundary should be extended to comprise of the entire value chain and the direct environment that shapes the value chain activities. In this sense, firms need to maintain balance among various firms that constitute the entire value chain across national borders, whereas the national policies should be tilted towards building a competitive business ecosystems that spreads across national geographical boundaries. Their business activities are fashioned or influenced by policies and regulations. One nation’s policies reflect on the activities in other nations as the activities are interconnected and inter-dependent.

2.3. Reinterpretation of Extended Firm Boundary and Business Landscape

The Section 2.1 illustrated the theoretical foundation behind firm evolution and how it has been extended by various studies. The evolution of firms starts from the premise that

there is exogenous market failure and firms evolve to internalize transaction costs (e.g., Williamson, 1975). The boundary of a firm was conventionally considered to be determined by the coordination of value added activities that are internalized under a common governance. However, as firms do not have all the necessary resources and information for the entire value chain activities, the activities are disaggregated to diverse firms.

There firms are not naturally chosen. The choices are determined by the degree of market failure, the location, complementarity and risks (Yim, 2015 *forthcoming*). They are fully or partially internalized, or externalized. The external contracts are also formed by geographical proximity (i.e., clusters and industrial districts).

However, even from the firm value chain analysis, or the (extended) firm networks perspective, there was a clear distinction between the market and the firm(s). Firm networks come together to constitute the value chain activities from transforming raw inputs to final consumer goods, but the analyses on firm networks either focused on certain activities of the value chain (i.e., technology development) or to certain industries (i.e., manufacturing or IT industries). The emergence of platform firms, on the other hand, shows that the boundary between the consumers and the firms has been dismantled. Consumers have surrogated the activities that were conventionally the firm activity. The consumers also affect which firms will be forming alliances with, and the extent of suppliers and complementary firms. Thus, the boundary of the firm, or its activities have been extended to encompassing the entire value chain as well as the consumers.

The business ecosystem perspective takes one step further. Business ecosystem considers the legal, regulatory and institutional factors affect the business activities (Moore, 1996). They affect how the firm alliances are made and which locations they operate. They also influence the efficiency of firm activities which reflect on firms' competitive position.

It is no more about one firms' survival. The competitive landscape has changed from a

battle of devices to a war of ecosystem (Ziegler, 2011). In other words, products are interconnected in a complex web in which reflects on the business activities of the firms.

While the center of the business ecosystem is on the value chain activities, the key differences between the value chain and business ecosystem is that while value chain analysis postulate the cooperation of firms, business ecosystem incorporate both the competition and the cooperation among firms. As value chain analysis was developed based on the manufacturing sectors, it still hold importance in understanding the boundary of firms (business activities). From the business perspective, value added activities do not necessarily take sequentially or in a one-way process. The interactions and transactions are done in multiple ways and it makes them more efficient and resilient to external changes. The more diversity there is within the ecosystem, the more likely the ecosystem will deal with the environmental change and create new knowledge (innovation).

Table 2.2. The Key Differences between Value Chain and Business Ecosystem

	Value chain	Business Ecosystem
Unit	Firm-based	Industry (Nations)-based
Means	Cooperation	Coopetition
Value Creation	One way	Mutual and Diverse ways

The concept of the business ecosystem is relatively new so there is a lot to be further explored (Peltoniemi and Vuori, 2004). However, the business ecosystem holds significance in the world of changing landscape of global businesses. The competitive landscape has changed due to shortening lifecycle of products and firms, fragmented market segments, and industry and technology convergence. As firms have increasingly

become inter-dependent, their performability and competitive positions are also intertwined with others. Thus, it is crucial for firms to seek efficient measures and avoid protective measures for long-sustained survival. As seen from various kinds of firm networks (i.e., patent pooling and R&D consortia), it is crucial for firms to extend its boundaries to invite new comers to the ecosystem that can also benefit the firms. Protective or monopolistic behaviors of the firm may sustain their position but does not render a greater value.

This chapter has built on the perspective that there are endogenous market failure in terms of resources transfer and in firm transactions. Firms are also at the same time exposed to risks and uncertainties that the decisions are made within the bounded rationality and opportunistic decisional frame. As Moore (1996) averred, firms no longer compete against firms, but they compete within the business ecosystem against other business ecosystems. Therefore, it is critical that instead of firms taking protective measures in defending its position, it needs to take more efficiency oriented measures to deal with constantly changing competitive structures with other firms within the business ecosystem. The following is the review on major streams of competitive advantages in strategic management.

CHAPTER 3. CRITICAL FACTORS FOR BUILDING COMPETITIVE BUSINESS ECOSYSTEM

Despite the changing business practices and norms in building competitive positions, studies on competitive advantage have not been analyzed from business ecosystemic perspective that takes into account of interrelated complex web of value chain activities. Even the studies on business ecosystem have not gone beyond emphasizing the notion of symbiosis and co-evolution of firms. Business ecosystem scholars (e.g., Moore, 1993; 1996; Iansiti and Levien, 2004a; 2004b), by comparing with biological ecosystem, averred that the business ecosystem grows and fades away as industries do but paid less attention to providing the sources for sustaining competitive advantages of the ecosystem.

In this respect, this chapter builds on both the static and dynamic theories on competitive advantage and emphasizes that in high velocity environments of industry convergence, firms need to cooperate more effectively to build competitive ecosystem. The initial research on firm competitiveness had foundations in industrial organization (e.g., Porter, 1985). It was reverted by scholars shifting their focus to firm attributes than the industry (Wernerfelt, 1984; Barney, 1991).

Both studies, however, remained static and monopolistic asset or positioning based. This is because these streams of studies have been developed based on a relatively static and long-term analysis. While the sustainability issue reflects the monopolistic view on competitive advantage, the studies on competitive advantage has been developed only to deal with the static analysis. The dynamic view on competitive advantage (i.e., dynamic capability, combinative capability, absorptive capability and emerging economies' competitive advantage) as well as the temporary advantages focuses on the learning effect and the capability to respond to market changes rapidly. However, this chapter extends to address the efficiency issue. Firms need to balance out and co-evolve

with firms that participate in the value chain (business ecosystem) and ensure that participating firms enhance competitiveness together against firms in competing business ecosystem. In order to do so, there are four criteria: compatibility, complementarity, connectivity, and commerciality. The following first illustrates the literature review on competitive advantage of firms.

3.1 Literature Review on Competitive Advantage of Firms

3.1.1. Static Analyses on Competitive Advantage

3.1.1.1. Industry-based View

The search of the competitive advantage has roots in the industrial organization (IO) studies where firm competitiveness derives from dealing with market failure coming from transaction costs or setting high entry barriers. IO has shifted the assumption on competitiveness from market perfection to market failure, where all resources are not accessible to anybody at a zero cost and the returns from these resources are determined by the structure of the industry within which a firm competes in (Porter, 1981). The structure of an industry is determined by the entry barriers, the number and the size of the firms, the product differentiation and overall inelasticity of the demand (Porter, 1980). They together influence the firm conduct (i.e., strategy) and the performance of the firms was presumed to follow directly from an industry's structure (Porter, 1981). Thus, the structure-conduct-performance (SCP) paradigm of IO economics explains why firms choose an "attractive" industries that can generate high economic returns for their investments.

IO has paved a way to the industry-based view where firms with similar products, similar resources and similar strategies come together to compete against one another. They are called as the strategic group which determines the boundary of an industry, or the competition where firms compete. As firms are considered as similar, the determinants that make the differences in firm performability are considered to come from external

factors, such as bargaining powers of suppliers and customers, potential threats from new comers and substitutes that together enhance the rivalry of the incumbent firms. They are nicely framed into the five forces framework (FFF) by Porter (1980) who found that the industrial structure does matter in determining the firm performance. By examining various factors, Porter (1980) also emphasized that whereas the industry structure make a fundamental difference to firm performability there is firm's positioning that could also be interactively fit together to generate high returns. If there were the given amount of the resources, there will be firms that will strategically position themselves to maximize the efficiency of all the resources to reach the productivity frontier line--the best practices of today (Porter, 1996).

Whereas in economics, the firm who can produce goods at the lowest point of the average cost may be the most cost efficient and competitive in the market, Porter (1980) explained that as long as firms can strategically position themselves by generating a differentiated value than reducing costs (in which all firms must strive for rather than to choose to), firms can still generate high performability and survive in the industry. Thus, Porter (1980: 1985) has introduced the generic strategies of the firm which are cost leadership, differentiation and focus (cost focus and differentiation focus), and added three new ways to the generic strategies in his article, "What Is Strategy?" published in 1996, which are variety-based, needs-based and access-based. These four and three strategies where nicely incorporated and reorganized in 8 strategic models which was to examine the sources of competitive advantages, the scope of competitive advantages and targets of the competitive advantages (Moon, Hur, Yin and Helm, 2014). Thus, the industry-based view as an extension to IO theories have contributed by three folds: 1) shifting to imperfect market system, 2) linking industry structure and firm positioning as two interactive determinants that determine high performability of the firms, and 3) there are additional means to generate a higher profitability than cost leadership, charging a higher premium price for a higher value created.

The differentiated value is created within the nine value chain activities which are

composed of five primary activities and four supporting activities. The primary activities are inbound logistics, operations, outbound logistics, marketing and sales and service. The four supporting activities are infrastructure, human resources, technology development and procurement. Among the five, the four of them supports each of the primary activities while infrastructure supports the entire value chain activities. These interlocked activities should be strategically fit with each other to minimize the coordination costs or resource inefficiencies within the firm, and aligned with its positioning within the industry (cost leadership, differentiation or focus). In other words, while each of the activities should reach the highest level of efficiency, or the “parity level” except in the activities where the differentiated value is created (Porter, 1980; 1985). Thus, by uniquely combining value added activities and generating a differentiated value becomes the competitive advantage of the firm.

3.1.1.2. The resource-based View

As complementary to IO and industry-based view of the firm, the resource-based view (RBV) has paid attention to internal matters of the firm that determine the average firm performability. The RBV assumes that resources are heterogeneously distributed among firms where firms compete with those that have different sets of resources.

In this respect, RBV can be traced back to Chamberlin (1933) who emphasized that key differences coming from technological know-how, reputation, brand awareness as well as patents and trademarks will determine high economic rents compared to those who do not have. When prohibited and protected well, firms enjoy monopolistic rents which can also be translated to the sources to reducing competition and setting entry barriers.

Because firms must make strategic choices under a situation where they have limited capacities, firms choose to build on their strengths or their core competencies that they can most efficiently utilize. These competitive assets have been developed through a

long period of time, which become intrinsically path dependent and firm-specific that they could not be readily imitated by others. Specifically, the RBV scholars developed the theory based on the premise that there are factor market imperfections and firms' varying degrees of specialization, due to their heterogeneity in nature, and thus the limited transferability of firm resources (Amit and Shoemaker, 1993). Therefore, the resources will become valuable, rare, non-substitutable or inimitable (Barney 1991) and *ex post* and *ex ante* limits to competition (Peteraf, 1993)

Determining which of the resources firms must acquire to achieve a high performance depends not only on the monopolistic position of the firm but also on how firms can constantly contribute to a high performance of the firm. In general, there are tangible and intangible resources, where tangible resources were more highly appreciated before the RBV studies. Cost reduction until the IO studies was also largely associated with tangible resources such as financial or human capital that was similarly distributed among strategic groups of firms. Towards the turning point to the RBV, Barney (1986) and Wernerfelt (1984) paid attention to specific physical assets that can be used to implement value creating strategies (Eisenhardt and Martin, 2000). Here, the tangible assets include specialized equipment, geographic location, and human expertise, or lean production system, multiple product development capacities, or superior organizational forces.

However, these tangible resources were easily codified and transferred to others which allowed firms to compete on such resources and limit the possibility of monopolistic position in the market. In this respect, subsequent RBV scholars shifted their attention to intangible resources as they were once attained, hard to be replaced by others. The intangibility is associated with technology, brand reputation or employee loyalty. Kogut and Zander (1993) specified three aspects of intangible resources to sustain their competitive position: complexity, codifiability, and teachability. The more complex the resources are, the less it is hard to be imitated or transferred to others. It is also the same with the codifiability or the tacitness. Whereas certain resources are firm-specific and

are built over a long period of time in the form of organizational routines and practices, they become hard to be replicated by others as they are formed in a specific setting in a combination of specific resources. Even when the resources are simple and codified, if they are hard to be learned or taught to others, they cannot fully be apprehended by others. In this respect, the atomic sources of competitive advantage has come down to the knowledge of the firm, which is embodied organizational structure, fixed capital (e.g., machines in the production process) or internal procedures, routines and at the gradual building of firm specific culture (Maskell and Malmberg, 1999).

As intangible resources are transferred to others by firms' codifying (learning) ability of the un-codified resources, or "buying" the resources, the competitive advantage of a firm indeed arises not only from the resource *per se*, but from how the resources are utilized and combined within the firm. In fact, the RBV was largely criticized to be essentially static in nature (Priem and Butler, 2001) and for not being able to explain "why certain firms have competitive advantage in situations of rapid and unpredictable changes" (Eisenhardt and Martin, 2000). Others pointed out that the RBV is conceptually tautological and lacks empirically ground (e.g., Williamson, 1999; Priem and Butler, 2000). In empirical settings, firms with superior resources have been falling behind, and even filing bankruptcies. By not able to "integrate, build and reconfigure internal and external competencies", firms were not able to meet the market demands (Teece, Pisano and Shune, 1997).

These resources, whether they are tangible or intangible, have the durability that defines both the technical and economic life of the resources. Resource value, in a long period of time frame, erodes over time by either imitation of others and an introduction of substitutable resources. This can be seen in evolutionary economics that does not apply equilibrium analysis, where resources go through the phase of variation, selection and replication or retention (Nelson and Winter, 1982).¹⁸ As Darwinian evolutionary theory

¹⁸ In product lifecycle presented by Vernon (1966) presents the cost competitiveness that erodes over time.

presumed, environmental changes are not always stable; any kind of innovation can be destructive enough to disrupt the existing market structure and give a grandiose opportunities for the new comers in the industry (Schumpeter, 1937). While an introduction of a new resources can shape the market demand and create new opportunity, it creates a gale of creative destruction for incumbent resources that decapitate its value. Thus, the sustainability of the resources is not a matter of superiority (which is ex post value) in a specific context or time frame, but by how firms can exploit and explore resources to sustain their position despite disruptions in the industry (March, 1991). Thus, the focus of the RBV has inevitably converged to the capability of the firm -- how the resources are managed, and how they are constantly upgraded and newly developed, in a dynamic framework. The extended RBV is the result of synthesizing Schumpeterian, Penrosean and Richardsonian approaches that have already been blazed by evolutionary and dynamic capabilities approaches to firm economics (Mathews, 2002). The RBV has also provided a profound foundations for relational perspective in firm networks (e.g., Dyre and Singh, 1998).

3.1.2. Dynamic Analyses on Competitive Advantage

3.1.2.1. Dynamic capability

Until the RBV, industries were regarded stable or moderately dynamic. Intangible resources or firm capabilities were analyzed similar to the organizational and strategic routines, mechanism or the processes of the firm (e.g., Nelson and Winter, 1982; Eisenhardt and Martin, 2000) that are created through the repeated practices within the firm (Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece and Winter, 2007). In rapidly changing environments or in hyper-competitions, however, path-dependent routines of the firm that specify steps and set the boundary of rules, may put firms in jeopardy. Eisenhardt and Martin explain that “simple routines keep managers focused on broadly important issues without linking them into specific behaviors or the use of past

experience that may be inappropriate given the actions required in a particular situation” (2000: 1111).

In high velocity environments, firms need to have the capability to be aware of what is going on outside of the firm. High velocity markets are explained as the environment that is ambiguous with blurred industry and firm boundaries, where nonlinear and unpredictable changes are taken place (Eisenhardt and Martin, 2000). In this sense, firms have become reliant on newly created knowledge specific to the environment, than the knowledge sets that are already embodied within the firm. As competitive advantage comes from intentional learning, or by-product activities of other activities of the firm, learning from experience, trials and errors, and as an integral part of the performance of all activities in the firm (Prahalad and Hamel, 1990), which accumulates over time and brings both dramatic and gradual changes in the firm’s internal structures and external relations (Maskell and Malmberg, 1999). Thus, knowledge has been the key process in maintaining and increasing competitiveness of the firm (Lundvall, 1992).

Knowledge creation comes from the interaction of exploitation and exploration where scholars have recently emphasized the ambidexterity of the two (Lubatkin, Simsek, Ling and Veiga, 2006; Raisch, Birkinshaw, Probst, and Tushman, 2009; He and Wong, 2004). Simply put, exploitation is the refinement of the existing resources where exploration is about integrating new resources with the existing one and generating new combinations of resources (March, 1991). Knowledge exists in some form or other and it is critical for firms to frugally use the resources to its full maximum in different combinations while absorbing new sources with the existing ones to stack new resource combination that may fill in the amount of the resources that has eroded over time (Wernerfelt, 1984).

The process of knowledge creation has been coined down to dynamic capability of the firm (Teece *et al.*, 1997; Teece, 2007). Dynamic capability of the firm has evolved from a capability to achieve and operate the best practices of the firm to sensing, seizing, integrating new knowledge sets, and transforming, reconfiguring, synthesizing and

recombining them (Grant, 1996; Pisano, 1994; Kogut and Zander, 1992) and then releasing and generating them to new applications to address specific markets and customers in distinctive ways and create competitive advantages (Prahalad and Hamel, 1990; Collis and Montgomery, 1995; 1998). The core aspect lies in generating new and superior resource combinations in business activities (Eisenhardt and Galunic, 2000).

There are variations to dynamic capabilities. Henderson and Cockburn (1994) explains the architectural competencies, Kogut and Zander (1993) uses the combinative capabilities, Cohen and Levinthal (2000) uses the terminology of the absorptive capacity to integrate new sources of knowledge sets. They altogether emphasize the transformation of superior knowledge sets in combination with existing resources and knowledge to create competitive advantage of firms.

3.1.2.2. Capabilities of Emerging Economies

The studies on competitiveness has been about the most top tier companies or those that play at the productive frontier (forerunners in the industry). They have been focusing on how firms have gained competitiveness, which have largely been base on the advanced firms or firms from the developed nations (Moon, 2015 *forthcoming*). Regardless of the theoretical assumptions that firms are accessible and are likely to have more competitive advantages in the developed countries, not all firms are created equally (Narula, 2012). Scholars that have analyzed firms from the emerging economies have pointed out different sets of competitive advantages that apply to the firms from the emerging countries that have met the environmental and economic changes in their home countries (e.g., Mathews, 2006; Khanna *et al.*, 2005). Even though firms from the developing countries were seen as secondary players in global economy, many firms have gained competitive advantages through the capabilities that were not regarded heterogeneous or superior to other firms. Scholars, focusing on firms that are from emerging markets or those that are at the growing stage, have emphasized on the competitive advantage that

are not largely associated with the state-of-the-art technology. Rather most of them focused on the ability in dealing with external markets that are faced with a large extent of institutional voids and market failure (Khanna and Palepu, 1997; Khanna and Palepu, 2005).

As most of these firms are perceived to have no advanced advantages and start with critical disadvantages in global competition, they are perceived as the copycats that try to emulate the best practices adopted by the incumbent firms (Moon, 2015 *forthcoming*). The common features that firms from the emerging economies are they 1) evolve gradually from a small international footprint and enter into the major markets, 2) are faced with relative deficiency in institutions, infrastructure and high market failure at home, and 3) have evolved from complementing their disadvantages they have in firm resources of their country of origin.¹⁹

Cuervo-Cazurra and Genc (2008) stated that firms from developing nations have better overcoming skills under “difficult” governance conditions than those from the developed countries because they are more familiar with these situations back at home. They have built resilience to difficulties and they know how to work-around anti-market barriers in doing businesses. Firms that come from a country with a high corruption are likely to know better than the firms from developed and efficient economies. The World Bank (2005) also reported that firms from developing countries have an edge in other developing countries as they are culturally similar or they are geographically closer to each other. Such familiarity reduces hidden and overhead costs in business operations.

Moreover, firms from emerging economies have taken different paths in firm evolution from those of developed economies. Because underdeveloped countries have no well-institutionalized infrastructure and high market imperfection, firms have diversified into multiple businesses to expropriate rents that are coming from underdeveloped industries.

¹⁹ The following is abstracted from Moon and Yim (2014) with some modifications.

Firms grew out of the ability to set up new business ventures across a variety of industries quickly and at a low cost (Guillen, 2000). Through such experiences, they have built competencies in effectively setting up subsidiaries in various environments and repeatedly entering a variety of industries (Amsden and Hikino, 1994).

They share resources across subsidiaries which can help them build overall and diverse knowledge over various projects, operations and businesses (Guillen, 2000). For example, because there were not many skilled managers in Korea before the 2000s, the top management team members were circulated across various subsidiaries upon their start-up and built diverse knowledge within the firm. This was how Samsung Group, the Korean conglomerate was able to effectively diversify and establish new subsidiaries due to project execution capabilities of the managers (Amsden and Hikino, 1994). The accumulated knowledge and experience helped managers to have portfolio of expertise for constant upgrade and expansion of the firm.

Because these firms are conglomerates that have diversified into various industries, they share important information and experience from peer members who have undertaken international expansion. They are also vertically integrated and form a strong relationship with international suppliers and clients. This enhances the bargaining power of the entire business network over the host country government and establishes market legitimacy in the local markets (Yiu, Law and Bruton, 2007).

Moreover, firms gain precious information from other institutions at home where they have built close relationships. Guillen and Garcia-Canal (2009) specified that firms have better political capabilities as they evolve in close connections with the government and political institutions. This capability helps firms better understand and deal with different situations in host countries than the firms from the developed markets. Thus, a strong network-building of firms has also become a competitive source for latecomers.

Overcoming, operational and networking capabilities were understood to be the competitive assets for firms from less developed economies, which would help them

become competitive but not the forerunner. Yet, as the environment has become more volatile, these capabilities have been reorganized by Moon and Yim (2014) as new sources of competitive advantage. They implied that the existing resources should be extended to be applicable to the leading firms as well because the competitive sources do not lie in “what” resources but in “how” firms constantly upgrade and manage these resources in the long run.

Firm capabilities from developing countries lie in overcoming disadvantages of both internal and external factors and balancing out any disruptions in business activities through time (Moon and Roehl, 2001; Moon, 2004b). These features have become the drivers for firms’ growth. While incorporating firm capabilities set out by previous scholars in the section above, this paper links latecomer’s competitive advantages set out by Moon (2013; 2014; 2015 *forthcoming*) with “different” ownership advantages of firm, which are agility, benchmarking, convergence and dedication.

Yet, these four factors are not specified as capabilities that are firm specific, or limited to managerial capabilities. They were presented as a set of determinants to explain the sources of firm or economic development, which managers need to consider in dealing with the entire value chain activities.

To elaborate, agility comes from speed competitiveness. Agility is required in every activity of the value chain and across the value chain. Each operation needs to be speedy and precise in finding a balance across its value chain activities to maintain efficiency. If one value activity grows faster than other activities, the entire outcome will not reach its full potential. Agility has particularly become important in fast changing environments as an independent source of competitiveness as firm productivity is not only constrained by the minimum level of input costs but also with opportunity costs coming from (delayed) lead time. Although the conventional studies have focused on

early entry, agility factor focuses on creating advantages from economies of speed.²⁰

Benchmarking capability has not been considered as an aspect of competitiveness. Rather, being unique and finding untapped markets through innovation was long been considered as the sources of firm competitiveness (Porter, 1996; Barney, 1991). However, Moon (2013; 2014; 2015 *forthcoming*) explains developing and finding new sources of competitiveness comes from learning and emulating other (competitive) firms. It is also because today's international business is complicated and highly interdependent that rather than bringing disruptions to the industry, bringing compatible yet complementary assets to existing global standard provides sustainable advantages (Moon and Yim, 2014). This is not only to enhance the current core competence but to complement the critical disadvantages. Thus, by having a high learning competitiveness by emulating the best practices tailored to each environment, firms may continuously sustain their competitive advantages.²¹

As an extension to the learning effect, there is convergence which is mixing existing resources or business experiences to create synergistic effects. Whereas the conventional perspective on firms from developing countries explains that they are diversified into

²⁰Lieberman and Montgomery (1988; 1998) have nicely categorized them into four benefits: preemption of assets which consists of inputs and locations (geographic, shelf and product spaces), preemptive investment in plants and equipment, switching costs and buyer choice under uncertainty. Empirical studies show that early entrants show high market share (Bowman and Gatignon, 1996), relative market share (Kalyanarama and Wittink, 1994; Klepper and Simons, 2000), trial penetration and repeat purchase (Kalyanaram and Urban, 1992) and the percentage growth in real net income (Nehrt, 1996), brand sales (Shankar, Carpenter, and Krishnamurthi, 1998) and so on. Studies have not been very clear of the first entry to product market, or to develop technology but they have shown the first entry contributes to great success. Despite various studies on first mover advantages both theoretically and empirically, there are still controversies where they face some shortcomings coming from free rider effects, resolution of technological or market uncertainty, and incumbent inertia.

²¹Initially, benchmarking was considered to emulate the global standard of firm practices. This was revised in the book of 2015 (*forthcoming*) that firms need to operate differently or localize to a certain extent to bring diversity and resilience to the entire firm operations. For example, firm operations may be successful in one location but a failure in another. If firms were able to localize and create competitive position in various locations, firms will be able to accumulate diverse knowledge and experiences which enhances their capability to deal with external changes as well as well as to create opportunities for innovation.

multiple and unrelated businesses, Moon (2015 *forthcoming*), and Moon and Yim (2014) reinterpreted that these firms build capabilities to converge diversified businesses to one unit, creating synergistic effects. They argued that the benefits can in fact outweigh the costs coming from (unrelated) diversification as firms build diverse knowledge and experience that can be shared and utilized across units. They combine and reconfigure resources for different purposes so that businesses can become more resilient to different business contexts.²²

Lastly, enhancing motivation of workers was based on positive incentive system, making workers to aspire for a superior compensation. However, motivation in firms of emerging economies, particularly in South Korea, was rather stimulated by setting clear goal sets with an emphasis on disadvantageous situation of the firm. For example, Hyundai Motors and SEC set artificial crises to alert employees even after they have gained competitive advantages. This is to put an emphasis on addressing new challenges that may lie ahead of them and complementing any disadvantages vis-à-vis their (potential) rivals, instead of compensating for what they have done well in the past. Thus, firms have created a clear goal-setting of business and promoted a higher dedication of workers to achieve such goals, which have become the fundamental drive for firms' growth and sustainability.

Overall, the capabilities that are illustrated as unique to the multinationals from emerging economies, particularly the successful Asian firms, have gained attention as the competitive sources of firms in general. As the competitive landscape has been changing rapidly, the dynamic perspectives on firm capabilities have become crucial. In high velocity environments, learning capability (i.e., absorptive capacity) and synergy creation capability (i.e., combinative capability) were emphasized to adapt to changing environments within a limited time period (i.e., economies of speed). The motivations of workers and goal settings have also been largely emphasized by organizational

²² This is closely related firm diversification and the emergence of conglomerates.

scholars to increase learning and operational capabilities to complement what is lacking at the current status of business (e.g., Taylor, 1911[1967]).²³ Therefore, it is important to note that competitive advantages of firms lie in dynamic perspective of firm competitiveness, incorporating the aspect of asset complementation.

With the rise of investments from emerging economies from the 1980s, the customary idea of multi-nationalization as the vehicle for large firms from industrial economies did not necessarily fit in explaining the trend (Child and Rodrigues, 2005; Moon and Roehl, 2001). The attempt to explain the gap between firms from the advanced countries and emerging economies was done by linking with ownership advantages (conventional perspective) but different sets of them (Wells, 1983). While firms from emerging economies of late industrialized economies were assumed to possess few competitive advantages with regard to operational scale, technological know-how, combinative capabilities and overcoming capabilities (e.g., Amsden and Hikino, 1994; Mathews, 2006; Khanna *et al.*, 2005) which are associated with addressing the deficiencies rather than exploiting superior advantages. Firms from a coarse environment help firms to survive better in global competition and other parts of the world as they have been “trained” in these environments. Their familiarity with the local context helps firms to identify the needs of the consumers more easily and suppliers to work closely together.

3.2. Analyses of Existing Studies on Competitive Advantage

Studies on competitive advantages have transformed throughout the years. The initial stage of competitive advantage that focused on the external factors, under the assumption that firms are similar in resources. Firms create advantages by increasing entry to barrier

²³ Motivation studies has background in automatic role of rewards and feedback on work motivation; however, these effects are mediated by psychological processes such as goals and self-efficacy (Bandura, 1986). Goal-setting theory (Locke & Latham, 2002) and control theory—a mechanistic combination of cybernetics and goal theory—focus on the effects of conscious goals as motivators of task performance.

and outrivaling others by strategically positioning itself apart from others (Porter, 1985; Kim and Mauborgne, 2004; 2005). The first shift in competitive advantages was from external factors to internal factors, which paved the way for the RBV. Firms are heterogeneous and they develop resources that are heterogeneous and immobile across firms. Firms exploit these resources to create competitive position, in which its logic aligns with that of the IO. Despite their great contributions, however, both streams of studies have been criticized for being static in nature as they have developed based on a static industries or competitive advantages that have been developed in a long period of time.

As the market changes rapidly, the second shift in studies of competitive advantages came from static to dynamic analysis. The dynamic analysis focuses on intangible resources and managerial capability in efficiently utilizing firm resources (Teece *et al.*, 1997). The dynamic perspective on these firms were focused on firms that are forerunners in resource exploitation and exploration, or firms that are competitive in generating new knowledge. In addition to the studies of competitive advantage, the dynamic analysis was found particularly in studies of firms from emerging economies. As these firms started with a critical disadvantage in firm resources (they do not possess superior resources as the leading firm, mainly from the developed economies), or in country-of-origin, their competitive advantage lies in capabilities of utilizing available resources (including external resources) efficiently and complementing their disadvantages. Although scholars on emerging economies averred that these competitive advantages are emerging economy-specific, the importance of complementing disadvantages has increasingly become critical in the studies of competitive advantage in general. The studies of dynamic capability in the end can be interpreted as the capability to complement new resources with the existing ones to adapt to the changing environments (e.g., Teece, 2007).

The dynamic perspective still predominates in studies of competitive advantage. However, the study is still limited for various reasons. First, the focus of the studies has

come down to microscopic analysis on the managerial role, or the routine of the firms (e.g, Makadok, 2001; Eisenhardt and Martin, 2000). Their analysis remains at firm level analysis (firms-specific or context-specific) and does not incorporate the relationships with others, or the business ecosystem perspective. As firm competition has changed from firm-to-firm to business ecosystem-to-ecosystem, firm survival and prosperity is determined by the cooperative relationship vis-à-vis others in the ecosystem. Increasing entry to barriers to reduce rivalry does not guarantee firm success. Sometimes such strategy leads to self-exclusion and fails to sustain firm's competitive position. In short, firm relationship should be understood from competitive to cooperative relations where building strong and idiosyncratic firm cooperation may become the basis of creating sustainable competitive advantage.

Firm cooperation should be understood beyond resources pooling or transfer. Not only does the transfer of knowledge take place through indirect firm networks, a firm's competitiveness may depend on other firms' position. In many cases, products are delivered in portfolio and their experience together determines the value delivered to customers (Gale, 1994). Particularly with increasing linkages between hardware and software, products have become interlinked (Gawer, 2011). The complementary products of TVs varies ranging from smartphone devices, video games, and computer devices and so on. The utility of TV is also largely enhanced through connecting the Internet, software program, and broadcasting channels. In this respect, the role of complementary and compatible goods and services is crucial. For example, even if electric vehicles are equipped with a more advanced technologies for high energy efficiency than petroleum-based ones, it cannot be successful without having many electric vehicle battery charge stations and infrastructure. The wider driving range there is, the lower switching cost from petroleum-based vehicles to electric vehicles for consumers becomes. Thus, it is not about how to pool resources together to enhance its own competitiveness but how to increase efficient value creation through unique portfolio of goods and services. In this sense, firms need to be strategically fit and

reinforce with each other, not to lock itself out but to increase efficiency with a larger number of cooperating firms and customers. Thus, while Porter (1996) explains that increasing efficiency (in his terminology, the operational effectiveness) is not a strategy and only the strategic positioning is, this dissertation emphasizes that in firm networks efficient transactions throughout value chain becomes critical and compelling strategy.

Second, strategic management has evolved from developing superior resources or positions over others that cannot be readily imitated by others. This has become the underlying logic in studies of dynamic capability (Eisenhart and Martin, 2000; Teece *et al.*, 1997; Teece, 2007) and in the studies of organizational learning of the firm--absorptive capacity (Cohen and Levinthal, 2000) and combinative capabilities (Kogut and Zander, 1992). In knowledge-based economies, technology or innovation is in fact at the center of creating competitive advantages. However, superior or new technology does not always yield similar rents or advantages in competitive markets, nor high commercial value. The value that derives from the superiority of the resources may not directly translate to customer value. The intrinsic nature of firms to make profits comes from high commercial value. The commercial value can be derived from a unique combination of multiple good enough resources (Cusumano, 2010). Enhanced customer value increases customer loyalty and trust that are likely to lead to repurchase and continuation of business transactions. The effect on end customer creates a higher value for firms that are connected to the value chain activities. On a similar note, the utility of resources and products increase as the number of other agents consuming them (Katz and Shapiro, 1985).

The victory of JVC's VHS over Sony's Betamax was not due to technological superiority but due to its positioning along with complementary products. For end users, recording TV shows and movies was the main purpose. Not only were the video machines simpler and cheaper than Betamax, the video tapes lasted longer than two hours, enough to record an entire movie. On the other side of the market, JVC also established relationships with nascent rental industry, where the rental shops started adopting more

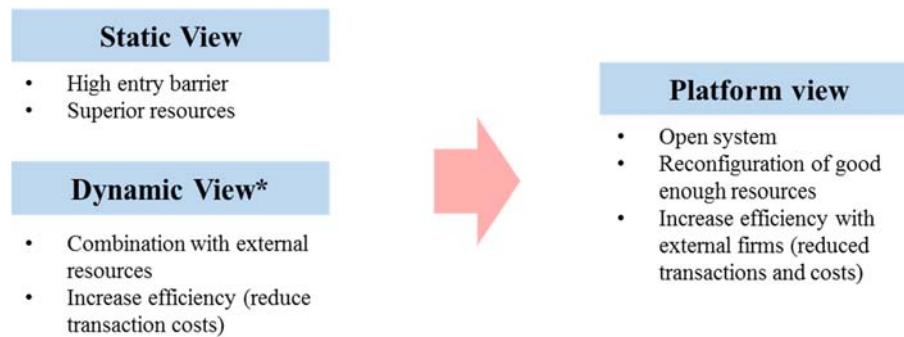
of the JVC products than Sony's. JVC also worked closely with Matsushita Electric (later changed to Panasonic), Hitachi, Mitsubishi and Sharp, to compete against Sony that was backed up by the Japanese government organization, Ministry of International Trade and Industry (MITI) (Cusumano, Mylonadis and Rosenbloom, 1992). As opposed to licensing strategy that Sony adopted with other manufacturers, JVC adopted the open and license-free system that heightened connectivity with various suppliers and rental shops. In the end, the dominance of JVC products paved the way towards the victory as more complementors adopted the (slightly) dominant product.

Third, as seen from Chapter 2 on the extended boundary of the firm, the boundary between the firms and the market has become obscure. Consumers are no longer only buyers of firm products and services that are unilaterally offered. Products were the means to deliver the value to customers. However, in the case of service industries, the product value increases with the number of the customers (Katz and Shapiro, 1985). In the case of insurance industry, if the customer network is unbalanced, then the cost of insurance will either be too high for the rest of the customers or the profit margin will be low for the insurance firm (Stabell and Fjeldstad, 1998). The value of the service provided will be affected by the characteristics and the number of the customers that join the network (Bental and Spiegel, 1995). Moreover, customers take a role in value chain activities that the competitive advantage does not derive only from the firm activities; they derive together with the consumer's value. In the case of platform services such as the Facebook or Airbnb, not only the number of users has the impact on enhancing the services value, the offerings and contents by users (customers) determine the competitive position of the platform provider.

Lastly, gaining competitiveness is related to time management. Time has become one of the scarcest and unchangeable constraining factors (Stalk, 1988). Studies on temporary advantages and high velocity environments have focused on either how frequently the competitive resources need to be developed or how fast firms need to adapt and combine new sources of knowledge with the existing ones (D'Aveni *et al.*, 2010). These studies

are extensions of the RBV of the firm where misses the point of the boundary of the firm. The extended firm boundary, as explained in Chapter 2, postulate that firms need to internalize transactions in order to make firm resources allocation to be more efficient than the transactions taken place in the market or the competitors. In this sense, it is important to create temporary advantage in a shorter period of time but it is also important to make the transactions within the value chain to be minimized, leaned and optimized to reduce the time.

Figure 3.1. The Changing Perspective on Competitive Advantage



Note: Platform view reflects the extended firm boundary perspective (i.e., towards business ecosystem).

Therefore, in order to reflect the changing business landscape and competition, it is crucial for studies on competitive advantage need to be further extended. To reconcile the gap between the theory and the practice, this following section describes changing trend of business landscape and business practices in gaining competitive. However, finding competitive advantage has been less paid attention in business ecosystemic perspective. As business ecosystem and (industry) platform has been used interchangeably (e.g., Quaadgras, 2005; Gawer, 2011), this chapter adopts platform studies re-categorize critical factors to creating sustainable advantage of business

ecosystems.²⁴ While business ecosystem perspective emphasizes on co-evolution of firms with the external markets, platform studies add features of network effects and strategic fitness. The platform brings important implications for enhancing fitness and self-reinforcing mechanism yet there has not been a comprehensive organization of factors that make the platform create self-reinforcing mechanism. Thus, the following section presents the literature review on platform studies and presents the critical factors for building competitive business ecosystem. The four factors retrieved from the studies of platform and business ecosystem that incorporate features of other studies, are presented to show that they are compatible and complementary to existing studies while at the same time extended to other relevant studies to better reflect the reality of changing business practices.

3.3. Redefining Competitive Advantage in Business Ecosystem

The platform studies have evolved from the 1960s, particularly to analyze manufacturing goods or processes. At the firm level, platforms strategy was on reusing or sharing of common resources for cost reduction and product diversity, without having to change the entire system. An example of effective product platform was Honda's global platform for the Accord that could tailor the demands of Americans for big and roomy cars, Japanese for shorter and thinner cars with high tech gadgets and Europeans for narrower and stiff ride cars (Sawhney, 1998). For production platform, there is Japanese Just-In-

²⁴ From the ecological perspective, this is similar to platform industry. A platform is defined variously; a relatively large set of product components that are physically connected (Meyer and Lehnerd, 1997), the core assets shared by a set of products (Wheelwright and Clark, 1992), or the architectural rules that enable a set of planned product offerings where the architectural rules define geometrical, mechanical, electrical and software interfaces (Bowman, 2005). The platform is composed of modules—tangible or intangible parts and components, or the input system—and architectures—tangible or intangible systems that hold these modules together. Platform provider coordinates and orchestrates the modules and architecture to increase product efficiency and product diversity.

Time (JIT) method. JIT was not only about scale efficiency to reduce costs and time of production and inventory. JIT is to find an optimized production schedule so that the production meets the demand and reduces any inefficiencies that take place in production processes (Stalk, 1988). Japanese automakers incorporated faster setup times for machine tools and stamping processes that could be used for different models or components without waiting long. JIT system also enhanced synchronization between sub-assembly production lines and deliveries that underutilized equipment and workers (Cusumano, 1985). Thus, the production processes were taken as the module on the architecture of the entire automobile production process line. Their operations were fit with each other that any mismatch in one process was hurting the subsequent activities of the production. Toyota, the representative case to adopt JIT system with *kanban* system, the automobiles were built around the shared components and architecture for automobiles and trucks.

Platform, however, is not a past fad. The modularity and architectural innovation has increasingly become important in recent years that automakers have increasingly paid attention to flexible manufacturing around common platform. As an extension to General Motors (GM) way of US brand portfolio, Volkswagen (VW) Group has developed a comprehensive system of platform sharing – Modular Transversal Toolkit, across different brands and segments (Wilhelm, 1997).²⁵ On top of it, it creates the strategic fit among the suppliers and relevant developers. For example, Seat plant producing the Leon model could be recruited to build the Golf, or the Audi A3, or Skoda Octavia.

The core components and architectures are shared among various (even competing)

²⁵ The platform is used across a wide variety of platforms that underpin between 40 to 60 different models of VW, Audi, Skoda and Seat (Brown, 2013). Platform sharing that mainly helps in reducing material costs, engineering costs, installation, investment and validation, does not only benefit the manufacturers (Gibbs, 2013). The technical basis reduces CO₂ and fuel consumption that ultimately benefits consumers. When the demand exceeds supply capabilities of the factories building those respective cars of shared platforms (Monitoring.com.au, 2014). Between 100 to 120 per cent of over production can be handled in one producers yet when it exceeds, on a long term basis, there needs cooperation between the suppliers to soak up the added demand.

firms. Fiat, an auto brand with deep roots in Italian heritage, stated that it produced 21 models on 19 architecture in 2006 and produced 38 models on 11 platforms in and only 5 in 2014. As Fiat also worked side-by-side with Chrysler that it uses half of its models based on Fiat's platforms and engines on Fiat Multiair variable valve technology.²⁶ GM and PSA Peugeot Citroen also shared new architecture, components and modules to reduce the structural cost base and improve economies of scale (Madslien, 2012).

The platform is shared beyond the conventional industry boundaries. They are connected to in-vehicle infotainment (IVI) system with the leading global IT companies such as Google, Samsung Electronics (SEC) and Apple, and LG Electronics (LGE) are also following the suit.²⁷ Google that has been successful in building driverless autonomous car, has been the leading software developer that allows unmanned driving. The program was built into Toyota Prius and some Lexus models for test driving.²⁸ SEC is also working closely with Tata Motors, the largest Indian automaker and BMW to provide software platform defined as an in-vehicle Internet connection (Business Korea, 2014). Apple also developed iOS for cars to connect iPhone with vehicles which focuses on drivers to view their iPhone screen on the dashboard, send voice calls, use Internet services and view driving information at the same time.²⁹ This is similar to Honda's mirroring technology of the Civic MY 2014 (Business Korea, 2014). LGE has penetrated the market with the establishment of the Vehicle Components Division focusing on

²⁶The modular front architecture (MFA) is basis of A-Class of Audi A3, and is used also by the Mercedes A-Class, B-Class, CLA and GLA, and Nissans' luxury subsidiary Infinity, as part of the cooperation between Mercedes-Benz's parent company Daimler AG and the Renault-Nissan alliance. Particularly, the joint venture formed between Daimler and Renault-Nissan made firms to co-invest in Mexico to expand to the US markets and fatten up the narrow margin on its entry models (Costello, 2014).

²⁷In terms of the initiation, Microsoft was the first mover in the automobile industry (The Guardian, 2014).

²⁸Google has established Open Automotive Alliance with Abarth, Acura, Alfa Romeo, Audi, Bentley, Chevrolet, Chrysler, Dodge, Fiat, Ford, Honda, Hyundai, Infiniti, Jeep, Kia, Maserati, Mazda, Mitsubishi Motors, Nissan, Opel, Ram trucks, Renault, Seat, Skoda, Subaru, Suzuki, Volkswagen, Volvo, where technology partners range from Alpine, Clarion, Cloudcar, Delphi, Freescale, Fujitsu-Ten, Harman, JVC Kenwood, LG, Nvidia, Panasonic, Parrot, Pioneer, Renesas and Symphony Teleca, to implement mobile operating system to in-car entertainment systems.

²⁹Apple has already established partnerships with BMW, Mercedes-Benz, GM, Land Rover, Jaguar, Audi, Toyota, Chrysler, and Honda to implement Eyes Free Siri, the built-in general voice-activation feature.

infotainment using audio and navigation systems, and has been seeking to work with electric vehicle developments in the framework of the inter-subsidiary Vista Project (Business Korea, 2014). Currently, there are software programs such as Pandora that are used and connected to the automobiles; Pandora is now being used in 2.5 million cars and 100 car models through one of its 23 partnerships with auto brands and eight partnerships with stereo manufacturers (Ballve, 2014).

The competitiveness is no longer a matter of superiority or diversity in products or resources, but a matter of the value added activities are closely linked together and create synergistic impacts by attracting various modules to the entire system. It is because as there are more numbers of new comers or products in the system, the more they will create imbalances or changes in the system. If they do not expand, or coopt new comers, they can reach a stable structure that does not stimulate much growth and take a path-dependency route. In this fashion, not only determining the boundary is enough, but creating network effect is crucial (Katz and Shapiro, 1994). However, network effects are in many cases disregarded as an external factor, or treated as a chicken-or-egg problem (Hagiu, 2006).

Firms need to attract, connect, and capture an integrated experience between the sellers and buyers. The more installed base of consumers the platform holds, the more sellers will be attracted to join the platform and thus attracts more customer base, and vice versa. This is also known as the network effects (e.g., Katz and Shapiro, 1994). Once the firm builds the self-reinforcing mechanism, it builds the competitive position. This is seen in video game, computer, credit card, insurance, and telecommunication industries as well as in human genome database (Sawhney, 1998).

Managers have made mistakes by disregarding network effects (Eisenmann, Parker, and Van Alstyne, 2006). Although many regard that this is the chicken-or-egg problem (Parker Van Alstyne, 2005) or take it for granted, addressing imbalances becomes the mechanism that coopts and cultivates complementors or consumers. This is because

firms find new opportunities by addressing the imbalances or defects in product platform. In this case, firms will be attracted to places where there are critical defects. For example, in two-sided markets, if there are mismatches between the sizes of the consumers and the sellers (if the consumer market is bigger than the seller market) more sellers will be attracted to the system.

Imbalances can also take within the group of sellers. If there are imbalances in product ecosystem, potential sellers will likely to target the market to address the imbalance. Or if there are critical defects in the platform, the customers will likely to shift to another platform. Thus, the mechanism that coopts and cultivates complementors and consumers, creates network externalities and promotes rapid development and yields high value to consumers. This shows how firms can constantly produce competitive products that can attract large customer base.

However, network effects also need to come with the fitness and reinforcing mechanism for co-evolution and innovation. Despite variations in analyzing fitness, this paper focuses on finding the fitness among products for gaining competitive position and increasing the utility of the product. Without addressing fitness, it creates disturbances which halt the efficiency or the utility of the entire system. For example, when eBay adopted PayPal, an Internet-based payment system, to facilitate a faster and easier transaction between sellers and buyers, it has added value and competitiveness to the whole eBay system. However, when eBay bought Skype, an Internet-based communication system, to facilitate a cheaper communication among sellers and customers, Skype actually deterred a fast exchange between the sellers and customers on eBay. The reason was not because Skype was uncompetitive, but it was not a good fit for eBay's entire system. Skype had sellers to allocate more resources in communicating with consumers that deterred the transaction speed and incurred high costs.

This example shows that one's competitiveness arises from enhancing the fitness with and nurturing the ecosystem. It is no more about being better than others, but how to co-

evolve and receive help when necessary by helping the other to gain dominance. As PayPal was a good fit for eBay (the entire system) and its suppliers, it was able to maintain competitiveness vis-à-vis its rising competitors such as Square. The more value it brings to the system, the more it will become competitive. Thanks to PayPal, eBay's revenue went up by 15% in 2011, while its PayPal division went up by 23% (King, 2012). Thus, firms should not focus on the product per se, but on how to utilize and develop resources to enhance their fit in the entire system. By expanding the view from product to entire ecosystem, firms can strategically define any imbalances and enhance fitness.

The competitive position is closely linked to the business ecosystem and how firms produce goods that are fit with each other. As not all products are produced by one firm, it is critical for the products that are produced diverse firms to be fit with each other (Stabell and Fjeldstad, 1998). It applies similarly to the value chain analysis. If firm activities are not fit with each other, the disruptions may hinder the efficient value creation that it would hurt the entire ecosystem's competitive position (Yim, 2015 *forthcoming*). Consequently, transforming the competitive advantages to competitive position is key to determining the sustainability of the entire business ecosystem. In order to do so, firms that construct the value chain activities need to be strategically reinforcing with each other as well as with its surrounding environments (Porter, 1996). The following illustrates the four critical factors that are necessary in order to enhance fitness and create reinforcing mechanism. They are compatibility, complementarity, connectivity and commerciality.

The following table is the analysis on diverse studies on the competitive advantage. The platform studies illustrate the analysis particularly on product development while the new platform perspective reflects the extended view on platform, from the extended boundary perspective (see Chapter 2). The emergence of platform firms gives insights to the changing environments, organizational governance as well as firm competition.

Table 3.1. Analysis of Various Studies on Competitive Advantage

	Sources of Competitive Advantage	Focus	View	Scope
Industry Based View	Coping with suppliers, consumers, substitutes, potential entrants and existing rivalry	Reduce external forces and finding strategic positions	Static	Industry
Resource Based View	Possessing heterogeneous and immobile resources	Acquiring resources that are valuable, rare, costly to imitate and non-substitutable	Static	Firm
Relational View	Engaging in heterogeneous firm networks	Rent-seeking in various firm ties	Static	Firm networks
Dynamic Capability	Sensing (shaping) opportunities and threats, seizing opportunities, managing threats and reconfiguration	Integrating, building and reconfiguring internal and external competencies to rapidly changing environments	Dynamic	Firm (Capability)
Emerging Economies Capability	Overcoming market failure (project execution, networking and overcoming capability)	Building shortcut and resilience capability in harsh environments	Dynamic	Firm (Capability)
Platform (Existing Studies)	Reducing costs, increasing flexibility, offering product diversity and overcoming barriers coming from diversifications	Increasing efficiency in product development and production of derivative products	Static	Platform (Architecture)
New Platform View	Enhancing cooptive power through compatibility, complementarity, connectivity and commerciality	Finding strategic fit among endogenous factors and exogenous factors.	Dynamic	Business ecosystem

Note: Literature review on platform is a compilation of existing studies on platform studies. New platform view is a theoretical extension introduced in this study. Emerging economies' firm capability is mainly focused on building capabilities in underdeveloped home economies.

3.4. Four Critical Factors to Building Competitive Advantage of the Business Ecosystem

The four factors were chosen through literature review on platforms (business ecosystems that were interchangeably used with the platform). Although they are the intrinsic characteristic of building platforms and competitive business ecosystems, they were rather disregarded or taken for granted. Some aspects such as connectivity were also regarded as chicken-or-egg problem (Hagiu, 2006; Rochet and Tirole, 2003).

3.4.1. Compatibility

The key aspect to platform or business ecosystem lies is sharing and reusing core components or architectures to reduce costs and time (Meyer, 1997; Sawhney, 1998; Meyer and Dalal, 2001; Muffatto, 1999). For components (modules) to be built on a common architecture to exploit economies of scale and scope, compatibility between modules and architectures is regarded as the core aspect to platform development. In the case of automobile industry, Ford initially did not have competitiveness in automobile industry with not good enough technology compared to incumbent competitors. With the ambition to provide one automobile per household, Ford went through a dramatic change to reduce the number of architecture that were not compatible among different products. It changed its strategy to gain market share with Model T which was purely through standardized one product to capture low cost market (middle class men) and, in later stages, developed shared multi-model architectures and core components to diversify its product range, without having to build entirely new models. The car models were able to share architecture and parts and components together, reducing cost efficiencies as well as production (lead) time.

Table 3.2. Existing Studies on Compatibility, Complementarity, Connectivity, Commerciality

	New Definition	Existing Studies	Representative References
Compatibility	Standardized modularity / features	Substitutability; smart reuse	Mahmoud-Jouni & Lenfle (2010)
	Backward & forward; vertical & horizontal (standardization)	Flexibility; Upgradability	Muffatto (1999); Cusumano & Selby (1995); Gawer & Cusumano (2007)
	Technological & legal	Delayed Differentiation Coring	Siddique, Rosen & Wang (1998); Baldwin & Clark (1997)
Complementarity	Interdependence and optimized variances Balancing out (competitor's) any deficiencies and imbalances	Coherence Self-reinforcing fit or interlocked activities Co-specialization	Gawer & Cusumano (2002; 2007); Moon & Roehl (2001); Meyer & Mugg (2001); Parmigiani & Mitchell (2009); Porter (1996); Pitelis & Teece (2010)
Connectivity	Hub of networks (network effects) Reducing transaction costs & time	Process integration Supply relations Open innovation (source) Tipping	McDermott & O'Connor (2002); Koufteros, Vonderembse, & Jayaram (2005); Muffatto (1999); Bosch (2009); Fisher (1997); Raman & Chhajed (1995); Rochet & Tirole (2003)
Commerciality	One-stop-experience (provide higher value for customers) Greater ex post value than ex ante value	Customer integration & consumer adaptation Referenceability & advocacy Directionality	Koufteros, Vonderembse, & Jayaram (2005); Sawney (1998); Rochet & Tirole (2003); Gans & Stern (2003); Gawer & Cusumano (2002; 2008); Hagiu (2006)

The degree of commonality has been one of the major concerns in platform strategy. The optimal point to balance commonality (integration) and distinctiveness came along with mass customization (Worren, Moore and Cardona, 2002). The more the platform is integrated and simplified, the less distinctive features could be added.

From producers' point of view, products need to be compatible with other products by simplifying the product design and improving flexibility. This was largely studied as the basis to platform studies and as an extension to modularity (e.g., Baldwin and Clark, 1997), dominant design (e.g., Suarez and Utterback, 1995; Tegarden, Hatfield, and Echols, 1999), and standardization (e.g., Sanchez and Mahoney, 1996; Antonio, Richard and Tang, 2009). Standardization is an essential part of compatibility, but compatibility has more connotations than standardization; it does not hold rigidity coming from standardization. Whereas the architecture may need to encapsulate relatively fixed standardization or innate specifications, compatibility needs to have flexibility and variances in modules that build upon a platform (Schilling, 2000).

Modules need to be readily and rapidly upgraded and substituted by other modules, which is an essential feature of modularity (Baldwin and Clark, 1997). By having diverse modules that can be added and upgraded, the platform can provide distinctive features. Incompatibility will make it difficult for products to be symbiotic or for firms to cooperate and innovate together. The barriers only create social costs for both the producers and consumers to deal with various technical matters (Farrell and Saloner, 1984). Thus, compatibility is a necessary condition for enhancing flexibility and variance in product use and increasing diversity for fast upgrade and adaptation (Siddique, Rosen and Wang, 1998).

Compatibility may be required with the product platform of the competitors. This can be seen from Apple's case. Initially, iPod demand was limited to only fans of Apple computer users. When iTunes, a software program to transfer songs and videos to iPod, was introduced, it was prohibited to run on the MS Windows, the rivalry product to

Apple computers. Apple did not want to have compatibility as Windows system operated on its competitors' computers, Dell and IBM. Apple wanted to deliver its unique value to only Apple consumers. However, as the Windows was pre-dominating the computer industry, Apple later had no choice but to license iTunes to run on the Windows to increase sales and market share.

Firms also need to find compatibility with its old and new products (Mahmoud-Jouni & Lenfle, 2010). This is because compatibility reduces the inconvenience or switching costs for consumers as they can still maintain their familiarity with the product. Having the compatibility with the previous products offers easier and more convenient transition to new products' experience, which in overall reduces the transaction costs for users (Meyer, 1997). Moreover, compatibility with other products enhances benefits and provides more diverse choices for consumers.

Though compatibility is a basic factor for a successful platform, many platform providers neglect or limit the compatibility of their product as they see it has a tradeoff they need to make, for example, between technology leakage and better usage. Particularly dominant firms choose to remain incompatible with rival because they may suffer a substantial decline in market share as compatibility would increase customers' value of their rivals' products (Farrell and Saloner, 1985). As seen in the case of Apple, compatibility can either be enhanced or hindered by legal systems and technological advancement. Legal compatibility indicates protocols, policies, and laws that specify how to (not) connect components to a platform, or how to (not) connect different products and use them together. On the other hand, technological compatibility refers to an advanced technology or system that allows some products to work together or be used together. Making iTunes and iPod compatible with the Windows computers was more of a legal compatibility issue rather than the technological one (Gawer and Cusumano, 2008). While protecting proprietary assets is crucial for firms in technology-driven industries, firms hesitate to make their systems accessible, not allowing them to be compatible with other products, particularly with the competitor's products.

While there are also counter arguments to the negative impact of compatibility associated with excess inertia (e.g., Farrell and Saloner, 1985; 1986), from the co-evolution of the business ecosystemic perspective, compatibility increases diversity and continuous development of the ecosystem than to bear the costs of inertia. As firm activities are dependent and dynamic, compatibility gradually stimulates the growth of the ecosystem and continuously adapt to the external changes. As the competition lies in between the ecosystems, firms strive for enhancing compatibility to remain competitive and leverage on diverse ecosystems, while the ecosystems will be developing through the new entrance and leverage used by the (module) firms (Mahmoud-Jouini and Lenfle, 2010). Thus, enhancing compatibility enhances the value of the firm, and its ecosystem by bringing diversity and enhancing resilience and leverage power over firm networks.

3.4.2. Complementarity

Platform and business ecosystem studies have developed around the complementary assets, products and firms. As firms gain competitiveness vis-à-vis complementary firms, the role of the complementary goods and services was also presented as a critical aspect for gaining competitiveness (e.g., Meyer and Mugge, 2001). However, the terminology of complementarity was used in terms of goods and services that may be used together.

On the other hand, other relevant studies on competitive advantage, particularly with multinational activities of the firm, complementarity has been used as complementary assets or resources. Pitelis and Teece (2010) explain that the managerial capability plays a significant role in creating value and innovation though complementing technologies that are necessary to achieve scale economies across national borders. They termed the complementary assets³⁰ as the co-specialized assets and emphasized that that “the value

³⁰ Pitelis and Teece (2010) defined complementary assets as the case where the value of an asset is a function of its use in conjunction with other assets)

needs to be combined in order to enable systemic innovation to proceed and to allow value appropriation in multi-invention contexts" (Pitelis and Teece, 2010: 1256). Harrison, Hitt, Hoskisson and Ireland (2001) explain that the complementary assets allow firms to exploit economies of scope, and entrepreneurial opportunities, when firm cooperation or mergers. Barney (1991) also explains that complementary resources create private and unique synergy, compared to combine with similar resources.

Complementarities was further emphasized in relevant studies of competitive advantage. While Penrose (1959) emphasized that complementing the imbalances of firm resources helps firms to grow, Moon (2010; Moon and Yim, 2014) emphasized on complementing any obstruction in value chain activities. Indeed, firm growth is more stimulated by deficiencies than the advantages of the firm (Moon, 2004a; 2004b). Thus, firms grow and innovate by addressing the defects or the imbalances that occur with the environmental changes (Teece *et al.*, 1997). On a similar note, imbalances in product ecosystem occur with advancement in other products or changes in position. Thus, firms constantly co-evolve and find fitness with other products to address any imbalances in product ecosystem.

Taking into consideration of complementarity presented from diverse aspects, the role of the complementarity extends to addressing the disadvantages or enhancing the advantages that come from the current existing competitive ones. In order to enhance its position in the market, firms need to constantly adapt and upgrade without changing the entire system. As it is difficult for firms to produce new competitive products constantly and rapidly, firms can produce products that complements the disadvantages of the current product. Particularly in the case where the product does not have the installed demand base, it is critical for firms to incase the base of complementors to attract more consumers and have network effects. Moreover, when developing new products, instead of producing something totally distinctive or different, it is critical for firms to incorporate and connect products that complement what the firm do no not have, or what other competitors do not have. This is the way to win over the rivalry than to directly

compete against the product. Gawer and Cusumano (2007) also explains that the greatest mistake of Netscape's mistake was challenging Microsoft too directly and present the browser as an alternative computing platform when it did not have enough user base or complementors. When a firm provides complementary products to existing and rivalry products, it delivers a higher utility and value to consumers than a "stand-alone improvements" in technology or products (Schmidt and Keil, 2013). It gives differentiated value than a different value.

Moreover, complementarity not only adds additional attributes to existing products but also increases its collective strength where a firm can defend itself from its outside forces. Instead of competing with other firms that have different competitive advantages, complementarity of resources and platforms gives firms a willingness to cooperate with each other and reduce the level of inter-firm rivalry, or threats coming from substitutes (e.g., Belderbos, Carree and Lokshin, 2006; Milgrom and Roberts, 1990; Dyer and Singh, 1998). Whereas minimizing firm rivalry was mostly understood as finding a new position that has not yet been tapped by others, complementarities minimize firm rivalry through strategic or inevitable cooperation of firms or fitness of the products. Particularly for startup innovators or latecomers, it is "safer" for them to leverage an existing value chains through providing complementarities rather than competing on novel value chain against established firms (Gans and Stern, 2003). In short, complementarity renders cost-effectiveness, saves time and helps new products to win over competition.

Complementarity is also critical for firms that are already competitive. Leading firms tend to look for technologies and products of next generation, or maintain their current competitive status (coming from path dependency and inertia). But competitive market position coupled with complementary resources would create "self-reinforcing mechanisms that shape a firm's evolutionary path that may amplify differences in competitive positions" (Schmidt and Keil, 2013: 209). Firms need to seek for complementarity on goods and services which helps them to find solutions to business obstacles and innovation, and renders them to (re)gain competitiveness.

3.4.3. Connectivity

Platforms connect modules, architecture, complementors and consumers together. In multi-sided platforms, connects sellers and consumers directly as well as with advertisers (Boudreau and Hagi, 2009). As income is not always generated in the exchange between the sellers and buyers; the advertisers have become the income source in multi-sided platforms. The more sellers and customers there are the more the advertisers are attracted to the platform, and vice versa (e.g., Katz and Shapiro, 1994; Rochet and Tirole, 2006). Yet, studies has been more focused on how to distribute and generate income among different parties (Hagi, 2006; Rochet and Tirole, 2003; Parker and Van Alstyne, 2005), and not much on how much value is created with the participation of the third parties.

The sellers or the platform providers work closely with the advertisers in delivering the value to consumers. Advertisers find partners to let consumers experience their products and share their experiences to others. Such bundling strategies have connected not only between platform provider and the sellers or advertisers, but among sellers, advertisers, platform providers as well as the consumers. The web of networks transfers information and knowledge that helps to reduce information asymmetry and uncertainties among them. This also enhances “trust” in the market. Moreover, the connection and delegation of value added activities of the firm increase the opportunities for further growth and innovation, while at the same time reducing development and transaction costs or time.

When firms introduce a new product, it may start as a compatible or complementary product to existing ones, but as a product or a firm increases the connectivity with more compatible and complementary products it increases its competitiveness and bargaining power in the market. For example, when KakaoTalk was introduced it was one of many social networking service (SNS) apps. As there was an increase in users, it has evolved as a platform that connects various games, books, blogs, shopping apps and connected

users to give presents to others—i.e., give Starbucks coffee coupon to other users. Only looking into online game, Kakaotalk connected 7 firms (10 online games) in 2011 but increased its connection to more than 230 game providers (520 online games) in 2014 so the market for Kakaotalk game increased from USD 400 million in 2011 to USD 1 billion. Kakaotalk is currently one of the largest online game platform provider (MTN, 2014).³¹

Thus, creating a centrality of the networks, firms can gain competitiveness. Powell, Koput and Smith-Doerr (1996) illustrate well that “central connectedness shapes a firm’s reputation and generates visibility, producing access to resources via ‘benefit-rich’ networks” and shape the nature of competition. Through their networks, they can incorporate diverse experiences for customers, increasing bargaining power over them as well. This is the case for App Store, eBay and Amazon, namely, the industry leaders that have built high barriers to entry by increasing the number of suppliers and customers.

Just as network effects is crucial in platform strategy, increasing the number of connectivity creates self-reinforcing mechanism. The product gains competitiveness through coopting more sellers and customers as well as the third parties (i.e., advertisers) to the platform. The “centrality” position converges and diverges information and even firm ties.

So as the firm has connectivity, more companies are attracted to form and continue their relationships together. Connectivity is supported by studies on social network theories

³¹ Connectivity that is closely related to the network effect has largely been emphasized in telecommunication where the increase in connectivity leads to the competitiveness of the firm. For example, where Qualcomm commercialized Code Division Multiple Access (CDMA). In the case of Google, it has adopted the open system where it provided the toolbar and toolkit for developers to build upon the platform, the Application Programming Interfaces (APIs) to enable developers to embed Google applications such as search, maps, calendars on websites, or to develop custom search engines (Gawer and Cusumano, 2007). It has also increased the amount of free online software such as YouTube purchased in 2006.

(e.g., Katz and Shapiro, 1985); companies will continue to form inter-firm partnerships and develop capabilities that are accumulated through both an explicit and tacit process (Kogut and Zander, 1992). This in turn opens opportunities for firms to establish new connections with their products and quickly respond to promising new technological opportunities (Hagedoorn, Roijakkers and Kranenburg, 2006) and ultimately deliver a higher value to consumers.

3.4.4. Commerciality

In the end, it should be noted that consumers determine the competitiveness of products. Competitiveness or innovation is not the innate value of the resource or the product. Rather, it is the *ex post* value determined by the consumers, which makes the market value deterministic in finding product competitiveness (Woodruff, 1997).

The demarcation between the firm and the market has become blurry, where the consumers surrogate the work of the firms, and establish a channel of feedback loop for firms. The number of users and the ratings that they give for the seller's product have become an important tool in attracting more consumers, creating network effects. The information transferred through personal networks is also highly valued by consumers—about 63% of consumers buy new products based on their friends' experiences rather than through the advertisement (Sung, 2014).

Consumers have also become the seller at the same time. They provide contents and services. For example, the contents of Wikipedia and Facebook is provided by the “market” or consumers. Airbnb.com is also an example where the room service is provided by the consumers. The so called peer-to-peer (P2P) businesses show that the distinction between the firm and the consumers is clearly dismantled.

Commerciality is not only about how to integrate technologies and resources into a sellable final product. It embraces consumer's perceived value in this context (Butz and

Goodstein, 1996). Product value is created from a mixture of price, accessibility, usability, diversity and an integrated experience perceived by consumers (e.g., Woodruff, 1997. Even if a product is of high quality, it may fail to meet the expected return in the market if the perceived value by consumers is low (Gale, 1994; Monroe, 1990). This has increasingly become more important as the global market became more fragmented and sophisticated. In marketplaces where there are powerful consumers, production advancement-technology advancement, and process and management improvements-will not necessarily be translated to customer satisfaction.

Instead, the product or services need to give integrated value that meets and shapes the demand of consumers. However, it is difficult to bundle the (future) needs of the consumers, as any defects in their user experience can degrade the perceived value. Moreover, with increasing participation and bargaining power of the consumers, the information asymmetry has reduced between the sellers and consumers. Thus, in order to increase the value for consumers, it is critical for firms to produce goods from the consumer point of view even if the technology or product functions are only “good enough” (Woodruff, 1997). A high technology does not necessarily increase the value whereas in the factor markets, high technology may be of high value among sellers.

This shows the gap between the value determined in factor markets and in product market. This also explains why not every innovative product of competitive firms has been successful by having heterogeneous resources. Apple Lisa, the first commercial PC to use a graphic interface, was slow and amazingly expensive that led the Window 3 to take the lead in the market. Macintosh Portable was also compounded with many cutting-edge technologies but it was ungainly large compared to other notebooks that were offered by Compaq Deskpro and Toshiba. Apple Newton MessagePad, the first to offer a hybrid version of handwriting recognition was hard to read and use. It was the same for the Powerbook Duo Series which lagged few months behind in market introduction and failed to exploit first mover advantages coming from the market. These products were introduced based on new technology and more advanced features that contributed

largely to product development. Yet, they were only attractive in small market segments, and not many consumers perceived the delivered value was worth the price they had to pay. Thus, having commerciality is about creating value delivered in both factor and product markets and reducing the gap that may incur between the two.

Commerciality, thus, distinguishes the delivered value in factor markets from that in the product market. While the value coming from technology advancement may be great (in terms of resource price or in technology development), the intrinsic value may not be as high when such newly advanced technology is incorporated to the end product. Although the value of innovation may be great from producer's view in the factor market, it may be perceived much less in the product market. Consumers will not then pay for the product as much as the producer had expected.

3.5. Application of Four Critical Factors for Sustaining Firm Competitiveness in High Velocity Markets

In high velocity environments, time has become one of the scarcest resources that managing time well has increasingly become critical (Stalk, 1988). As Steve Jobs mentioned, the reason that Apple produces goods in China is not only because of low labor costs (there are countries with cheaper labor costs), but it is also because Chinese factories could assemble a large volume of products within a limited period of time (Duhigg, 2012).

Knowledge diffusion and imitation of competitors has also become easy and rapid. While firms may develop new technology or a product, it may not last long and will not be able to enjoy monopolistic rents for a long time. Firms cannot gain competitiveness from one time hit and the capability to create temporary advantage unremittingly determines the competitiveness of a firm (D'Aveni *et al.*, 2010). In other words, a firm's capability to do so constantly but also rapidly becomes critical in sustaining the competitive advantage.

Time scarcity was dealt in terms of early entry (e.g., Lieberman and Montgomery, 1988; 1999). Early entry may provide first mover advantage, yet the four factors provide strategic guidelines to in which both the first mover and latecomers in the industries, as business ecosystem is on the continuous process of changes. In this fashion, we examine how firms have morphed from resource developer and value creator to become the “orchestrator” or resources and value added activities. The orchestration capabilities of firms are developed through four factors and when firms are successful doing so in a limited time period, the latecomers may also open opportunities to become competitive and for the leading firms to constantly adapt the changing environments.

First is the capability to make resources compatible. When it comes to which resources to configure, it was about similar or complementary resources. It was to exploit economies of scale or resources. However in the era of technological convergence, where industry boundaries have blurred, not only similar but distant/different resources have also contributed to creating a unique set of resources and become the foundations to innovation. Thus is, it no more about similar or distant resources, but how to make resources compatible while maintaining distinctiveness in resource portfolio.

Second, in order to exploit economies of scope, acquiring complementary resources is critical (Helfat, 1997). In order to gain competitiveness vis-à-vis rivals, it is important to gain complementary assets that the rivals do not possess. As cutting edge resources do not necessarily transfer to high performance of firms, firms' ability to determine which imbalances of resources to address becomes the key to directing firms to attain and transform their resources to new products (e.g., Parmigiani and Mitchell, 2009). Harrison *et al.* (2001) also evidenced that combining and outsourcing complementary resources are associated with higher performance than with similar resources that are unique. Complementarity also encourages firm alliances and joint ventures to bring synergistic effects (Harrison *et al.*, 2001; Kogut, 1988), and motivates firms to go abroad to complement their shortcomings (e.g., Moon and Roehl, 2001). Moreover, complementary resources allow firms to grow faster, than searching for new resources

such as technologies that are divergent from their resources or business activities (e.g., Wernerfelt, 2011).

Third, it is not only firm resources that change. Firm networks also change and affect the networks of others. Firm networks should also be examined from evolutionary and dynamic perspective where a change in networks brings in new opportunities for growth and restructuring. Firm networks change at different speed where some firms last longer than others and play the main network channel. Thus, there are proprietary relationships or the shared networks that play as the locus of diverse sets of networks. The ability to discern such changes and transform itself to the platform provider that connects various parties can change their position in the market. The firm, for example, with a larger pool of connectivity evolves as the focal firm in the ecosystem. Their bargaining power does not merely come from a large number of connections, but firm's versatility in managing firm networks by dealing with uncertainties and complexities that arise from business ecosystems. A hub of firm networks becomes the most competitive cluster that in the end attracts and co-opts diverse firms, which cannot be easily imitated by a random mixture of firms.

Last is the commercializing capability. It is important to note that consumer's preferences are also dynamic. As Katz and Shapiro (1985) insisted, the boundary of a firm influence is expanded through which products can be used together by end consumers. In the end, firms need to increase and maintain their profitability, which is determined not only with the efficient production management, but by meeting market needs. Loyalty implies satisfaction but satisfaction does not necessarily lead to loyalty (Gommans, Krishnan and Scheffold, 2001). Thus, managing customer's feedback has increasingly become important and effective means to creating competitive position in the market. Moreover, consumers' network has also catalyzes the spread of knowledge, reaching diverse markets. In this sense, commercializing capability leads to broadening our perspective and understanding the sources of competitive advantage in business ecosystem.

Table 3.3. Key Literature on Four Critical Factors

Authors	Compatibility	Complementarity	Connectivity	Commerciality
Cusumano (2010)		✓/√	✓/√	✓
Hagiu (2006)		✓		✓/√
Wheelwright & Clark (1992)	✓/√	✓	✓/√	
Meyer (1997)	✓/√			
Meyer & Utterback (1993)	✓/√	✓/√		
Gawer & Cusumano (2008)	✓/√	✓/√		
Nobeoka & Cusumano (1997)		✓/√	✓/√	✓/√
Robertson & Ulrich (1998)	✓/√	✓/√		
Rochet & Tirole (2003)			✓/√	✓/√
Mahmoud-Jouini & Lenfle (2010)	✓/√			
Sawney (1998)	✓/√			✓/√
Muffatto (1999)	✓/√			

Note: ✓/√ represents a special focus √ a moderate focus on the factors.

As the four factors are critical factors to platform strategy, they have been either explicitly or implicitly implied in research findings. However, studies have not incorporated all four factors, and each of the studies dealt only a partial aspect to each of the factors (see Table 3.3). For example, Gawer and Cusumano (2007) specified that the critical criteria for building a competitive platform are the systems of sue, easy to connect to and build upon, and non-substitutability. Among the two are part of the compatibility and non-substitutability is the result of creating competitive platform. Furthermore, they presented the two platform strategies -- coring and tipping. Coring is to develop core aspects that could be built upon. Tipping is when firms tip across markets through building a complementary product with their main products and extend their monopoly power. On the other hand, Mahmoud-Jouini and Lenfle (2001) emphasized on the smart reuse which means the interplay or a co-evolution of the platform and the products, through an interaction between product/commonality/differentiation, which falls under the definition of compatibility for finding strategic fit of modules and architectures.

3.6. Analyses of the Four Critical Factors

This chapter presented four factors that have been discussed as critical points of building competitiveness of business ecosystem. Compatibility has been associated with convertibility and standardization of the architecture and modules, and it has been critical for rapid upgrade and change without having to change the entire system (e.g., Wheelwright and Clark, 1992; Meyer and Utterback, 1993; Meyer, 1997). Compatibility in this study holds significance in being able to use together, despite different features, through technological or legal permissive level. Complementarity has been used in terms of “complementary devices or services” (e.g., Cusumano, 2010), where in this study, it is illustrated as the features of complementarity compared to the existing products or services. The underlying logic behind this is that innovation or finding new markets comes from defining what is critically lacking in existing products and improving upon

it to deliver a higher value.

Compatibility and complementarity both enhance connectivity, whereas increasing the number of connectivity itself also becomes a critical factor in enhancing competitiveness. As Moore (1993) explained, the new comers bring changes to the ecosystem that may be helpful or detrimental to the existing business ecosystem. Lastly, while existing studies have been focused mainly on firms' capabilities and resources to strategically position in the market, not much attention has been paid to how these resources are transferred to high commercial value. As there is a gap between the value delivered from technological advancement and from the commercial advancement, it is crucial that firm activities are focused on advancing the commercial value.

The modelling the four factors contributes by integrating and focusing on an indefinite issue of how to maintain competitive in a dynamic and interconnected world, and extending on each of the factors that has been discussed in various disciplines. This paper also extends on the existing studies of platform from sharing the core components together to building the fitness and self-reinforcing mechanism among modules and platforms to co-evolve rapidly.

These four factors are not only critical for platform providers but also for firms that come as modules on the platform. The latecomers could also make entrance by enhancing four factors with competitive ecosystems. The four factors are also applicable to various industries and different units of analysis, at the product level and the value chain activities. Chapter 5 discusses the application at the international business ecosystem level.

However, this study has limitations and calls for further in-depth research. Firstly, firm connections are either close or open system, which holds tradeoffs between the two. For example, Apple's iOS system has relatively the closed system and its control over the quality and pricing issues may restrict the connectivity of the sellers (intermediaries), but it may co-opt sophisticated consumers to the platform, compared to the open system

of Google Android.

Particularly in service sectors, confidentiality has increasingly become an issue. As personal information of product users has been stored and being monitored, issues such as information leakage, piracy or illegal use has become a critical issue. In this sense, there is a growing concern over confidentiality where platform participants want to sacrifice their accessibility to diversity for the protection of their personal information. In this case, four critical factors need to be aligned with enhancing confidential matter as well-i.e., compatibility should not render any unwanted or unconfirmed piracy of personal information.

Lastly, as building competitive platform is closely linked to winner-takes-all, the issue of anti-trust policies or the rigidities coming from dominant design structure may rise (Cusumano, 2010). Although this paper focused on how four factors promote gradual innovation of the ecosystem, the decline of platform is inevitable. In such cases, complementary firms need to meet four factors in shifting to new platforms for their sustainability whereas the platform provider may also want to enhance four factors as to benchmark the new platform competitor. Thus, four factors may play different roles in different stage of the platform evolution.

CHAPTER 4. GLOBAL VALUE CHAIN FOR FIRM AND NATIONAL COMPETITIVENESS

In the previous chapter, critical factors for building competitive business ecosystem were presented, with no multinationality in the equation of competitiveness. In global competition, firms seek the most fitting location, whether domestic or foreign, to efficiently and specialize on a few of the value chain activities to enhance efficiency in operations. The existing studies on firm motivation of going abroad are developed around Dunning's four motivations which are resource-seeking, market-seeking, efficiency-seeking and strategic asset-seeking. Yet, the motivations are merely related to developing input resources or market expansion.

Firms are also not free from location. Firm activities are bounded by locational advantages (i.e., access to technology, infrastructure, and labor force) as well as political and social norms and policies. Locational advantages should not be measured in absolute terms; firms have different motivations of going abroad based on their resource (competitive) status.

By adopting the diamond model that is used to analyze industry competitiveness, this study analyzes firm motivations and suggests four motivations (eight sub categorizations) of foreign direct investment (FDI), which are inter-related with each other. Although location advantage may be valued differently based on firm's needs, the location that can complement these factors becomes the best fit for strategic investments.

Yet, firm activities are constrained by non-economic factors at home and host countries such as political and public concerns in both home and host countries. Whereas host countries may regard inward FDI of multinational firms as neo-colonialism, home countries are concerned with industry hollowing out effect and unemployment. By analyzing positive and negative impacts of multinational activities in both host and home countries this dissertation finds that existing studies come to conclusion that positive

impacts outweigh the negative impacts on both host and home countries.

Furthermore, as opposed to the conventional notion (international trade theories, investment development theories to FDI theories) that the competitive markets derive firms out of the country to exploit monopolistic assets, this chapter extends on Moon and Roehl's (2001) imbalance theory that it is the market failure at home that derives the firm out of the country. Through statistical analysis, this study also shows that firm multinationality enhances firm and national competitiveness. The multinationals serve as agents to balance out the resources between the host and the home countries, by complementing what is critically deficient in the home market (Pitelis and Teece, 2010). For example, Japanese firms are seeking to move headquarters to Singapore to complement what is lacking at home: access to emerging markets in ASEAN countries and skilled labor force with diverse backgrounds (Rahil, 2012).

Thus, this study contributes by extending FDI economic theories that firms invest not only because of market failures in home countries. Second, market failure does not concern only resource factors (i.e., technologies), but three other factors—related and supporting industries, business context and market sophistication. Third, through empirical statistical and case studies, this study shows that firms enhance competitiveness through globalization process where managers and policy makers need to adopt business ecosystemic perspective in analyzing the impacts of globalization on firm and national competitiveness as well as in devising the strategies to minimize the latent negative impacts. Thus this chapter extends on the previous chapter that analyzed mainly product and firm relationships, to the national level analysis to reconcile the gap between the theory and the reality of political and social pressures on firm investment decisions.

This section is organized as follows. The first section reviews the theoretical development and critically analyzes that the existing theories need to be extended. The second section, based on the extended analyses, suggests revised framework of firm

motivations of going abroad. Third, this section review both pros and cons of firm globalization on host and home countries. This part is complemented by statistical analysis that firm globalization enhances firm competitiveness which leads to national competitiveness. Thus, in order to enhance national competitiveness, this study applies four critical factors in building national competitiveness from international business ecosystemic perspective.

4.1. From Trade to Foreign Direct Investment (FDI) to Global Value Chain

4.1.1. Theoretical Review on International Transactions

They are two different means to economize and coordinated resources – the hierarchy and the market system (price measures). In imperfect market system, the hierarchy was considered to be more effective than price measures (Coase, 1937; Williamson, 1975; 1986). However, the dichotomous analysis did not focus on different levels of market failure across national borders or any other kind of artificial borders between ethnic, cultural, or religious groups that are set by the humankind.

International transactions to increase national welfare was noted from perfect market system which became the backbone of neo-classical international trade theories. The markets were considered to be perfect within the system, with no transaction costs in market productions and exports (Cho and Moon, 2013). Only the sales of the final output (the product) was exchanged in foreign markets (export). The perfect market system, thus, could not explain why firms go abroad, or why the input factors of the productions are transferred across national boundaries. Neither can it explain why firms internalize activities of the firm and grow bigger than other firms. The economic players are simply measured at national levels where all productions are done within the national boundary.

Firms with more absolute or competitive advantage thus exports more and the earnings from their exports are used to cover the costs of their imports. Despite the development

of international trade theories from Mercantilist's view, to comparative advantage and factor endowments-view, having comparative advantages led nations to engage and benefit from international transactions.

In questioning why firms invest abroad to produce in foreign countries, scholars shifted their perspective on international business from foreign sales to foreign production, which became the foundation to foreign direct investment (FDI) theories. At the initial stage of FDI theory building, the industry development path (IDP) theory that could not go much beyond the in neo-classical thinking of factor endowments and comparative advantage (Dunning, 1981; Dunning and Narula, 1996; Buckley and Castro, 1998). The IDP theory connotes that "the outward and inward FDI position of a country is systematically related to a country's level and structure of economic development" (WIR, 2006: 143) as it is based on the premise that the factor endowments still do not move around freely across national borders. In this sense, the resources of the firm equates the resources that are available at home markets.

This is why inward and outward investment amount aligns with the level of comparative advantages of a nation, particularly the outward investment level, which does not go much beyond the international trade theories—the more abundant/ competitive resources there are the more nations will engage in international transactions (Lall, 1996; Dunning, 1981). The IDP theory explains that there are five stages of national industry development path that show a positive relationship with the flow of outward investments. In the first stage of the economic development (low GDP per capita) there is a low level of both inward and outward investment due to low economic development³². The inward investment outpaces the outward investment as the country attracts inward investment

³²Initially, there were four development stages, where the fourth stage represented the net generators of direct investment. Yet, the fourth stage was not adequate to explain the relation between economic development and the level of multi-nationalization of firms when "an intense liberalization process made way for a wider geographical diversification in the generation and reception of direct investment (Duran and Ubeda, 2005: 124). The four stages were re-adapted to consider two groups of developed countries which through light on the fourth and fifth stage (Dunning, 1993).

to engage in a certain kind of productions of the country. The gap between inward and outward increases in the second stage, where the inflow investments by the multinational enterprises (MNEs) accumulate. With increasing spillover effect within the nation, and increasing GDP per capita of the country, in the third stage, the country starts to increase outward investment compared and decrease the ratio of the inward investments. These three stages were grouped as less developed countries which reflect the less liberalized economic situation in the 1970s and part of the 1980s (Duran and Ubeda, 2005). During the fourth stage, the fully developed countries, the amount of outward investments exceed the inward investment, in which the net outward investment, in return, reflects the developed level of the countries. The fifth stage lacks empirical findings where the level of the outward investment ratio is expected to decrease as inward investment increases at the same time. The final stage is also considered as the developed economy model.

The IDP theory faces criticisms with regard to the underlying assumptions that the level of GDP per capita cannot be aligned with the level of industrial development as they may be largely regulated and manipulated by the government (Dunning, 2006)³³ and that the FDI in IPD theories was mainly limited to the scope of the duplication of home country productions in foreign countries. Thus, the key difference between trade and FDI was in the mobility of resources; trade theory assumes perfect immobility of the resources across national borders and FDI assumes the mobilization of production factors across national borders.

After the IDP theory, FDI studies were further developed to explain market failures that became the foundation to explain why firms move productions abroad. Not only there were trade barriers but there were no foreign market to appreciate the value of the exported production factors (Hymer, 1976[1960]; Rugman, 1981). Imperfections were found in markets for knowledge and information as well as in capital, where firm specific

³³Technological knowledge was considered as the outcome of accumulative processes of the economic development (e.g., Dosi, 1998).

externalities were not regarded in the model. Market tastes differ within and across national borders, and neither constant returns to scale was guaranteed nor price equalization in factor or product markets. Market inefficiencies also derived from physical and psychic distances between the nations aggravates the efficiency of market transactions and firms were exporting their business processes rather than final goods and services. The external factors also played a significant role in driving the multinationals outside of the national borders. The exogenous factors include government regulations and controls as well as institutional policies and regulations that hinder any flow of resources and factor inputs across national borders.

These market failures were not categorized in the initial stage of the FDI theory development. When Bain (1956) and Hymer (1976[1960]) studied foreign productions, their logic was based on structural market failure—endogenous market failure coming from monopolistic assets. Firms need advantageous resources (the ownership advantages) which can compensate for and override the disadvantages they are likely to face in the host country compared to the local firms. The disadvantages may arise from lack of knowledge on the host country (e.g., industry structure or the market conditions) or inaccessibility to certain resources necessary to compete in the host country market (e.g., government supports or firm networks). In other words, firms are driven by the monopolistic assets that they already possess at home markets, which may be more potent abroad than at home. The monopolistic assets include scale economies, knowledge advantages, distribution networks, product diversification and credit advantage, to attenuate competition and provide potential rents to the multinationals (Kindleberger, 1969; Caves, 1971).

Aside from structural market failure, transaction cost economics scholars averred that market failure is endemic and needs to be overcome by firms by internalizing market transactions. In this regard, Dunning (1981) stated that once firms decide to go abroad, they have to find means to make their operations efficient across national boundaries. The emphasis on the efficiency has been development by Coase (1937), Buckley and

Casson (1976) and Williamson, (1975) as well as McManus (1972), Rugman (1981) and Hennart (1982). This is to lower transaction costs “by reducing the number of contract necessary to combine complementary resources in production” (Safarian, 1972: 63) and “transferring prices, maneuvering liquid assets, moving around production facilities and expanding degrees of freedom than a uni-national firm confined to one country” (Dunning and Rugman, 1985: 230).

These two market failures were framed into Dunning’s OLI paradigm³⁴ where structural market failure was incorporated into the ownership (O) advantage and transaction cost market failure became the internalization (I) advantage. L stands for locational advantage. Although these three factors are not mutually exclusive, they became the backbone to FDI theories.

The ownership advantages include both tangible and intangible resources: the tangible refers to natural factor endowments, manpower, capital, the intangible refers to knowledge, brands, organizational structure, and managerial skills, innovative capacity, non-codifiable knowledge and accumulated experience, but also incorporates cultural, legal and institutional environment as well as industry market structure that can block and close markets to set entry and exit barriers (Rugman, 2010; Dunning and Lundan, 2008).

Ownership advantage is any kind of income generating assets to benefit from international activities which needs to be possessed prior to the act of internalization (Dunning, 2001). The internalization advantage allows firms between the parent and foreign subsidiary to overcome certain problems “associated with market transactions, thereby increasing the returns available from the firms’ assets” (Teece, 1986b: 27).

³⁴John H. Dunning (1954) developed the foundations of eclectic paradigm in the mid-1950s that was subsequently revised as the OLI paradigm (Dunning, 1980; Dunning, 2001; Moon, 2015 *forthcoming*). The paradigm explains that US firms that are self-sufficient, invest in the UK partially for ownership advantage (monopolistic assets of the investing firm) and location advantage (monopolistic assets of the location) due to productivity difference between the two countries.

Rugman (1981) takes one step further that internalization of markets is because that there is no market to sell their ownership advantages that they need to create the market themselves that cannot appropriate the rents of the firm specific assets. This led the transaction-cost economics-based internalization theory to emphasize that host countries need to have well established institutions that can protect dissipation of ownership advantages, otherwise, host countries will try to dissipate the ownership advantage of the firm. This motivates firms to internalize the market, rather than choosing licensing or arm's length transactions. The internalization theory thus brings our attention to the issue of entry modes.

Location advantage, in which Rugman (2010) claims it to be not necessary or not generic with other two variables, refers to host country factors such as the labor force, natural resources, market size and other environmental factors of culture and government's behavior (Rugman, 2010). The locational factors derive firms to foreign locations due to differences in price and factor endowments where firm assets can be more economically utilized. However, locational factors can be seen as part of the internalization theory where firms go abroad to seek either local firm specific or country specific resources (Rugman, 2010; Moon, 1997).

The OLI paradigm, despite its great contribution to understanding multinational activities across national borders, has not been free from criticism (e.g., Moon and Roehl, 2001; Pitelis and Teece, 2009; Rugman, 2010). Initially, the OLI paradigm has been developed based on the duplication of home production activities in foreign markets. Over the years, the paradigm has been interpreted as finding sources to grow and gain competitive advantage in global competition. Particularly in rapidly changing environments where cost reducing internalization of market is not enough for firms to sustain their markets abroad, firms need to have ownership advantages to close markets but also need to have managerial capability to proactively create new product, new markets, new organizations and new management techniques and technologies to sustain their position in foreign markets (Horaguchi and Toyne, 1990). Ownership advantage,

thus, has been extended to focus on the managerial capability in managing the resources efficiently within the system, allocating them across business units that are spread around the globe and gaining new sources of competitive advantages from host countries.

Internalization advantage, on the other hand, has been extended to the ability to acquire and adopt external resources for further rent creation based on Buckley and Casson (1976), McManus (1972) and Uppsala models of dynamic learning. With the emergence of the knowledge base economy and rapidly changing environments, internalization theorists paid more attention to the dynamic concept of managerial discretion as an explanation of the behavior of firms and manager's capabilities for upgrading existing resources and innovation.

The location advantage has also been extended similarly. As opposed to a unique set of immobile (natural) resources of the location, L advantage was geared towards "the distinctive and non-imitable set of location bounded created assets" Dunning (2000: 178) that can complement the core advantages of the investing firms. The location factors also include institutions and authorities that provide the appropriate economic and social infrastructure so that the multinationals can create rents from their own ownership advantages. This is because business activities and their performability are largely fashioned by the institutional framework within which they operate. At the same time, multinationals are likely to move their resources and production processes to the location that they can economize and optimize their resources the best (Oliver, 1997; Dunning, 2000). This is to create the best fit between the investing firm and the host country (this part will be elaborated in the following section).

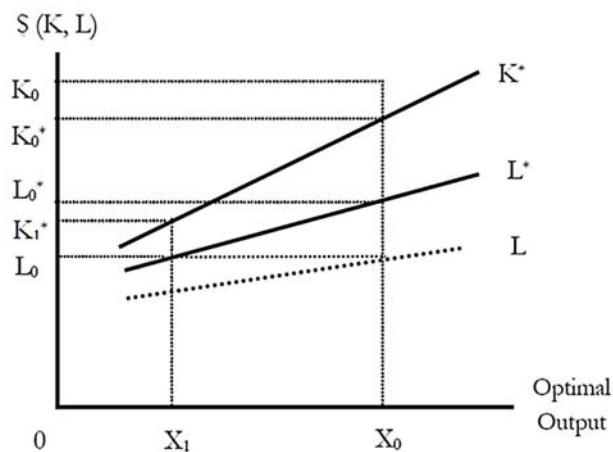
In short, studies on multinational firms have extended from asset exploitation perspective to asset complementation one. Asset exploitation is based on the ownership advantage to create a structural market failure, and asset augmentation is to complement the core advantage of the firm. Although Dunning (2000) has incorporated in his latest study the internalization aspect with regard to learning, he explains that the ownership

advantage needs to be met in prior to pursuing internalization which shows that that monopolistic forces are used in terms of motivation for firm growth/ expansion, and internalization as a way to make their overseas activities more efficient to sustain their position in foreign countries. Rugman explains, “MNEs (multinational enterprises) use overseas subsidiaries to produce goods similar to those developed in the home market where these products all make sure of the information monopoly of the MNE” (1980: 369). In this respect, both O and I advantages converge to the concept of setting the entry barriers to others to sustain their position. Not much of the studies on Dunning and his students including Sarianna M. Lundan show that the OLI paradigm remains as a means to attenuate competition through internalizing their activities across national boundaries.

However, firm activities across national borders are not limited to duplication of home activities in host countries. In many cases, firms seek resources to complement their deficiencies back home (asset-augmentation), or co-create value and markets with both domestic and global footprints (Shan and Song, 1996). Outward FDI from emerging economies was regarded as an exceptional phenomenon in the conventional perspective of FDI, but studies show that these firms invest to augment assets through their capabilities that were built at home markets—these firms are accustomed to demanding and price-sensitive capabilities (Sinha, 2005) and unpredictable political and regulatory environments as well as less stable economies (Aykut and Ratha, 2004) than firms from the developed economies.

Yet, it is not only about firms who have disadvantages at home. With fast changing environments, firms from developed economies also invest abroad to augment resources and adapt to various markets. The twin concepts of co-specialized assets and dynamic capabilities (as an extension to RBV) have become influential in the development of the theory of the firm (Teece, 2007; Pitelis and Teece, 2009). However, they have not gained much attention in the theory of the MNE and FDI (Augier and Teece, 2007; Pitelis and Teece, 2010). Arguably, the economic theories of FDI was unable to explain how MNEs develop and sustain competitiveness over time.

Figure 4.1. Constraint Function for *ex ante* Optimal Output



Source: Moon (2004b)

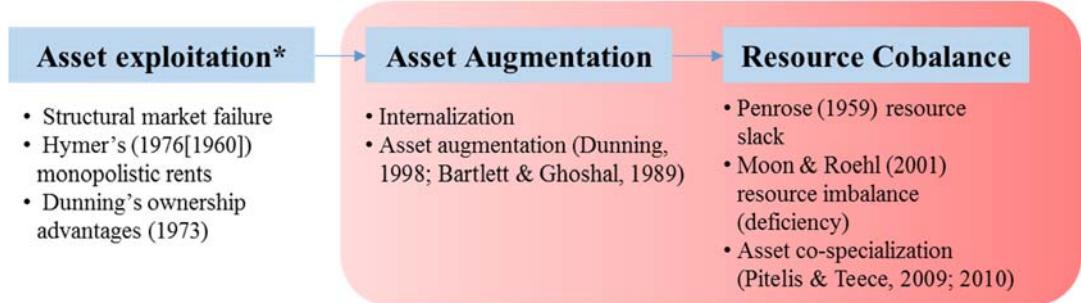
Thus, as opposed to Dunning's OLI paradigm, Moon and Roehl (2001) introduced the imbalance theory which posits that the deficiency of the firm motivates the multinationals to go abroad, even more than when firms own critical ownership advantages. The logic behind the theory is illustrated in Figure 4.1. The optimal input of capital (K) and labor (L) at the level of optimal output of X_o is K_o^* and L_o^* respectively. If there were more capital for input at the level of K_o and the lower level of labor at L_o , the firm can only produce at the point of X_1 than X_o because there lacks the labor. The marginal productivity of the abundant capital will be zero as they will not be utilized and remain as a slack and decrease efficiency of resources. In this case, managers will decide to improve upon the level of deficiency in order to reach the optimal level of *ex ante* output of X_o . The reason the firm will try to increase more than to utilize the abundant factor is because the optimal level becomes lower by $X_o - X_1$ when there is deficiency, whereas when there is abundance, the firm can produce at the level of X_o (the expected

optimal level) and choose either to invest abroad or not. Thus it is the deficient resources that motivate firms to invest abroad.

The core aspect of the imbalance theory is that not only does the firm try to invest abroad to exploit its ownership advantages, but also to complement what they lack in (Moon and Roehl, 2001). When firms have slack resources, they invest abroad to maximize their output and when they have deficiencies they invest to complement them (Moon and Yim, 2014). This can also be extended to why firms not only seek for similar resources or those that are already known (Rosenkopf and Nerkar, 2001), but also search for new resources for firm diversification or upgrade.

However, imbalance theory, developed as an extension to Penrosean perspective on firm expansion, focused only on the resource imbalances. Similar perspective was developed by scholars on co-specialized assets and dynamic capabilities (Teece, 2007; Pitelis and Teece, 2009; 2010). MNEs have increasingly employed complementary integration, design, technology as well as marketing capabilities to create and capture value (Pitelis and Teece, 2010). Particularly in knowledge intensive industries, there is a requirement not only to integrate globally distributed assets (technologies) but also to identify, develop and leverage specialized and co-specialized assets (Augier and Teece, 2007). MNEs have increasingly employed complementary integration, design, technology as well as marketing capabilities to create and capture value (Pitelis and Teece, 2010). Firms do not necessarily to integrate assets but collaborate cross-border through orchestration of a panoply of global assets. Thus, asset co-specialized perspective avers the managerial capabilities of the firm to find opportunities abroad as well as to continuously shape, configure, and align those assets to create new technology, to respond to competition and serve changing customer needs (Teece, 2007; Teece *et al.*, 1997).

Figure 4.2. FDI Theories Development



4.1.2. Analysis and Extension to FDI Theories

Resource accumulation and advancement may lead to firm growth, but they do not necessarily lead to competitive position, in various locations. In practice, firms are not fully heterogeneous, and they require different sets of resources throughout time. Sometimes less advanced technologies are necessary to tailor less developed markets compared to heterogeneous technologies they utilize in more advanced locations. For these reasons, everyday issue in multinational operations lies in enhancing imbalances in firm operations which are collaborating and competing against diverse institutions in diverse markets. As an extension to the addressing resource imbalances and co-specializing assets, Moon (2010) and Yim (2013) suggested that constant process of balancing out activities of the firm shows how firms can grow constantly upgrade value chain activities and adapt to the environment that the firms operate.

In global operations, some activities grow and develop faster than other in different locations. Collaborating (local) firms also vary. Through inter-activity knowledge sharing mechanisms in geographically distributed activities, firms can capture and create opportunities that become the foundation to new sources of competitive advantages by improving activities that hinder the optimization process of the global value chain (Yim,

2013). As examined in the previous Chapter III, firms experience in diverse locations also renders sustainable competitive advantages. Diverse knowledge sets and managerial capabilities will help firms to co-create advantage with local firms in host countries and lead to extensive spillover effects (e.g., Alcacer and Chung, 2007)

The extended imbalance theory, thus, encapsulates the value added activities of the firm as well as firm alliances to create the final value added products and services together. While asset augmentation focuses on monopolistic nature to maintain firm growth, the imbalance theory pays attention to the cooperation of firm alliances to make the streams of value added activities to flow in the most economical way. The imbalance theory looks in the entire value chain activities and the process innovation that have become increasingly critical not only between the headquarters and subsidiaries but also with firms that constitute the entire value chain. Without building common knowledge sharing processes or mechanism that are shared among collaborating firms, it may degrade the entire business performances.

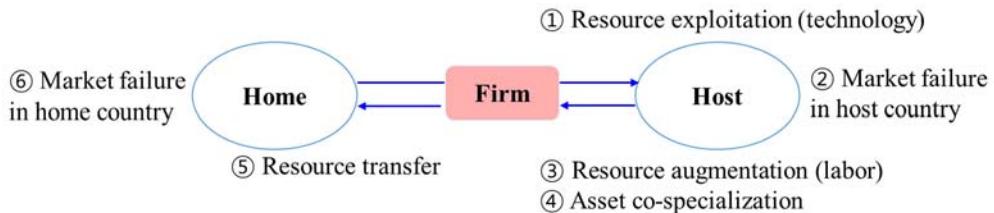
With increasing social and political pressures on firm operations, firms need to constantly upgrade to meet new legal and regulatory standards that are set upon them. For example, Toyota, the Japanese automobile firm was faced with heightened environmental regulations in the US market that it developed hybrid technology to overcome such regulations. In Indonesia, MNEs, by regulation are pressured to engage in social activities to improve the local environment. Public pressures also drive firms to address problems across its entire value chain activities. Fair trade for coffee beans and other trading products are a good example. Many firms have incorporated this as their supply management and social activities. Apple's manufacturing firm in China, Foxconn was criticized for disobeying labor laws in China and not being able to meet the quality control, which had hurt the image of Apple. Currently, Apple controls and manages the activities of Foxconn and other collaborating firms to meet global standards and control quality of its final products and operations.

Furthermore, the extended imbalance theory is also useful in explaining why host countries attract inward FDI for their regional and economic development (Yim, 2013). For example, developing countries attract foreign investments to overcome their disadvantages and improve market failures. Host countries attract multinationals not only because they have advantages but also because they have critical disadvantages. Host countries give preferential treatments in order to rectify and improve upon market inefficiencies and develop related and supporting sectors. Instead of developing the resources by domestic firms that have no special sets of advantages, foreign firms can deliver and build resources in host countries more efficiently (Yim, 2013). This is similar to make-or-buy decision of firms, which is applied to the national level.

The extended imbalance theory contributes by extending the analysis beyond FDI on both the host country and on the entire global value chain activities that may be constructed through arm's length transactions such as trade, licensing or outsourcing. In many cases, outsourcing or firm collaborations are not included in the analysis FDI although, in practice, firm operations are done similarly as in the relationship between headquarters and subsidiaries. Firms have control and management over other firms without equity investments (Yim, 2015 *forthcoming*).

Critical deficiency of FDI theories to explain MNE activities, however, lies in the very foundation of FDI theories: the market failures. Whereas market failure perspectives presumes asset exploitation (mainly technology) of MNEs due to a greater extent of market failure in host countries, the extended imbalance theory illustrates that a greater extend of market failure in home countries makes firms to engage in cross-border businesses. This part is closely related to the re-categorization of firm motivations of going abroad, which will be elaborated in section 4.2.

Figure 4.3. Theoretical Extension to Market Failures of FDI



FDI theories have developed from resource exploitation to resource augmentation as an extension to internalization theory and to the co-specialization of resources, changing the shift from exploitation to complementary of resources. Even through asset co-specialization incorporates the notion of firm collaboration, it does not go beyond the relationship of the investing firms' resources. Moreover, firms chose to engage in FDI than arm's length transaction upon entering the foreign market so as to overcome market failure in host countries. This is why Dunning (1998; 1994; 1997) explains structural market failure (ownership advantage) becomes the prerequisite to transaction cost market failure (internalization advantage) in Dunning's OLI paradigm.

On the other hand, the extended imbalance theory explains that as firms cannot find the resources at home market, they need to go abroad to complement what lacks in their home market. The transfer of the resources from foreign subsidiaries or foreign firms to the Headquarter (home country) helps the home country to overcome domestic market failure. For example, firms from emerging companies invested in advanced countries to transfer high technology to home country. Whereas inward FDI may transfer technology (resources) to home countries, the transfer to local firms may be more efficient through internal transactions, which is through outward FDI. In many cases, transfer of resources or technologies are hindered by absorptive capacity, technological level, or motivation to learn of local firms (e.g., Chang, Gong and Peng, 2012; Cohen and Levinthal, 1990; Gupta and Govindarajan, 2000; Szulanski, 1996). The transfer is also largely influenced by the institutional development –technology transfer is more actively done in countries

that have a well-established intellectual property rights regulations and systems. In most cases, technological transfer to local firms are categorized under the spillover effect. This is the indirect transfer that are not necessarily transferred intentionally. The investing firm may transfer resources internally to its subsidiaries but it would try to constrain technological leakage to local firms, or prevent technological transfer to local employees that may work in another local firms or start its own company. Thus, to transfer resources to home country, (outward) FDI will be more effective than (inward) FDI whereas MNEs would prefer to engage in arms' length transaction in the case of low complementarity from host countries (Moon, 2007; Yim, 2015 *forthcoming*).³⁵

Knowledge transfer through outward FDI to home countries is meaningful in various ways. First it is a theoretical extension to FDI theories and to the imbalance theory. Second, this explain the real business world better than the conventional notion why knowledge spillover effect is limited in host countries. The positive effects of FDI is not as prominent in reality and often times involves time lags. This also explains why MNEs choose outsourcing and arms' length transactions over FDI. Lastly, market failure in home country does not only extends upon existing studies on host country market failure and complements the theoretical foundation for the imbalance theory.

4.2. Categorization of Firm Motivations on Going Abroad

4.2.1. Conventional type of FDI Motivation

Location factor still remain as an important tool in increasing the competitiveness of a firm (Porter, 1990; 1998). Although there has been a rigorous debate between scholars whether the world is flat (e.g., Friedman, 2006) or spiky (e.g., Florida, 2005), it is about whether which locations firms should seek. Too much globalization may inhibit performability of firms (e.g., Lahiri, 2010). Certain locations do provide competitive

³⁵ Refer to Appendix Figure 1.

advantage that firms need to choose the location that fits with their needs.

Dunning (1993; 2000) specified four critical motivations as an extension to internalization advantage, in association with the location advantages. The first is market-seeking, which is designed to satisfy a particular foreign market or set foreign markets of demand-oriented FDI. The second is resource-seeking that is designed to gain access to natural resources such as minerals, agriculture produces, unskilled labor and suppliers to firm activities. The third is the rationalized or efficiency-seeking FDI which is to promote a more efficient division of labor or specialization of an existing portfolio of foreign and domestic assets by the investing firm. This is closely related to the quality of host country infrastructure, supplier networks, special cluster and supportive government policies (Rugman, 2010). The last is the strategic asset-seeking which is to protect or augment the existing ownership advantages of the firm or to reduce that of the competitors. This is particularly focused on the learning aspect from the host countries.

To re-evaluate, the resource and market seeking FDI to seek country specific location advantages, whereas the asset seeking and efficiency seeking may derive from firm specific location advantages as they come in the form of interaction with other firms in the host country. Moreover, the location is chosen based on the locational advantages compared to those of the home country. For example, a manufacturing facility of US firms is moved to a cheaper cost location due to the price differences with the home country. Thus, firm motivation of going abroad is closely related to deficiency and high market failure in home markets while Dunning's four categorization is about asset exploitation and augmentation. Applying the extended theory of imbalance theory, the following re-categorizes the outward FDI of MNEs.

4.2.2. Re-categorization of outward FDI (OFDI)

Dunning's FDI motivations concerns mostly with input factors and market expansion. When analyzed with the diamond model that is used to analyze the competitiveness of

industries (nations), the four motivations fall only under two aspects of four inter-related determinants.³⁶ They together enhance or degrade the competitiveness of the location. Using the diamond model, Moon and Yim (2014) re-categorized the motivations to eight which are further elaborated with various examples in this thesis based on the extended imbalance theory.

First, firms invest abroad for (input) factor-seeking FDI. Input factors refer to resources, both tangible and intangible, which are critical for firm operations and productions. These factors are subcategorized to basic and advanced factors where basic factors are related to country-specific assets such as natural resources and unskilled workers, while advanced factors are firm-specific assets such as skilled managerial capabilities or technology. Dunning's resource-seeking is categorized in tangible basic factors and the strategic asset-seeking motivation falls under intangible advanced factors.

Basic factor-seeking FDI was prevalent at the initial stage of FDI from the US and the EU where the Western firms sought for a lower cost production to relocate their manufacturing lines in Mexico, Asia and Eastern Europe. Seeking cheaper labor costs is considered as asset exploitation rather than asset augmentation as it is merely seeking a cheaper labor through relocation of manufacturing lines. Yet, it could be interpreted as to overcome the disadvantage of labor cost at home market. In practice, firms do not choose to relocate for merely a lower cost; workers need to provide other skills that cannot be compensated at home—such as speed competitiveness. Manufacturing firms investing in China over countries that have similar labor cost is due to their speed competitiveness (Chen, Pun and Selden, 2013; Duhigg and Bradsher, 2012).

The example of complementary FDI for advanced factors is investment made by LG

³⁶The four determinants are factor conditions, demand conditions, related and supporting industries and business context (structure, strategy and rivalry). The extended version of Porter's (1990) diamond model is the generalized double diamond model which emphasizes that all four determinants need to be internationalized to enhance the overall national competitiveness (Moon, Rugman and Verbeke, 1995; 1998).

Electronics (Lucky-Goldstar was the official name back in the 1990s), the Korean electronics conglomerate firm, to acquire the last US electronics manufacturing company, Zenith. LG Electronics (LGE) invested about 5 per cent share (USD 15 million) of Zenith in 1991, increased its shares to almost 58 per cent (USD 351 million) in 1995, and acquired the firm in 1999 after Zenith filed the bankruptcy plan. The initial purpose of LGE's investment was to acquire flat high resolution screen TV and computers and multimedia technologies, the brand name and access to the US market to compete in digital technology market (Moon and Yim, 2014; Moon, 2007). Currently, TV manufacturers pay Zenith a USD 5 royalty on each TV they produce using VSB technology. In North America, digital TV sales increased rapidly with the new of the mandatory digital broadcasting converting policy that took effect since 2009. The countries that adopted the VSB technology are Korea, Canada, Mexico and Argentina. With several countries adopting the standard vestigial side band (VSB) technology, the investment has become one of the most successful FDI cases of complementing disadvantage.³⁷

Second, in the conventional FDI on market-seeking concerns with market expansion for the duplication of its advantages from home. Market expansion, however, is critical for firms from small economies such as South Korea and Singapore (Moon, Rugman and Verbeke, 1998). With small market at home or unsophisticated market, firms aggressively target large or advanced markets first to succeed at home. Korean entertainment companies that had been successful in Japanese experienced growing

³⁷After LGE took over Zenith, it was considered as a failure takeover due to organizational problems. Currently, Zenith is earning a huge profit from the special procurements of digital TV is based on the US's digital TV VSB technology. The VSB has been chosen by the US Federal Communication Commission on Advanced Television Service accepted proposals from the public in 1987 and united the four winning systems to form the Digital HDTV Grand Alliance, coming the best of each system. Between the VSB technology adopted in North America and European digital video broadcasting-terrestrial (DVB-T) standard, Korea turned to VSB and introduced DMB (digital multimedia broadcasting), a digital radio transmission system to enhance mobility (Roh, 2008). The royalties were USD 51 million in 2007, USD 95 million in 2008 and were expected to increase to USD 150 million in 2009 and USD 202 million in 2010 where the data in 2009 and 2010 were only the prospects that were reported in the LG report. See Appendix Figure 2.

competitiveness in Korea after its success abroad. Market expansion is also closely related to servicing the host countries better and faster. Hyundai Motors invested in the US to serve growing market in the US and portray a US made cars.³⁸ In many cases, FDI in downstream activities for market expansion showed a strong complementary relationships with exports (Head and Ries, 2004) yet in more recent years, upstream activities have also moved closer to the market to reflect consumer tastes in productions (localization) and to exchange knowledge faster.

However, as Porter (1990) explained, understanding the most sophisticated market helps firms to learn, imitate, innovate and find sources of competitive advantages. Firms create new business opportunities by dealing with diverse national, industrial, cultural or environmental differences (e.g., Ghoshal, 1987). In order to learn sophisticated tastes of consumers, firms strategically invest in the most sophisticated market of the world. South Korea, which has long been perceived to be sandwiched between cheap market of China and high technology driven Japan, has positioned itself as the test market with the uptake of the best in high speed data communication and increasingly sophisticated and dynamic consumers particularly on electronics goods and services (Bloomberg Businessweek, 2003). It has been difficult to compete in the Korean market with intensified competition of the domestic firms trying to win consumers that electronics firms are seeking Korean market as the test market of their new technologies and products prior to the introduction in the global market (EU Gateway, 2014; PCNC, 2009).

³⁸Hyundai Motor's investment in the US is also closely related to overcoming labor issues in home market. Its investment seeking labor was not for lower cost but to avoid continuous labor-management dispute. If firms were investing particularly to get the brand recognition in the investing country this can be seen as the factor (national reputation resource) seeking investment. However this example has been re-categorized from that of the Moon (2007) and Moon and Yim (2014) to the market seeking as brand seeking investments are largely associated with market seeking in certain locations. In the case of Korean firms, they sought for gaining reputation in the developed markets to improve their status in the developed markets and targeting the third market with the brand image.

Table 4.1. Comparison and Extension on the Motivation of Globalization

	Contents	Explanations and examples	Case studies
(Input) Factor seeking	Basic factor	Natural resources, low skilled labor seeking, Cost reduction (scale and scope economies)	US & EU manufacturing firms in Mexico, East Europe and Asia
	Advanced factor	Highly skilled labor, local firm resources (technologies & manufacturing capabilities)	LGE's acquisition of Zenith; SEC in Silicon Valley for R&D and Italy for design center
Demand seeking	Market expansion (Size)	Country of origin effect of developed country Access to large emerging markets	Hyundai Motors in the US
	Market learning	Better address consumer taste (market fragmentation) and sophistication (scope economies); test market	Amore Pacific in France & China

Business context seeking (strategic reasons)	Institution/ policies	Comply with and avoid policies and regulations of home & host countries, Regulation by-passing, policy incentives	PulmuOne investment in US and Japan to avoid home country regulations; SeA International in Guatemala; Hynix in China
	Firm rivalry	Strategic reasons and cross-subsidization	SEC and LGE in similar locations; Michelin and Goodyear cross subsidization
Supporting & related sector seeking	Local infrastructure	Access to clusters, network building with local institutions	SEC in Silicon Valley, Choongang Plastic Engineering in China Test bedding in Singapore
	Supporting major investments	Package investments, supporting home country firms, diversification strategy	Wooribank' easy finance supporting Korean firms abroad

Note: The shaded areas are the ones that are included in the conventional type of FDI (cost reduction, scale economies); Dunning's efficiency and resource seeking goes under basic factor, strategic asset seeking goes under advanced factor, and market seeking under market expansion. This table was extended from Moon and Yim (2014) and Moon (2007).

On the other hand, Amore Pacific, a Korean cosmetic company strategically invested in French market to learn sophisticated (global) cosmetic market. In order to grow as a reliable cosmetic company in the global market place, Amore Pacific invested in Japan and France to learn the sophisticated market demands and learn to tailor each market segments from low to high end. Essentially, the products tagged with “made in Korea” made Amore Pacific fail in its first attempt to target diverse markets. The firm acquired Lempicka, the French fragrance company, in April 1997 and a French luxury perfume brand, Annick Goutal, to reinforce its perfume line, and establish its own brand of Lolita Lempicka in 1997 to target the global market.³⁹ At the same time, Amore Pacific pursued expansion strategy targeting the Chinese market, forming a joint venture with the Chinese firm in 1993 and setting up a wholly-owned subsidiary in Shanghai in 2000.

The third motivation of FDI is the strategic business context-seeking FDI. This type of FDI is missing in Dunning’s categorization for FDI motivations. Business context-seeking FDI is motivated by the two: the firm rivalry and the institutional reasons. For example, Samsung Electronics and LGE tend to engage in similar activities in similar locations to keep each other in check or offset the advantage of its competitors for going abroad. Another example is the cross-subsidization of Michelin, the French tire maker, and Goodyear, the US tire maker. When Michelin was growing competitiveness in the US market, Goodyear invested in Europe hoping to compensate for their weak position in the home market by increasing the shares in Europe.⁴⁰ This turned out the two competitors cross-subsidizing their operations across the Atlantic (Moon, 2010; Hamel

³⁹The initial point of getting the recognition in the French market was with the establishment of Lirikos that produced products with “made in France” label, concealing the mother company brand is from South Korea. To Amore Pacific, French market was important as it indicated the successful penetration of high end market where the French fragrance market was very competitive (the leading company had only 4 percent of the French market share) and highly fragmented. The market sold over 150 thousand bottles of perfume every day, where about 32.90 per cent are women fragrances and 65 per cent were for men (FEBEA, 2007).

⁴⁰When Michelin introduced the radial tires with Sears in the US towards the late 1960s under the label of Allstate, Firestone and other US tire manufacturers suffered costly setbacks and lost market share. In 1988, Firestone had been acquired by the Japanese tire firm, Bridgestone and among the five US tire firms, Goodyear was the only one left independent (Sull, 2000).

and Prahalad, 1985).

Although this example is closely related to market-seeking, its investments are considered as the rivalry driven as when Goodyear was first attacked in the US market by Michelin, its response was lowering prices, increasing advertising and offering dealer better marketing. Yet, when Goodyear realized that it had much more to lose than Michelin in the US market, it was triggered to invest in the European market for retaliatory purposes in competitor's key markets (Hamel and Prahalad, 1985). .

In the case of the institutional reasons, firms seek preferential treatments (e.g., tax reduction) to avoid or comply with regulations and policies of both home and host countries. Alabama's tax incentive system was one of the strategic reasons for Hyundai Motors' FDI in the US. Yet, certain regulations or policies at home also motivate firms to invest abroad. For example PulmuOne Co. Ltd., a Korean food processing company, built its business in the US to avoid various regulations on food processing industry enforced by the Korean government.⁴¹ General Electric is also known to concentrate its profits offshore as the US imposes the highest 35% of corporate tax in the world (Kocieniewski, 2011). Witt and Lewin's (2007) study shows how firms use outward FDI as an escape measure to home country institutional constraints. Misalignment between firm needs and home country institutional conditions due to a slow development of institutional adjustments makes firms to seek a more efficient location to do business.

FDI is often used as a circumventing strategy to enter a third market as well (Rugman and Verbeke, 1998). For example, anti-dumping duties by the US and the EU propelled Hynix Semiconductor to invest in China to cooperate and reduce the cost of production

⁴¹PulmuOne's initial entry to the US in 1991 was to serve the Korean living in the US. With the acquisition of the Wildwood Natural Foods in 1004 it made its way as one of the US mainstream seller. Its major businesses are soy protein, home meal replacement, Soejae (food materials), green vegetable and juice, food service. As the US market has become increasingly saturated, the company has been in the red figures that it has started expanding to and collaborating with Japanese food companies such as KIBUN, Asahi and Pharma Foods International (PFI).

and export to the US and the EU market.⁴² The Korean company, SeA International, also established a factory in Guatemala to overcome quota restrictions imposed in home market. The example above are associated with addressing market failures (transaction costs deriving from market-unfriendly regulations) in the value chain activities of the firm.

In more recent years, firms relocate their business activities due to natural disasters or other social conflicts. For example, Japanese firms faced critical disadvantages at home due to natural disasters and demographic changes at home. Panasonic, a Japanese electronics firm, decided to relocate its global procurement and logistics headquarters for the first time outside of Japan to lessen its exposure to natural disasters and overcome decreasing productivity and aging society at home, while serving host countries more efficiently. The reason that Japanese firms have been more aware of investing abroad is coupled with their willingness to enhance management and operating skills in multicultural environments as they have been falling behind the global competition despite their competencies in engineering and manufacturing (Wakayama, Shitaku and Amano, 2012; Iwatani, Orr and Salsberg, 2011).⁴³

Lastly, the related and support sector-seeking FDI has become an important trigger for FDI. When firms invest abroad, supporting or related firms follow the same suit in order to complement operations in foreign locations. This type of motivation can be sub-categorized into two: the host country related and supporting sectors, or partnered firms' related and supporting sectors. The former is when firms choose a certain location to take advantage of the support sectors in the host country. For example, a Korean firm, Choong-Ang Plastic Engineering that manufactures polyester tarpaulin bag for cement products established manufacturing facilities in Guangdong Province of China because

⁴²Refer to Appendix Figure 3.

⁴³Though Porter (1990) categorized institutions and government policies as exogenous factor of government and natural disasters as the chance event, they all affect and characterizes the (disadvantageous) business environment of the firms. Thus, this study has categorized such factors under the business context-seeking.

of the advantage coming from the province's transportation and financial infrastructure. This type of investments is related to increasing flexibility in process scheduling and enhance process capabilities by having diverse networks. This may be categorized under the factor-seeking motivation (originally, Porter (1990) categorized infrastructure under factor conditions), yet such investment is to increase efficiency of the entire business operations, rather than an asset-seeking purpose. This is not only about geographical proximities or infrastructure of the country. It is about building new networks with various institutions and firms to easily monitor competitors, and to find new business opportunities. Firm network, whether loosely coupled or condensed, knowledge flow becomes more active in locations of concentrated institutions with well-established infrastructure (e.g., Granovetter, 1973; Ajuha, 2000; Hite and Hesterly, 2001; Burt, 1992).

On the other hand, firms invest in foreign locations to gain competitiveness by supporting its home country firms in foreign locations. For example, Wooribank, a Korean commercial bank, invested abroad to make Korean firms in foreign locations have an easier access to financial support. Also, as Hyundai Motors expanded its operations abroad, a number of part suppliers also followed the similar route.

While looking into external and internal, as well as direct and indirect factors, the new categorization of FDI motivations shows a more comprehensive yet systematic analysis of FDI motivations. We can see that Dunning's definitions of resource-seeking and strategic asset-seeking FDI are under the categorization of the (input) factor-seeking. Efficiency-seeking, which is examined in terms of labor cost reduction, can also be categorized under factor-seeking, while the related and supporting sectors-seeking FDI further emphasizes reducing any imbalances that hinder economizing activities of the firm. Dunning's market-seeking FDI is similar to demand seeking, but misses the aspect of market learning.

It is nevertheless important to note that firms move their value added activities outside

of national borders not only for one of these reasons. They transfer to benefit a combination of these eight motivations. Firms attempt to find locations where they can benefit as much as possible in one location. Yet, locations hardly provide all those benefits. This makes firms to diversify their activities in diverse locations.

Firms investment is usually not done I none time; they are sequential and operated in portfolio. Firms need to consider how their investment in one location can benefit the entire value chain activities, or the geographical portfolio of investments. Furthermore, globalization issue is not about how much firms should globalize, but it must be about how firms can design an optimal combination of geographical diversification of value added activities to enhance economize and add value throughout the entire value chain activities.

However, firms are bounded to certain locations, largely by political and social pressure. Even though firms operate and compete in global scale, the impact of firm globalization may be different on national competitiveness from firm competitiveness. When firms have an optimized geographical distribution of value chain activities, firms may benefit from economies of scale, scope and diversity coming from national differences (e.g., Ghoshal, 1987), along with the eight factors mentioned above (assuming firms have fulfilled their motivations of going abroad).

Moreover, firms are pressured or triggered by national competitiveness of host and home countries, where conflicting interests of managers and policy makers have not gained much attention in academia. Whereas business managers seek locations that best enhances the firm competitiveness, policy makers seek for national interests (i.e., domestic employment growth) which often constraints firm growth in size and geographical scale. Thus, the following section organizes both the negative and positive impacts on host and home countries to illustrate that firm globalization leads to firm competitiveness and to the national competitiveness in the end. With statistical studies, this study also solidifies the theoretical extension of the FDI (extended imbalance theory)

to show national competitiveness is a function of a number of globalized firms as MNEs plays the agent role in transferring and creating the competitive sources across national boundaries.

4.3. Cost Benefit Analysis of Firm Globalization on Firm and National Competitiveness

Economic theories of international transactions, from trade to FDI, presume that competitiveness enhances globalization. Neo-classical economics studies posit that nations export comparatively advantageous goods. From IDP theories to FDI, scholars explain that firms invest abroad to exploit its monopolistic assets abroad, assuming that competitiveness is a prerequisite to globalization. Firm alliances are also more likely to be formed with firms retaining heterogeneous resources (e.g., Gulati, 1999; Mahoney and Pandian, 1992). In this respect, these studies have aligned with dependency theories that postulate the less developed firms or nations need to be dependent on the developed firms and countries. While such rationale behind the economic theories have gained criticisms on unilateral exploitation of host countries, they have been complemented by studies of positive impacts on host countries of increasing imports and inward FDI.

On the other hand, there has been less attention on the impact of upstream FDI and the impact of firm globalization on home countries. As the upstream FDI was considered as an exceptional case at the initial stage of FDI theory development (Moon, 2004a), its impact on developed host countries was considered to be minimal, or similar to those of other FDI from the developed nations. However, with increasing outward FDI and offshoring activities of firms, the impact of distributing value chain across national borders has been debatable.

In order to analyze the relationship of firm globalization with firm and national competitiveness, this section adopts the extended imbalance theory of FDI based on the

eight factor FDI motivation mentioned above.⁴⁴ The extended imbalance theory, along with asset co-specialization and dynamic capabilities of the multinationals, suggests that globalization is a necessary condition for enhancing competitiveness of firms. Firms do not only enhance their own competitiveness through orchestrating global value chains, the nations also enhance cooperation through multi-lateral relationships of firms. Thus, using the same framework, this section analyzes the impact of global value chain on building both firm and national competitiveness. The following analyzes competitiveness in consideration with various streams of studies on firm and national competitiveness.

4.3.1. Positive and Negative Impacts of Firm Globalization on Firm Competitiveness

Globalization of firms was referred to as the duplication of firm activities or knowledge transfer from the headquarters to its foreign subsidiaries. Globalization of firms was accelerated, with the growing number of firms from the newly industrialized nations such as Japan, South Korea, Singapore, Taiwan and Hong Kong. Firms from the Western countries tried to move their productions outside to a cheaper place as they were losing cost competitiveness. Firms re-located inbound logistics to seek (natural) resources, operations and outbound logistics to reduce production costs and improve efficiency. In later stages of the firm globalization, firms relocated supporting activities of the value chain to augment new assets, enhance learning capabilities and exploit economies of scope and manage risk as well as to innovate. Kathawala, Zhang and Shao (2005) explained that globalization of firms contribute to cost and risk reduction, improved service delivery and process management, while enhancing the ability to redeploy internal resources better. Other scholars such as McDougall and Oviatt (1996) and

⁴⁴ As mentioned in previous section, this analysis is based on Porter's (1990) diamond model. Yet, as Porter (1990) model is based on domestic competitiveness, the model was extended by Moon, Rugman and Verbeke (1998) to analyze the competitiveness of nations including the internationalization realm. The analysis used in this section aligns with their concept of generalized double diamond model.

Vaatanen, Podmetina and Pillania (2009) showed that globalization of firms heighten profitability and labor productivity.

Ghoshal (1987) also organized the benefits of globalization by three strategic targets (achieving efficiency in current operations, managing risks, and innovation, learning and adaptation) and three sources of competitive advantage (national differences, economies of scale and economies of scope). Yet, the framework remains as an overview of existing studies, without systematic organization of the factors and sources of competitive advantage. When analyzed more critically, economies of scope comes from national differences, where managing risks is the *ex post* factor to achieving internal efficiency and adaptation or innovation.

In overall, studies on firm globalization shed light on the input factors (firm resources), disregarding market expansion or network externalities that were averred by Dunning (1993; 2000; 2004; 2006). Such skewed analysis, however, can mislead managers in deciding an investment locations. As mentioned in Section 4.2.1, firms are motivated by various reasons that interchangeably affect the entire global value chain. Additionally, the location is not chosen only by the input factors of host country compared to those of the home country, but also by the interrelated factors in host countries that fit with the demands of the investing firm, among the potential targeted locations. The sources of competitive advantage are intertwined with various aspects – industry structure, input resources, firm networks and institutional environment as well as managerial capabilities that the impact of multinationality of the firm on building competitiveness needs to be extended to a more comprehensive analysis.

The main streams on sustainable competitive advantages can be analyzed using the eight motivations of FDI which is more comprehensive.⁴⁵ For input factors, firms increase

⁴⁵ The resource-based view and dynamic capabilities are closely related to the input factor-seeking motivation of FDI, while network analysis is related to the related and supporting industries-seeking motivation. The institution-based view (as well as competitor analysis) is related to the business context-seeking analysis. The industry based view looks into the combination of the eight factors (the rivalry

overall efficiency because each firm maximizes its competitive advantage through strategically focused resource allocation (Christopher, 2011) and serve as a web of knowledge exchanges between multi-tier suppliers and service providers. This helps firms to build heterogeneous resources and capabilities in creating new knowledge sets and managing global operations. By operating in diverse locations, firms expand market and, at the same time, enhance firm reputation and brand, thus increasing bargaining power over global consumers. Offshoring also helps firms to rapidly serve the markets. For example, Lenovo, a Chinese computer maker opened new manufacturing line in North Carolina, US to assemble PCs, tablets, workstations and servers to reduce the costs from logistics when they are done in China, and to fulfill rapid delivery requirements. Firms can also take diverse strategies to counter and avoid direct competition and unfavorable policies, regulations and pressures put upon them. Lastly, through globally diverse networks, firms can co-evolve and create network externalities which also helps them to build entries to barriers that are hard to be penetrated or imitated by others.

Negative impacts can also be categorized under the four aspects: (input) factor conditions, demand (output) conditions, business strategy/context, and related and supporting industries. For input factors, MNEs face unexpected technology or information leakage, mainly because the host country does not have well-established IP regulations. Although firms collaborate, investing firms try to protect their IP rights in host countries while local firms try to learn through emulating the investing firms' products and technologies. On the other hand, as firm activities are dispersed geographically, it hinders knowledge exchanges between activities thus deterring the innovation process. Sometimes, local information is not well communicated and reflected in the value chain activities that it makes firms to be obtuse to external changes. Geographical dispersion also makes quality control difficult. In many cases, localization

(business context-seeking), related and supporting industries-seeking and demand seeking). Thus, when using eight motivation framework (the diamond model concept), positive and negative impacts of multinationality on firm competitiveness can be analyzed as Table 4.2.

strategy makes firms to be less engaged in control of subsidiaries in which a low quality of local products could hurt the image of the firm. Thus, FDI may entail a higher hidden costs coming from delivery, administrative or shipping costs as well as from image building. The hidden costs also stem from institutional and regulatory differences which hurt the businesses.

When a surge of inward FDI disrupts the local competition, it creates anti-sentiment and unfavorable policies towards the investing firms. This either creates (trade) conflicts between nations or pressures firms to pull out of the country. In the case of firms encountering unexpected social uproar or natural disasters, operations tend to be disrupted. For example, a flood in Thailand made firms such as Nissan and Toyota to suspend production due to difficulties in obtaining parts from suppliers (Ye and Abe, 2012). A temporary shutdown of Merck Chemicals International, a German firm that solely produced Xirallic specialty paint pigments in Fukushima, Japan (near nuclear reactor) in 2011 from natural disasters as earthquakes and tsunami which had affected subsequent automakers including Ford Chrysler, Volkswagen, BMW, Toyota and General Motors. The cumulative effect on the US automobile production costs are estimated to hurt about 400,000 units of production (Euroasia Industry, 2014). On the other hand, when tech bubble burst and demand slowed dramatically, Cisco was not prepared to track the inventory of products across its geographically dispersed value chain activities. Lastly, geographical dispersion or working with less familiar local partners prolongs negotiation or delivery time which also hinders to build long term relationships with local firms. Costs of managing global operations and logistics is high. Dow Chemical supplies parts and components from various locations that makes Dow to spend more money on logistics and services than on manufacturing (Elms and Low, 2013).

Table 4.2. Positive and Negative Impacts of Firm Globalization on Firm Competitiveness

	Positive Impacts	Negative Impacts
FC	Economies of scale, scope and innovation (learning) Asset augmentation and creation	IP theft and imitation Hinder innovation process (segregated value chain activities) Poor quality and service
DC	Market expansion and learning Brand recognition and building	Inflexibility and low agility to serve the markets in the developed countries Increase in additional production and shipping costs
BC	Strategic circumvention firm competition, policies and regulations	Tax policies and trade conflicts between countries Unexpected supply disruptions (natural and human disasters)
RS	Co-evolution of related and supporting firms Network externalities	Longer value chain activities associate costs (longer delivery time, higher costs of inventory obsolescence, higher insurance costs higher management operational travel requirements) Increase of coordination and management costs

4.3.2. Positive and Negative Impacts of Firm Globalization on Host Countries

Both direct and indirect impacts of FDI on host countries have been well documented (e.g., Blomstrom, Lipsey, and Kulchycky, 1988; Brainard, 1993; Buckley, Clegg and Wang, 2007; Li, Liu and Parker, 2001; Lipsey, 2004; O'Donnell and Blumentritt, 1999; Taylor and Driffeld, 2005; Görg and Greenaway, 2004). Yet, there are several limitations to existing studies. First, many studies on host country impact are focused on either the input factors (technology development and capital inflow), or network effects which are considered to be unquantifiable. Second, these studies are mainly based on the impacts of the multinationals from the developed economies in less developed host countries (downward FDI). Not much attention has been paid to the impact of firms from emerging economies in developed countries. Moreover, less attention has been paid on the negative impacts of FDI on host countries.

The comprehensive analysis on host countries is summarized in Table 4.3. Multinational firms bring technologies and managerial skills, increase employment, expand market size and promote urbanization or development of the regions and promote competition and cooperation with local firms. The increase of productivity of firms stimulates national productivity growth through subsequent proliferating and network effects (Kimura and Kiyota, 2006). There are also negative impacts. Host countries become more dependent on the developed countries (i.e., dependency theory), face increased economic risks and crowding out phenomenon of domestic firms which could make the domestic industry base thinner.

In addition to positive and negative impacts on home countries, there are additional impacts that may be either positive or negative. In many cases, FDI impacts are double-sided. However, these studies focus either at the sectoral/regional level and fail to take into account the appropriate counterfactual to this problem (Navaretti and Castellani, 2004). Multinational firms initiate more on-the-job training programs that skilled labor force move from local firms to the MNEs and induce a high labor turnover in local firms. Such trained workforce are likely to start a new local business or work in domestic firms

that in turn may diffuse technology (Aitken and Harrison, 1999). Increase in wages may be helpful for employees but sooner or later the nation may lose cost competitiveness. Increase of inbound FDI, also debatable, increases import volume. As much as 80 per cent of trade facilitated by the multinationals (WIR, 2013), there are concerns with increasing imports of inputs from abroad. The key mobile phone producers operating in China – Nokia Motorola, Ericsson and Siemens, account for 95 per cent of China's mobile phone export (Hill, Wee and Udayasanker, 2012). In this respect, cooperation with local firms are stimulated by political and social pressure. For example, with growing criticism against Japanese firms' import to the US and the UK, Japanese auto companies changed their strategy to increase their purchase of parts and components from the local-based firms, enhance cooperation with the local suppliers (Verdict, 2012). This may not foster the best business environments for multinationals.

The presence of the multinational firms, whether they are industry leaders or followers, increases competition and cooperation among firms. They check on each other and exchange information (e.g., Porter, 1998; Bresnahan, Gambardella and Saxenian, 2001). The intensified competition may also be detrimental to uncompetitive local firms but may stimulate firms to grow and the industry may be refurbished with new comers. The presence of new comers exposes the host country to deal with various situations that also stimulates host country institutions and regulatory frameworks to meet the global standards in return. Sometimes, these institutional changes may be discriminatory against local firms.

Table 4.3. Positive and Negative Impacts of Firm Globalization on Host Country Competitiveness

	Positive Impacts	Negative Impacts
FC	Capital inflows, Employment increase Technology development and transfer Productivity increase	Inappropriate compensation & labor exploitation & turnover IP theft
DC	Market expansion, Export increase Enhanced consumer sophistication level	Unnecessary consumption
BC	Enhanced firm competition and cooperation Improved institutional structure & systems Encourage growth of local firms	Social problems and income inequality
RS	Backward and upward linkages with local firms Multiplier effect/ Spillover effect on the region (e.g., agglomeration, urbanization, infrastructure development)	Cut off existing domestic linkages Crowding out effect of local firms

Note 1: This table was extended from MOTIE, KOTRA and ITI (2007) based on several key articles such as Caves (1974), Blomstrom (1986), O'Donnell and Blumentritt (1999), Buckley, Clegg and Wang (2007), Li, Liu and Parker (2001), Aitken and Harrisson (1999), and Hanemann and Rosen (2012).

Note 2: FC stands for factor conditions, DC for demand conditions, BC for business context, and RS for related and supporting industries.

Impacts on home countries are duality in nature yet, FDI scholars have acknowledged that despite potential negative impacts of inward FDI, positive impacts outweigh negative impacts on host countries. Moreover, positive impacts are evident compared to the times when there is no FDI. Moon and Bark (2001) showed that even the negative impacts can be diminished in the case of open economy in the developing stage by showing how internationalization has lessened economic downturn for the countries that were more open than those that were relatively closed to FDI. The logic behind these findings can also be seen from the business ecosystem perspective, where a new comer via internalization stimulates the growth or the restructuring of an industry or a region. Lastly, the negative impacts tend to be of the short term and the positive impacts the long term effect. For example, productivity of local firms may decrease in the short run as upon their entry to host country market, foreign firms with lower marginal costs are likely to increase production relative to its domestic competitor draw demand from domestic firms, causing them to cut production (Aitken and Harrison, 1999). In the long run, however, domestically owned firms will benefit by accumulating knowledge and increase of productivity through spillover effect. Foreign firms also serve as a stable source of demand, which benefit domestic firms to maintain relationships with employees trained by MNEs.

4.3.3. Positive and Negative Impacts of Firm Globalization on Home Countries

Jack Welch, GE's former CEO from 1981 to 2001 suggested that the ideal situation for the US firms was to have factories on a barge where they could move around whenever and wherever that was the best competitive environment (Denning, 2013). Offshoring or outsourcing was the production fad for multinationals, where they much focused on losing cost competitiveness in home country and the need to compensate for it from the host countries. According to a study of TPI in 2003, up to 67 per cent of US and European firms involved offshore workers. McKinsey, one of the leading consulting companies also mentioned that “companies continue to indulge in herd behavior” (The Economist,

2013).

As firm globalization is seen as the outcome of home country competitiveness, offshoring or outward FDI's impact on home countries was rather negligible or indirect. The underlying assumption, although not explicit, of downward FDI is that there is a gap between the advanced and less developed nations. The static status of FDI impact analysis disregards that the competitive advantages of nations can also shift over time. The emergence of new competitive locations attract firms and build a stronger global value chain networks. The dynamics of global value chain activities have impact on home countries as a surge in outward FDI or offshoring may bring hollowing out effect in the home country. Existing studies only touches upon a few aspects of the four determinants. Particularly the empirical studies, on home country effect are relating to the factor conditions (the first row of the table below. They are related to increasing employment, wage level and productivity growth, total factor productivity growth, as well as technological transfer and increase in R&D spending. Each study touches upon either positive or negative impacts on home countries that does not present the entire picture. Table 4.4 presents a comprehensive analysis of the impact of multinationality of firms on home country.

The positive impacts on home countries remain puzzling after many years of controversy and a considerable amount of empirical studies. Firms from emerging economies, particularly, learn technologies from developed countries. Firms from the developed nations benefit from investing in low cost countries, and increase efficiency in home as well as an increase in output and employment in the long run (Navaretti, Castellani and Disdier, 2006). Hijzen, Inui and Todo (2007), by adopting the methodology as Navaretti and Castellani (2004) on Japanese manufacturing firms for the period of 1995-2002 found that the Japanese firms' competitiveness in terms of output and employment has been strengthened along with the trend of outward FDI. Moreover FDI and exports have become complements whereas the relationship with productivity increase level in their studies showed insignificant. As domestic firms operate globally, it also has country of

origin effect that enhances the national reputation. In cases of underperformance, it has detrimental effects on national competitiveness. In overall, Egger and Pfaffermayr (2003) who used several endogenous treatment approaches to analyze the impact of investing firms on domestic investment behavior of Austrian manufacturing firms, showed that the multinational activity of the firms are likely to increase the investment in firms in home countries. The global linkages also enhance the overall network of firms and the relationship with host countries. Close economic ties through MNEs often leads to less conflict between nations. The more firms are operating outside of the country they also have spillover effect at home in enhancing the awareness of global operations and at the same time improves the domestic institutions and regulations.

Similar to the host country effect, firm globalization has negative impacts at the same time. The recent trends of the studies and empirical analyses are different from those of the 1980s where the multinationals from advanced nations benefited greatly from cost reduction in foreign countries. The negative impacts from offshoring and outward FDI have increasingly been the topic of academic research as the traditional competitive nations have been losing competitiveness at home. Much of the analysis congregate to substitution effect (Markusen, 1996; Blonigen, 2001). The following table shows that studies on the negative impacts are associated with losing competitiveness of firms and thinning base of the domestic industries and firms that in the end reduces the exports and employment at home.

Table 4.4. Positive and Negative Impacts of Firm Globalization on Home Country Competitiveness

	Positive Impacts	Negative Impacts
FC	Long-term capital inflow, Technology learning Job creation, Productivity increase, TFP growth; Domestic R&D spending increase	Capital flight, job export, reduce future investments Short term capital outflow Efficiency reduction (decrease in scale economies)
DC	Export increase (complementary) Quality increase (country-of-origin effect)	Short term export decrease
BC	Enhanced global competitiveness Advanced industry structure	Social problems (i.e., income inequality)
RS	Creating global synergy through international cluster Enhanced global linkages	Industry hollowing out effect, Home production cuts Thinning domestic base

Note 1: This table is organized based on several key articles on both positive and negative impacts. Although scholars emphasize the duality effect, representative studies on FC of positive impacts are Hijzen, Inui and Todo (1997); Kimura and Kiyota (2006), Pfaffermayr (1999), and Fors and Svensson (2002). Studies on DC are done by Markusen (1996; 2002) and Blonigen (2001). Chen and Ku (2000) analyzed the RS. Studies on the negative impacts focus on FC and BC. For FC, there are Frank and Freeman (1978), Glickman and Woodward (1989) and Barba, Navaretti and Veables (2004). For negative impacts on BC of home country, there are Bound and Johnson (1992), Lawrence and Slaughter (1993), Berman *et al.* (1994), Sachs and Shatz (1994) and Wood (1995).

Note 2: FC stands for factor conditions, DC for demand conditions, BC for business context, and RS for related and supporting industries.

Generally, the studies find that the effects of FDI that the negative impacts are short terms which can be offset from long term positive impacts (Navaretti *et al.*, 2006). However, there remains the causality issue whether the outward FDI has directly contributed to hurting the competitiveness of domestic firms and industries or they were already becoming uncompetitive before the core multinational firms were leaving the country. For example, the suppliers at home may not provide as competitive intermediary goods to focal firms, compared to the suppliers outside of the national boundaries. Because multinational (focal) firms are competing in global market place where their competitors may be cooperating with more competitive suppliers than those at home, these firms have no choice but to collaborate with firms from abroad. Apple's offshoring shows the losing competitiveness of US manufacturing firms (other than higher labor costs that can be compensated domestically) in speed that it had to collaborate with firms from China.

Empically, Chen and Ku (2000) explain that the hollowing out effect of manufacturing sector in Taiwan between 1986 and 1994 was not simply because of increasing outward FDI but because non-performing firms were exiting the industry due to technical changes and rising wages. The reduction of employment rate was also not due to offshoring of multinational bases but because of adoption of technology. Navaretti and Castellani (2004), using the propensity score matching to estimate the causal effect of investing abroad on the performance of Italian firms to see whether the substitution effect is derived directly from firms moving abroad and found that they are not. Similarly, Kleinert and Toubal (2007) tested that there is no relationship between outward FDI and job export.

Other studies show that the result may be different depending on the type of the investments or the target. Particularly in downward investments, Navaretti, Castellani and Disdier (2006) found that there are more positive impacts than the negative ones at home when firms invest in cheaper labor costs. In the case of Italy, the efficiency at home activities were enhanced, while in the long run it was translated to the growth of output

and employment. Similar results showed in France in terms of productivity and the size of domestic activity although the impact was relatively smaller than in Italy. Driffield and Chian (2009) also empirically tested that job creation has a substitution effect with that in foreign locations, yet the impact is evident in low skilled workforces. Schmid and Grosche (2013) averred on the other hand that in order to manage workforce abroad, the outward investments upgrade the quality of job creation (i.e., managerial tasks), and thus the productivity of workforce at home. Elia, Mariotti and Piscitello (2009) also tested both downward and upward FDI, where the results show that foreign activities have a negative impact upon the demand for low skilled workers but also on the demand for high skilled workers when FDI are addressed to high income countries. Furthermore, Debaere, Lee and Lee's (2009) studies on emerging economies showed that moving to less advanced countries decrease firms' employment growth rate especially in the short run and moving to a more advanced countries does not affect employment growth in any significant way.

Since the labor is the most "sticky" resources that cannot be transferred to other locations (countries) easily (Reich, 1990), creating domestic employment has been the key issue regarding the global activities of the multinationals with regard to home country effect. There are many studies regarding the impact of outward FDI on employment in home country (see Table 4.5) and they were relating to see the effect on employment and wage level. Different results on job creation and quality increase comes from methodological differences and other external factors that cannot be fully controlled. However, research shows that while multinational firms do well abroad, they tend to increase both domestic and foreign employment. The more they grow, there are also many suppliers that are involved in the ecosystem (spillover effect) and increase the industry and regional growth at home.

Table 4.5. Firm Globalization and Job Creation in Home Country

Authors	Results	Analyses Scope
Lipsey (1994)	Stable employment at home in headquarters (R&D and supervision)	US multinational firms
Blomstrom <i>et al.</i> , (1997)	Preserve unskilled jobs at home and skill intensive works is conducted abroad	Swedish multinationals
Schmid & Grosche (2013)	Increase of domestic employment	German automobile industry
Hijzen, Jean & Mayer (2009)	Mid to long term employment growth	US multinational firms
Harrison & McMillan (2011)	Market seeking OFDI enhances employment growth	French
Frank & Freeman (1978)	Job export (displaced 167,337 workers in US)	US firms in 1970s
Glickman & Woodward (1989)	Annual loss of 274,000 US jobs (0.5% of total employment)	US firms in 1970s
Braconier & Ekholm (2000);	Substitution effect in high income locations, but no relationship in low income countries	Swedish multinationals
Pfaffermayr (2001)	Substitution effect in high income countries yet it is responsive to relative labor demand to relative labor costs	Austrian firms in a certain within-industry/country analysis
Chen & Ku (2000)	No relation with job creation or job displacement	Taiwanese manufacturing firms

4.4.4. Empirical Test on the Relationship between Firm Globalization and Competitiveness of Firms and Nations

The previous section presented the overall cost-benefit analysis of both firm and national competitiveness. The accumulating studies, however, does not present the definite conclusion to the competitiveness of firms and nations. Moreover, existing studies have not incorporated the comprehensive picture of globalization and competitiveness. Thus, this section presents, based on the extended imbalance theory, the relationship of firm globalization with firm and national competitiveness.

4.4.4.1. Hypotheses

As opposed to existing studies where competitiveness leads to globalization of firms, the extended imbalance theory posits that globalization is a necessary condition to enhancing firm competitiveness. Market failure is not necessarily greater in host countries; rather the home country disadvantage drive firms out of the country (Moon and Yim, 2014). Moreover, firms with critical disadvantages are more driven to invest abroad than firms that have affluence in resources (Moon and Roehl, 2001).

Table 4.1 presents the motivation of firms going abroad and they resort to complementing the disadvantages of firms. As firms need to complement, augment and create new sources to lead and adapt to the changing environments, enhancing experiences in global locations and finding the fittest location with firm needs are crucial to compete against other firms. Furthermore, competitive sources no longer derive from one location. They derive from the degree of compatibility, complementarity, connectivity and commerciality with other firms in various locations (Yim, 2011; 2013; 2014; 2015, *forthcoming*). Thus, firms invest abroad and enhance multinationality in order to overcome their disadvantage and outrival its global competitors. Thus, this draws upon the first hypothesis:

Hypothesis 1: The more firms engage in globalization, the more competitive firms become.

The underlying assumption of existing studies of trade and FDI theories is that there is no difference between national and firm resources. Thus, export and outward investment increases as the national economy develops and the resources are upgraded. However, as Leontief (1963) presented in studies of trade that firms may export otherwise from the national competitive resources. In FDI, firms may engage in upward investments as they do not have resources at home. Firms are willing to take risks to invest in resources they do not have, as they are the agents rather than the surrogates of national resources builders.

Firms are the main agents to create and build national competitiveness. They utilize, transfer and create resources to increase the net welfare of nations. They distribute wealth and create employment and execute value creation. Thus, firm competitiveness becomes prerequisite to enhancing national competitiveness. As opposed to the conventional thinking that competitive national economy bears competitive firms, firms (take risks to) operate independently and globally to source what is lacking at home. Rather than the substitution effect, firm globalization has positive impacts on home countries as firms find resources across national borders because they cannot find them at home. Globalization does not only transfer resources and builds managerial capabilities, the expansion of business scopes help firms to become more competitive and contributes to home country. By building networks with host countries, firms also enhance economic ties and create synergistic impacts between nations (interdependent and reinforcing relationships). Thus, this draws upon the second hypothesis:

Hypothesis 2: The more competitive firms are, the more competitive nations become.

4.4.4.2 Data

To test these two hypotheses, the data sets were selected based on the most comprehensive indexes. There are various ways to measure globalization degree of firms. Buckley, Dunning and Pearce (1978) measures by sales of overseas affiliates and associated firms. Rugman and Verbeke (2004) measured by the foreign sales, where the consumption was made. Similar data sets can be seen from studies of Grant (1987; Tallman and Li, 1996). Daniels and Bracker (1989) used foreign income to total income ratio (ratio of foreign sales to total assets). Tallman and Li (1996) used the number of foreign countries in which a firm has subsidiaries. Kotabe, Srinivasan and Aulakh (2002) also adopted similar measurements. However, foreign sales, foreign income or the number of foreign countries are only related to the downstream activities. Globalization is related to the assets, resources and value chain activities conducted in foreign countries.

Thus, the data of transnationality index (TNI) was retrieved from the United Nations Conference of Trade and Development. The index measures the ratio of foreign assets to total assets, the ratio of foreign sales to total sales and the ratio of foreign employment to total employment. The composition index of the three ratios show the degree of multinationality of firms that are ranked by their amount of foreign assets. The data well represents the degree of internationalization of non-financial related 100 firms from developed countries and 100 from selected emerging economies. The first 100 firms from the developed countries are listed by assets disregarding the nationality of the firm, but there were only 5 firms that were overlapping with the firms that were included in the latter 100 firms from emerging economies.⁴⁶ The data was retrieved from the year of 2011.

Firm competitiveness is defined variously, yet the ultimate goal of firms is to enhance the performability of firms as well as its sustainability. Total sales or income as well as

⁴⁶The five firms were Cemex S.A.B. de C.V., Petronas - Petroliam Nasional Bhd, Vale SA, CITIC Group and Hutchison Whampoa Limited. Firms that were headquartered in two countries are Royal Dutch Shell, Rio Tinto, Unilever, and BHP Billiton Group.

ROI, ROE, ROS are used in previous studies. Performability of the firms vary depending on the industry structure that not only one composite index can show high performability of the firms. As there are no consistencies in defining the competitiveness of firms, while at the same time, these variables well reflect the performability level of firms together, three data sets were retrieved. The three data sets are Fortune Global 500, FT Global 500 and Forbes Global 2000. Fortune Global 500 ranks global firms by revenues for their respective fiscal years ended on or before March 31, 2013. Revenue figures include consolidated subsidiaries and reported revenues from discontinued operations but exclude excise taxes. In order to rank companies in terms of market capitalization – the stock market value of a company, FT Global 500 is used. The data was collected based on the companies where the free float is at least 15 per cent and are valued in the lines of shares that are quoted on the stock market that incorporates stock market listing along with market perception as well as investor' expectations. Lastly, sales, profits, assets and market value are all considered in the list of Forbes Global 2000. The data was organized by 2000 firms for each factor, sales, profits, assets and market value and only the companies that made to the top 2000 for all four metrics are included. The scores are all added up for all metrics (equally weighted) and are ranked in descending order by the highest composite score. They are all from year 2012. In order to retrieve firms from all three indexes to measure firm competitiveness, the data were chosen from 2012 which were the most recent data that were available for all three indexes.

The dataset was reorganized to analyze firms that include in four indexes. TNI is ranked by the amount of foreign assets invested that looks into the globalization degree of the firms from three composite index of foreign assets, foreign sales and foreign employment. The TNI does not necessarily reflect the leading firms in performability. Thus, the three other indexes, Fortune Global 500, FT Global 500 and Forbes Global 2000 are considered in terms of large firms that have high performability in global competition. These indexes, on the other hand, do not necessarily measure the globalization degree of firms. Thus, in order to test the first hypothesis, firms that were

included both in the TNI index and firms that are included in either Fortune Global 500, FT Global 500 or Forbes Global 500 but not included in the TNI are compared. As TNI does not include financial related firms, financial firms related firms are excluded from the three index for competitive firms. The data samples are therefore two, one including the financial firms (Table 4.6) and the other excluding the financial firms (Table 4.7). In Table 4.6, the number of firms that are global and are competitive are 97 (in Fortune Global 500 list), 95 (in FT Global 500 list) and 148 (in Forbes Global 2000 list). Firms that are included in these three lists but not included in TNI are 403 (among Fortune Global 500 firms), 405 (among FT Global 500 firms) and 1852 (among Forbes Global 2000 firms). Among the global competitive firms, there were no financial related firms, but among non-global firms, there were 102, 137, and 578 firms that are excluded from Fortune Global 500, FT Global 500 and Forbes Global 2000, respectively.

Table 4.6. Data Samples of Competitive Global Firms

		Number of Firms		
		Fortune Global 500	FT Global 500	Forbes Global 2000
UNCTAD TNI	Global (H)	97	95	148
	Global (L)	403	405	1852
Total		500	500	2000

Table 4.7. Data Samples of Competitive Global Firms (Non-financial)

		Number of Firms		
		Fortune Global 500	FT Global 500	Forbes Global 2000
Global Competitive Firms (Non-financial)		97	95	148
Competitive Firm (Not global)	Financial	102	137	578
	Non-financial	301	268	1274
Total		500	500	2000

National competitiveness is an aggregate concept that needs to take into consideration of various factors (Kao, Wu, Hsieh, Wang, Lin and Chen, 2008). Measuring national competitiveness is not as clear as competitiveness at the firm level, as market share or profitability at the national level often gives misleading insights. The balance of trade and economic strength often does not taken into account of internationalization (Moon *et al.*, 1998), such as foreign affiliates and foreign licensed sales (Kao *et al.*, 2008), and imports are also an important factor for the growth of national industries and economy. Nations do not compete as firms do (Krugman, 1994) and high performance does not necessarily mean that nations are competitive, healthy and sustainably stable. Yet, with

regard to economic performance, Porter (1990) states that the growth of (productivity level indicates the potential and sustainability of nations. Porter (1990; 1998) states that national competitiveness is determined by interacting forces of four endogenous determinants with two exogenous factors (also known as the diamond model). The four endogenous factors are factor endowments, the sophistication of the market, the context for firm strategy and the cluster.

The existing studies of FDI impacts at national level have been conducted to measure a few aspect of the diamond model. Employment, wage rate and technological development and spillover effect as well as local firm development level and productivity level are representative. Not many studies have used the competitiveness index to examine the FDI impacts. On the other hand, studies that examine the national competitiveness per se have used other comprehensive measurements that are the Global Competitiveness Index published by the World Economic Forum (WEF), and World Competitiveness Yearbook published by IMD focus on productivity or its sustainability. They are currently the most representative indices used globally.⁴⁷ Global Competitiveness Index is calculated by 15 pillars whereas World Competitiveness Yearbook is based on four components of the sixty countries.⁴⁸ However, all these measures are still based on the domestic competitiveness and often overlaps with each other's indicators. These figures still do not incorporate the internationalization aspect.

⁴⁷There are several institutions that measure and conducts research on national competitiveness.

⁴⁸Fifteen pillars of the Global Competitiveness Index are institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, labor market efficiency, financial market development, technological readiness, market size, business sophistication, innovation. The Global Competitive Index takes the stages of development of 144 economies into account by attributing higher relative weights to those pillars that are more relevant for an economy given its particular stage of development. That is, although all 12 pillars matter to a certain extent for all countries, the relative importance of each one depends on a country's particular stage of development. The four determinants of the World Competitiveness Yearbook is economic performance, government efficiency, business efficiency and infrastructure where each of these factors is divided into 5 sub-factors and altogether features 20 such sub-factors. These 20 sub-factors comprise more than 300 criteria, and each sub factor has the same weight in the overall consolidation of results, which is 5 per cent. The data are measured in terms of both hard and soft data, where hard criteria represent a weight of 2/3 in the overall ranking, whereas the survey data represent a weight of 1/3. They are all aggregated to make the total consolidation. Both of these reports have gone through several phases or revisions throughout the years.

Furthermore, although they have divided the settings into three stage-- cost advantages, efficiency advantages, and innovation advantages—they do not explicitly link with the growth of the productivity or economic development level. In order to overcome these limitations, the new national competitiveness index was developed, the IPS-EE

The IPS-EE index was developed based on Porter's (1990) diamond model, extended by Moon *et al.*, (1998) to the generalized double diamond model, to incorporate multinational activities. Further extending the generalized double diamond model to 9 factor based, Cho and Moon (2000) introduced the IPS model, including the government factor that was considered an exogenous factor in the diamond model, and four human factors that were segregated from four physical factors of diamond model. The reason is that the government and human factors play a critical role for countries at the developing stage and the role of human capabilities have become increasingly important in managing multinational activities. The IPS Model was published by Edward Elgar Publishing Co., and became the IPS-EE model.⁴⁹ The data sets were retrieved from year 2012.

4.4.4.3. Methodology and Results

In order to see the effects of firm globalization degree on firm competitiveness, t-Test was adopted to compare the average competitiveness value of the firms that are globalized and not globalized. Based on the data sets of Table 4.5 and Table 4.6, the two groups of firms were compared with each of the metric from firm competitiveness index. The table below shows that revenue (Fortune Global 500), market value (FT Global 500) and sales, profits and market value (Forbes Global 2000) are significantly related by

⁴⁹There are 62 countries measured by 16 sub-factors and 106 criteria. 5 of the criteria are hard data and the rest are soft data. The four human factors are (unskilled) workers, politicians and bureaucrats, entrepreneurs and professionals. Methodology adopted to calculate the competitiveness of nations are the three-year moving average methodology to minimize the effects of random variances in a particular year (Cho and Moon, 2013).

$p<0.01$ with the globalization degree of the firm. The globalization of firms is also significantly related to the ranking of firms for each indices. The only metric that did not show a significant relationship is the assets where foreign assets may vary depending on the industry character. For example, software firms and banking sectors do not need a high amount of foreign assets invested as the manufacturing firms do.

Thus, in order to test the relationship with non-financial firms, t-Test was done with non-financial competitive firms (three indices), as Table 4.6. Using the same methodology of the t-Test, the significance level was $p<0.01$ for every metric of each firm competitiveness index (see Table 4.8). Here, the globalization index showed a highly significant relationship with foreign assets as well.

Table 4.8. T-test between Firm Globalization and Firm Competitiveness

	Dependent Variables	Independent Variables	Means	Std.	Sample Size	t-value
Fortune Global 500	Revenue	Global (H)	96.60	96.12	97	4.492***
		Global (L)	51.95	37.87	403	
	Ranking	Global (H)	168.67	138.78	97	-6.462***
		Global (L)	270.20	138.95	403	
FT Global 500	Market Value	Global (H)	85007.65	72230.89	95	4.886***
		Global (L)	47328.58	42888.04	405	
	Ranking	Global (H)	168.22	132.55	95	-6.410***
		Global (L)	269.8	140.46	405	
Forbes Global 2000	Sales	Global (H)	66.10	85.42	148	7.192***
		Global (L)	15.46	22.70	1852	
	Profit	Global (H)	4.34	7.44	148	5.486***
		Global (L)	0.97	2.67	1852	
	Assets	Global (H)	89.85	97.58	148	0.512
		Global (L)	78.52	267.67	1852	
	Market value	Global (H)	56.84	67.27	148	7.230***
		Global (L)	16.61	26.70	1852	
	Ranking	Global (H)	447.14	469.56	148	-14.660***
		Global (L)	1044.53	562.25	1852	

Note: ***p<0.01, **p<0.05, *p<0.1

**Table 4.9. T-test between Firm Globalization and Firm Competitiveness
(non-financial firms)**

	Dependent Variables	Independent Variables	Means	Std.	Sample Size	t-value
Fortune Global 500	Revenue	Global (H)	96.60	96.12	97	4.707***
		Global (L)	49.47	38.80	301	
	Ranking	Global (H)	168.67	138.78	97	-7.230***
		Global (L)	283.21	134.68	301	
FT Global 500	Market Value	Global (H)	85007.65	72230.89	95	4.876***
		Global (L)	46707.43	42624.22	268	
	Ranking	Global (H)	168.22	132.55	95	-6.120***
		Global (L)	267.20	136.46	268	
Forbes Global 2000	Sales	Global (H)	66.10	85.42	148	7.069***
		Global (L)	16.28	21.74	1274	
	Profit	Global (H)	4.34	7.44	148	5.590***
		Global (L)	0.91	2.06	1274	
	Assets	Global (H)	89.85	97.58	148	8.591***
		Global (L)	20.62	27.17	1274	
	Market value	Global (H)	56.84	67.27	148	7.198***
		Global (L)	16.70	25.65	1274	
	Ranking	Global (H)	447.14	469.56	148	-14.516***
		Global (L)	1048.54	537.24	1274	

Note: ***p<0.01, **p<0.05, *p<0.1

To test the degree of explanatory power of the relationship between firm globalization and firm competitiveness, regression analysis was done. Prior to regression, cluster analysis using k-means of 148 firms that are both included in TNI and Forbes Global 2000 which comprises all the components of Fortune Global 500 on revenue and FT

Global 500 on market value. K-means showed that 66 firms were in a similar relationships.⁵⁰

Table 4.10. Regression of Firm Globalization and Firm Competitiveness

	Dependent Variables			
	Sales	Market value	Assets	Profits
TNI	0.574**	1.260***	1.242***	0.076***
R²	0.098	0.145	0.132	0.110
F	6.268**	10.698***	9.306***	7.384***
N	60	65	63	62

Note: ***p<0.01, **p<0.05, *p<0.1

Table 4.9 shows the regression results between firm globalization and firm competitiveness. Each factor of firm competitiveness shows a significant relationships, whereas market value and assets and profits are significant by p<0.1 and sales by p<0.05. The explanatory power of each variable is about 10 per cent. The t-test and regression analyses show a significant impact of firm globalization on firm competitiveness and therefore validates hypothesis 1.

In order to measure the difference between the firm competitiveness and national competitiveness, national competitiveness is measured by 4 datasets from the IMD, the WEF, and the IPS-EE. The average of the three indexes is also used. In order to compare firm competitiveness and national competitiveness, firm competitiveness needs to be paralleled and be translated to the national level analysis by ranking the number of the countries by the number of competitive firms that were included in each country. The size of the country is controlled by the number of population (1 million). Table 4.10

⁵⁰53 firms showed high ranking in Forbes Global 2000 and TNI, 13 showed low in both indexes. 26 firms were ranked high in TNI but ranked low in Forbes Global 2000, whereas 56 ranked low in TNI and high in Forbes Global 2000.

shows the number of overlapping countries between the headquarters of firms (firm nationality) from each indices of firm competitiveness (Fortune Global 500, FT Global 500, and Forbes Global 2000) and the countries included in indices of national competitiveness (IMD, WEF, IPS-EE). The data are retrieved from year 2013. Table 4.10 also shows the correlation results between firm competitiveness and national competitiveness which are all significant.

Table 4.11. Firm Competitiveness and National Competitiveness
(Spearman's correlation rank-order)

	Fortune Global 500		FT Global 500		Forbes Global 2000	
	Correlation	N.	Correlation	N.	Correlation	N.
IMD Ranking	0.613***	35	0.753***	34	0.814***	41
WEF Ranking	0.712***	36	0.807***	35	0.817***	41
IPS-EE Ranking	0.740***	33	0.789***	33	0.804***	37
Average Ranking	0.710***	36	0.848***	35	0.834***	41

Note 1: ***p<0.01, **p<0.05, *p<0.1

Note 2: N represents the number of countries.

Using Forbes Global 2000 list of firms, the cluster analysis divided the countries into two groups to determine independent variables: the country with a high number of globally competitive firms and the country with a low number of globally competitive firms. There are 21 firms that are high in firm competitiveness and 20 firms low in firm competitiveness for IMD Ranking, WEF ranking, and the average ranking of the three national competitiveness indices. With the IPS-EE rankings, there are 17 firms that are high in firm competitiveness and 20 low in firm competitiveness.

The t-test was adopted to compare the average t-value between the two groups of firm competitiveness of high and low. The result shows that for all national competitiveness

index, firm competitiveness showed a significant relationship by $p<0.01$.

Table 4.12. T-Test between Firm Competitiveness and National Competitiveness

	Independent Variable	Means	Std.	N.	t-value
IMD Ranking	Firm competitiveness (H)	12.14	7.27	21	-7.466***
	Firm competitiveness (L)	30.30	8.29	20	
WEF Ranking	Firm competitiveness (H)	12.67	7.59	21	-6.939***
	Firm competitiveness (L)	30.90	9.19	20	
IPS-EE Ranking	Firm competitiveness (H)	10.18	6.65	17	-6.973***
	Firm competitiveness (L)	27.10	7.90	20	
Average Ranking	Firm competitiveness (H)	11.76	6.83	21	-8.248***
	Firm competitiveness (L)	31.30	8.30	20	

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note 2: The test only includes firms that are both included in the Forbes Global 2000 in order to maximize the sample size, and the index measures the metrics that are covered by either Fortune Global 500 or FT Global 500.

The t-test shows that there is a positive relationship between the number of competitive firms and the national competitiveness. In order to measure the impact of firm competitiveness on national competitiveness, regression analysis was adopted to measure the relationship between the national competitiveness indexes and firm competitiveness indexes. Multicollinearity has been tested using the varimax factor analysis among the indexes for both firm and national competitiveness. The results show that there is a high multicollinearity among the 3 indexes of national competitiveness ($p<0.01$) that the average of the three is taken for the dependent variables

Table 4.13. Multicollinearity Tests of Variables

Correlation Coefficient

	IMD	WEF	IPS-EE
IMD	1		
WEF	0.927***	1	
IPS-EE	0.846	0.849***	1

Note: ***p<0.01, **p<0.05, *p<0.1

Correlation Coefficient (n=57)

	Market value	Sales	Profits	Assets
Market value	1			
Sales	0.679***	1		
Profit	0.517***	0.231*	1	
Asset	0.525***	0.805***	-0.001	1

Note: ***p<0.01, **p<0.05, *p<0.1

Factor analysis for four metric of Forbes Global 2000, market value, sales, profits and assets show that there is a high multicollinearity among asset, sales and market value.⁵¹ Thus, market value sales, and asset can be seen as one factor which are closely related to firm size. Thus the three variables are renamed as firm size. Profit variable on the other hand did not show high multicollinearity with other variables. Yet, among Forbes Global 2000, 98 firms in natural resources-related industries which have above average high profits compared to other industries, are excluded.⁵²

⁵¹KMO & Bartlett's Test of Sphericity is a measure of sampling adequacy that is recommended to check the case to variable ratio for the analysis being conducted whether it is acceptable for the sample adequacy. While the KMO ranges from 0 to 1, the world-over accepted index is over 0.6

⁵²The natural resources related firms tend to show extraordinary high profits compared to firms in other industries. However, natural resources are not closely related to enhancing national competitiveness as

Table 4.14 Factor Analysis of Firm Competitiveness and National Competitiveness

Variables		
	Firm Size	Firm Profit
Market value	0.951	-0.059
Sales	0.920	0.224
Asset	0.650	0.639
Profit	0.001	0.966
Eigenvalue	2.173	1.395
% of variance explained	54.326	34.876
Cumulative % of variance explained	54.326	89.202

Based on the factor analysis, the regression was done between firm size and firm profit, with the average of firm competitiveness. According to Model 1, the results are valid for both independent variables of firm size (assets, market value and sales) and profit.⁵³ The firm size is significant by $p<0.05$ and profit by $p<0.1$ and the adjusted R^2 for two dependent variables is 0.230. The model shows that firm size (market value, sales and assets) has a more significant effects than firm profit on enhancing national competitiveness. Thus, the t-Test and regression analysis proves that the relationship between firm competitiveness and national competitiveness is significant and validates hypothesis 2.

seen from China, India, Brazil or Saudi Arabia. On the other hand, competitive European nations as well as Singapore does not have natural resources (Cho and Moon, 2013). Porter (1990) explains that national competitiveness is driven by created assets. This will be further elaborated in Section 4.5.

⁵³ Multicollinearity between IMD and WEF is 0.927***, WEF and IPS-EE is 0.849***. Multicollinearity between market value and sales is 0.679***, market value and profit is 0.517*** and market value and asset is 0.525***. Multicollinearity between sales and profit is 0.231*, sales and asset is 0.805**.

Table 4.15. Regression of Firm Competitiveness and National Competitiveness

Variables	Model 1
Firm Size	4.501***
Profit	3.774**
R ²	0.257
Adjusted R ²	0.230
F	9.351***
N	57

Note: ***p<0.01, **p<0.05, *p<0.1

4.4.4.4. Analysis and Limitations to the Research

The empirical test shows the two step approach to see whether firm globalization leads to firm competitiveness, and the number of competitive firms leads to national competitiveness. The first hypothesis is a reverse to conventional notion that competitiveness leads to globalization. The extended imbalance theory was applied and shows that firms seek globalization in order to complement and build competitive advantage. As firms seek the most competitive location to optimize their operations, the globalization of firms also implies that their home country may not provide the most competitive resources that are needed for specific firm operations. Firms also grow by expanding their targeted markets. In order to better serve and learn the local market, firms invest close to the market. Investment in foreign locations does not necessarily mean exploiting local resources such as natural resources and unskilled labor (Moon, 1997); it refers to collaborating with other firms through forming strategic alliances and joint ventures. However, the aspect of arm's length transactions, such as trade, outsourcing or licensing have been eliminated from FDI theories (Pitelis and Teece, 2010). This aspect was also eliminated from the TNI calculations. Whereas the

conventional type of FDI was limited to setting up a wholly owned subsidiary in foreign locations, firms have increasingly chosen different modes of entry to foreign locations (Yim, 2015 *forthcoming*).

By applying the extended firm boundary, the value chain analysis, firms engage in arm's length transactions that should be considered as multinationality of firms. Choosing foreign partners to constitute the entire value chain shows that firms are enhancing their competitiveness through globalizing its streams of value activities. Firms co-develop and co-create market across national border with others (Pitelis and Teece, 2010) and the competitive global value chains can enhance each firm's performance and competitiveness in global competition. This part will be further elaborated in Section 4.5.

The second hypothesis tests that the number of competitive firms led to enhancing the national competitiveness. As MNEs are the agents of transferring resources across border and creating new resources, the growth of multinational firms and the increase in number lead to a higher level of resource transfer as well as spillover effects. As seen from Section 4.3.3, the positive impacts from firm globalization contributes to enhancing the national competitiveness. The benefits include technological externalities, the increase in local firms' total factor productivity and their propensity to export (e.g., Moosa, 2002; Fotopoulos and Louri, 2004; Blomstrom, Globerman, and Kokko, 1999; Bell, 2005). Additional competition created by foreign investment stimulates innovation (Krugman, 1991), and promotes other relevant and complementary sectors' growth (Porter, 1990, 1998). FDI also creates demands for local output, and the backward linkages strengthen supply industries, feeding forward linkages to other local firms in return (Delgado, Ketels, Porter, and Stern, 2012).

At the same time, an increase in the number of globally competitive firms also implies that local firms should take in part of globally competitive value chains. The more connected the local firms become to the global value chain, the more they will benefit from enhancing their competitiveness. Firms from both developed or developing

locations, the participation of local firms in the global value chain has an important effect on the scope of local firms' upgrading. They learn from the global leaders of the chains and overcome their major constraints that they face coming from "a lack of specialized skills, difficult to access to technology, inputs, markets, information, credit and external services" (Giuliani Pietrobelli and Rabellotti, 2005: 550).

In the end, firms are the main economic drivers. They economize resources, create value and enhance the national economic welfare. By having numerous globally competitive firms means that nations have high potential of upgrading and sustaining their competitiveness through continuous linkage to the changing global markets. Whereas the domestic market may not be able to provide the most competitive resources to firms, the nation can enhance competitiveness through supporting and nurturing the best environment for them to grow. For example, the domestic market may be small, but national policy makers may build favorable policies and business environments for these firms to invest abroad and co-develop with foreign firms.

To take a step further to the empirical test on the number of globally competitive firms, national policy makers are concerned with economic welfare discrepancies between the haves and the have-nots. Despite the economic development led by the conglomerates in Korea, the political and social debate is consistently on the issue of income distribution—restrict the growth and activities of big firms, in order to sustain the growth of the SMEs. However, the welfare distribution through restricting business activities may hinder further value creation. As seen from the previous section on the FDI impacts on national competitiveness, supporting and complementary firms grow due to inter-related relationships with globally developing firms. Firms do not grow and survive itself (Powell, 1990). Thus, it is critical for national policy makers to expand the scope of business beyond national borders and foster the growth of globally competitive firms to support and enhance the competitiveness of local SMEs.

Although existing studies have been focused on a few aspect of the competitiveness,

without interrelated activities of factor conditions, demand conditions, business context and related and supporting industries, nations cannot be developed. Therefore, this dissertation has chosen variables that well reflect the national and firm competitiveness, rather than a specific aspect of competitive sources. Moreover, TNI has been chosen to reflect the globalization of firms not only by sales or the number of foreign affiliates, but by the input factors such as employment and assets. However, this empirical analysis is not perfect and has several limitations. The model was done based on a simple regression. The first and second hypothesis, despite the same sets of data, are not fully on the same level of analysis. Even though the number of competitive firms were tested to level out the analysis scope to nations, the linkage between the firm globalization and national competitiveness is weak. Moreover, the TNI has limitations in reflecting firm globalization as the ranking is done by the foreign assets which may not incorporate service sectors that do not entail large investment on foreign asset, and do not reflect globalization at the value chain analysis. It reflects globalization of an individual firm. Nevertheless, it is important to note the contribution of the empirical tests – to test the extended imbalance theory with new comprehensive variables, and that the test was to complement the theoretical extension of FDI and the comprehensive analysis of firm globalization effect on enhancing and discouraging firm and national competitiveness.

CHAPTER 5. BUILDING COMPETITIVE INTERNATIONAL BUSINESS ECOSYSTEM: TOWARDS SHARED VALUE CREATION OF FIRMS AND NATIONS

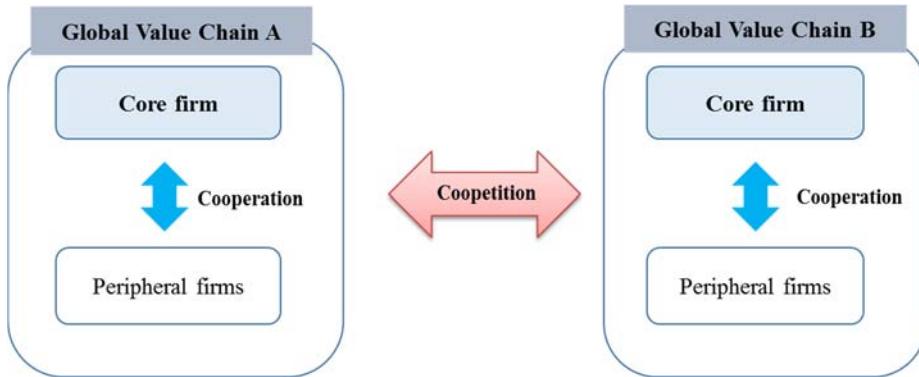
The open economy under pure competition has however been under siege (Porter and Kramer, 2011). Business has been facing various major issues regarding economic and social issues. With slowing down economic growth, domestic politics have tilted towards setting barriers in economic ties as well, and blaming firms' for the failure. While capitalizing on the most productive areas is the priority for global managers, the national policy makers often limits the competitiveness at the national level, disregarding the importance of internationalization on building national competitiveness (Moon, Rugman, Verbeke, 1995; 1998).

The conflict between firm managers and politicians lies in different scopes of understanding on competitiveness. Firm cooperation and competition take place in global term. Not only their inputs are sourced abroad, their supporting and related activities are geographically dispersed. Firms also attempt to locate themselves close to the global market in order to serve each market more efficiently. In this sense, it is critical for firms to seek locations or other firms that are competitive to form competitive ecosystem compared to competitor's ecosystem. However, it is easy to think that the national competitiveness is also bounded by the national borders. As the national economies stagnates or social problems occur, it comes down to national problems and requires domestic measures and policies to solve them.

However, firm competition is no more about firm-to-firm competition and their competitiveness is determined by the entire value chain activities. Firms that serve as the architecture may play a significant role in coopting suppliers and enhancing the entire value chain activities. Not only does a firm sustain the competitiveness of its own, its competitiveness is also largely dependent on others' competitiveness (see Chapter 3).

As seen from Chapter 4, the competitiveness of (domestic) firms affects the domestic economy and competitiveness. Firms are unparalleled vehicle for improving efficiency of national resources, creating jobs, building wealth and meeting human needs (Porter and Kramer, 2011) but they do so in cooperation with other firms that form the value chain. The more competitive ecosystems you are in, compared to your competitor's, the more competitive you become (See Chapter 3). Firms, however, cooperate across national borders and the value added activities are disaggregated internationally. The global value chain activities, which expands the business ecosystem to the international scope, needs to be compatible and complementary with each other. Their connectivity across national borders helps them to build new sources of competitiveness, overcome business obstacles at home and become resilient to various situations such as natural disasters, and overcome domestic issues (See Chapter 4). The global value chain also do not target specific markets, but their commerciality expands the horizon of business landscape which makes the value chain competitive. Thus, firms enhance their competitiveness through building competitive international business ecosystem. National competitiveness in this fashion should be understood in terms of global value chain and how firms could become competitive agents for efficient resource transfer and business facilitator across national borders. The more (local) firms are connected and contribute to competitive international business ecosystems, the more nations will benefit from global activities of firms.

Figure 5.1. Competitive Landscape of International Business Ecosystems



As seen from Table 5.1, even though the focal firms are direct competitors, firms gain competitiveness when they could form the entire value chain to be efficient and cooperative. The core firms need to cooperate with complementary and peripheral firms to enhance the competitiveness of the global value chain. However, the firms do not necessarily need to restrict their businesses within the boundary of business ecosystem. Firm competitiveness should be sought across the boundary as well. In fact, collaboration between the firms across business ecosystems helps the entire business ecosystems to continuously co-evolve together and enhance competitiveness (i.e., prevent from falling into growth trap). For example, LG Display (under the same LG Group with LGE) supply screen displays (for iPhone 6, LG Display supplies screens in cooperation with Toshiba Mobile Display) for Apple's iPhone, whereas for iPhone 4, SEC supplied RAM and internal memory chips, as well as the A4 chips that take up almost 26 per cent of the iPhone's components costs (Phone Areana.com, 2011). Samsung actually built its business model around supplying components to others to give it the scale to produce its own products more cheaply (The Economist, 2011).

As seen from Chapter 3, not all the participating firms need to be the most competitive to make the entire international business ecosystem competitive. The added value is the

sum of the value created by each constituent parts and processes that make each value creation activities to be fit with each other. As a number of firms specialize in different productive tasks, the efficiency of the entire value chain depends highly on the way companies are interconnected (WIR, 2013). In other words, the national policies should be tilted towards facilitating local firms to be connected to the global chain and form strategic fitness with cooperating firms and nations.

This is not only to create economic dependency and cooperation among nations but to facilitate a freer economic market system and further growth of firms across nations. Thus, it is critical particularly for underdeveloped nations to not only look into how local firms need to be grown within the national boundary but to look into how they can be connected to global value chain activities of globally competitive multinational firms. Moreover, the self-sufficient countries also need to expand their business horizon to remain competitive. Therefore, the national or firm boundary needs to be redefined with the concept of business ecosystem to facilitate competitive streams of value chain activities.

While incorporating the analysis of the previous chapters, the following presents the real business environments where national policies take an opposite stance to that of the global managers with the economic downturn, and evaluates the literatures on national competitiveness to find reconciliatory measures for developing both national and firm competitiveness. By adopting the four critical factors presented in Chapter 3, this chapter also presents case studies on facilitating the national economic development through building international business ecosystems. Lastly, this chapter concludes with providing strategic policy measures in building national economic competitiveness.

5.1. The Recent Trends: A Gap between the Theory and the Reality

Despite the scholarly studies on positive and negative impacts of globalization, with the

economic downturn in the developed countries such as the US and the EU, politicians and the public have taken sides with the negative impact of home country multinationals going abroad. Unemployment rate has been increasing in the US and the EU after crises in these regions in 2008 and 2011 respectively. Industries have been losing competitiveness, giving their long standing competitive stance to firms from the developing countries. For these reasons, politicians have taken protectionist view, asserting that domestic productions may compensate for the transaction (additional) costs that occur in offshoring. To US policymakers, offshoring was one of the key agendas, due to jobless recovery from the 2001 recession. In response, the multinationals have taken reshoring strategy, bringing back the jobs and productions back home.

Historically, there was a strong linkage between economic growth and job creation throughout the business cycle, yet, the US economy showed a different result where the policymakers and researchers blamed offshoring for being account for 3% of net job loss in the US. In 2004, the former President George W. Bush signed the law of the American Jobs Creation Act that contained more than USD 13 billion a year in tax breaks to encourage firms to create jobs and invest in America (Kocieniewski, 2011).

Due to the hollowing out effect of certain industries, the policymakers have also declared that the cost arbitration should not be the key or sole factor in directing firm productions to foreign locations. Manufacturing is particularly important in increasing jobs, promoting growth and innovating industries in home country. Manufacturing process has indeed developed dramatically—the automatic process may reduce the costs that come from transportation and a higher labor cost in domestic market.

Thus, the negative impacts of offshoring and positive impacts of reshoring have been emphasized particularly in the US and the EU markets.⁵⁴ Levine (2012) cited that

⁵⁴However, even though other developed counties have similarly gone through economic downturns, Japan, which has suffered critically from relying greatly on domestic productions have been pushing firms to go abroad to do businesses. The reasoning behind the Japanese policies is that the competitiveness of Japanese multinationals stimulate the economy by increasing exports of the domestic products and increasing wages,

offshoring accounts of long delivery times and rising shipping costs for overseas production, quality control issues, and the physical separation of design and production personnel and a lack of safeguards on intellectual property outside the US. Increasing customer dissatisfaction of US firm services have also cost the company to a great extent (Levien, 2012). Dell Computer Company suffered from poor services where Boeing, an aircraft maker that outsourced 70 per cent of the development and production of 787 Dreamliner to around 50 suppliers, suffered from huge delays in supplying and distributing parts and components on time. Particularly, when one value chain activity is delayed the subsequent activities suffered greatly.

Based on the negative impacts of offshoring (and benefits of reshoring), the Reshoring Initiative was founded in 2010 in the US in an attempt to bring manufacturing jobs back and fix the trade balance (mainly to reduce imports) and strengthen the skilled workforce and defense industrial base. Before the re-election of Obama Barrack in 2011, the President had a dinner with the major CEOs of the US firms and asked Steve Jobs, the former CEO of Apple Inc. if the jobs can come back to the US. Apple employs about 43,000 workers in domestic and more than 700,000 people abroad to make the iPhones (Duhigg and Bradsher, 2012). Despite the facts, Steve Jobs answered that the “jobs cannot come back” (Duhigg and Bradsher, 2012). The reason has much to do with the nature of the global competition. Apple is not competing with domestic US firms, nor can it maintain its competitiveness by being successful in the domestic market. Back then, there were fast growing companies from SEC and LGE from Korea and Xiaomi from China as well as Nokia from Finland partnered with Microsoft from the US that were growing rapidly or taking over a large market share.

Korea and China had cost competitiveness compared to the US firms whereas Nokia had productions in cost-effective places within and outside of the EU. The cost advantage

undergirding consumer spending and feeding back into stronger business investments (Iwatani, Orr and Salsberg, 2011), after failing to increase exports from depreciation of yen.

was not the only reason; the US has superior technology--production and process technologies, which can compensate for the low cost (Apple's products are not pursuing cost leadership strategy). The underlying logic to Jobs' decline was not only about the cost competitiveness of China. Jobs mentioned that the US does not have competitiveness in producing a large number of productions within a short period of time, nor can it be found readily in other low cost places. The motivation of going abroad can be seen from the cost and speed competitiveness compared to the US yet choosing China as a strategic location of Apple lies in the competitiveness of China compared to those countries with similarly low-cost wages.⁵⁵

After Tim Cook took over the CEO's position, Apple is working with domestic suppliers to produce Mac computers in Texas and additionally in Arizona. Motorola, after being acquired by Microsoft, has also started manufacturing in Texas to produce top tier phone Motor X in Flextronics.⁵⁶ GE is bringing back water heaters and refrigerator to Louisville, Kentucky, and Wham-O is bringing back Frisbees to California from China. Chesapeake Bay Candle shifted its production to Maryland from China in 2011, Ford Motor Co. is also adding capacity for 200,000 vehicles with plans to invest USD 6.2 billion in US plants by 2015 in Michigan, hoping to save 1,200 jobs, and also bringing back the production of medium-duty trucks from Mexico to Ohio to save 2,000 jobs (Deligio, 2014; The Economist, 2013b). Sleek Audio is also moving its production from Dongguan, China to Florida to produce high end earphones due to quality control problems in China, whereas Otis Elevator is moving its factory from Mexico to South

⁵⁵Six weeks prior to the introduction of new iPhone Jobs was not satisfied with the plastic screen that could be readily scratched. Jobs wanted to change the entire smartphone manufacture to glass screens. With limited time frame, he had to outsource the productions to Foxconn that could make the production of --- number of phones possible within 6 weeks. According to New York Times, Foxconn woke up its workers in the middle of the night to get the job done in time (The Economist, 2011).

⁵⁶Flextronics used to be the former manufacturing company for Nokia. Other parts of Motorola phone is being produced in Argentina, Brazil and China. After opening the factor in the US, the advertisement slogan has changed to "designed by you, assembled in the USA" which is to tackle Apple's slogan of "designed by Apple, assembled in China". The recent ad of Apple no longer has the assembled part; it is solely, "designed by Apple in California".

Carolina to keep R&D closer to manufacturing and reduce logistic costs (The Economist, 2013b). Google and Caterpillar are adding new capacity in the US.

The European countries are taking the similar move. The speech of Prime Minister David Cameron of UK at the World Economic Forum shows that cost is not the only reason to bring back the jobs but it is about the ability to create shorter and more responsive supply chains and ease of communication with customers.⁵⁷ The Regional Development Committee also published the paper to support “reshoring initiatives seeking the re-entry of production and services from third countries, specifically in the context of Europe’s traditional industrial heartlands (EPRS, 2014). The reasons were similar to those that were presented by the US, increasing costs from developing countries (e.g., labor costs and transportation, inventory costs) and issues related with product quality and IP rights. Some of the representative of European firms taking a reshoring strategies are as follows. Hornby, the UK toy manufacturer announced its intention to relocate a partial part of its Airfix model aero plane lines back to the UK from China and India. Piquadro Spa, an Italian leather bag and fashion accessory manufacturer, also reshored production of its high end product lines from China to Italy (Euroasia Industry, 2014).

Yet, European firms are near shoring than reshoring. European countries face limitations in bringing back jobs and industries domestically as they still face large challenges domestically. The labor market is still inflexible and costly and major European countries are owned and managed by family owned businesses that their activities are more loyal to their countries of origin in the first place. This had been particularly evident in French automobile industry (The Economist, 2009b). Near shoring of European firms are targeting Morocco and Romania to avoid some of the political and social pressures. Compared to the Northern European countries, French, Spanish, Italian and German

⁵⁷According to a study by EEF/GfK on the UK firms in reshoring the reasons include 1) minimize logistics costs, 2) reduce inventory costs, 3) reduce product delivery time, 4) minimize supply chain risks, 5) improve quality of inputs, 6) wage inflation overseas, 7) improve environmental credentials, and 8) improve customer collaboration. Among the large firms, the shortening of the delivery time was the first whereas for the SMEs, the priority was on improving quality of inputs.

firms are concentrated in European firms. For example, Germany's Mittelstand, the mid-sized family firms sell their products globally but they are operated in Europe (The Economist, 2013b). Germany's Leon Group, a global supplier of automotive wires, optical fibers and cables systems which situated six of its production plants within Morocco, to reduce manufacturing costs and benefit from close proximity to primary European markets such as Portugal, Spain, France, Germany, the UK and so forth.

The issue of "A giant sucking sound" has also popped up in the Asian context. The political and social pressure that direct firms toward home country has been increasingly evident as opposed to the theoretical extension discussed in Chapter 4. The reshoring activities of the firm, however, raise concerns in various ways. The analysis on cost cutting was based on rudimentary cost calculations such as labor costs, cheap commodities, and favorable exchange rates, but actual costs derive directly and indirectly throughout the entire process of value chain activities. According to the newly presented calculating methods—the Total Cost of Ownership, by the Reshoring Initiatives show that the 27 cases on the price differences between China and the US, ranging up to 69 per cent, can be reduced down to 4 per cent when aggregating all cost and risk factors associated with offshoring (Reshoring Initiative Website, 2014).

Yet, the calculation disregards the costs of reshoring its impact on competitiveness. The reshoring activities may hurt the entire global value chain and has negative impact on the entire business ecosystem – a change in supplier or location may not guarantee strategic fitness between firm activities. The reshoring may compensate for the negative impacts from offshoring yet the impact on home countries are questionable as it might not bring back the jobs or increase productivity; jobs may be created domestically under the assumption that the reshored firms will perform better than the times of offshoring, and therefore fix the trade deficits.

Table 5.1. Trade Measurements and Productivity

Rank	Country	Total GDP	LP	ALPG	Rank by ALPG
1	United States	16768.05	114,914.14	1.37%	76
2	China	9469.124	19,665.81	10.22%	2
3	Japan	4898.53	75,233.83	1.03%	82
4	Greece	3635.959	66,699.44	0.78%	94
5	United Kingdom	2523.216	85,374.15	0.88%	90
6	Russia	2096.774	37,410.24	3.79%	28
7	Italy	2071.955	78,851.62	-0.43%	115
8	Iraq	1876.811	39,166.49	4.20%	23
9	Canada	1826.769	85,273.71	0.45%	106
10	Australia	1505.924	91,943.19	1.02%	85
11	Spain	1358.687	82,815.15	0.95%	86
12	South Korea	1304.468	66,437.67	2.56%	48
13	Mexico	1260.915	37,271.24	0.48%	104
14	Ireland	870.275	100,983.97	1.51%	71
15	Netherlands	853.806	83,945.82	0.52%	102
16	Turkey	819.99	42,383.28	1.92%	58
17	Senegal	748.45	5,128.39	1.02%	84
18	Switzerland	650.431	80,529.59	0.42%	107
19	Argentina	610.288	33,663.65	0.51%	103
20	Sweden	558.949	89,155.12	1.50%	73

Note 1: The ranking and figures are calculated by the author.

Note 2: GDP stands for gross domestic production in USD millions (2013). GDP per capita in 2013 US\$ (converted to 2013 price level with updated 2005 EKS PPPs). Labor productivity (LP) per person employed in 2013 US\$ (converted to 2013 price level with updated 2005 EKS PPPs). LPG stands for average labor productivity growth from year 2000-2013.

Note 3: The shaded countries are both included in the list of top Total GDP and LP.

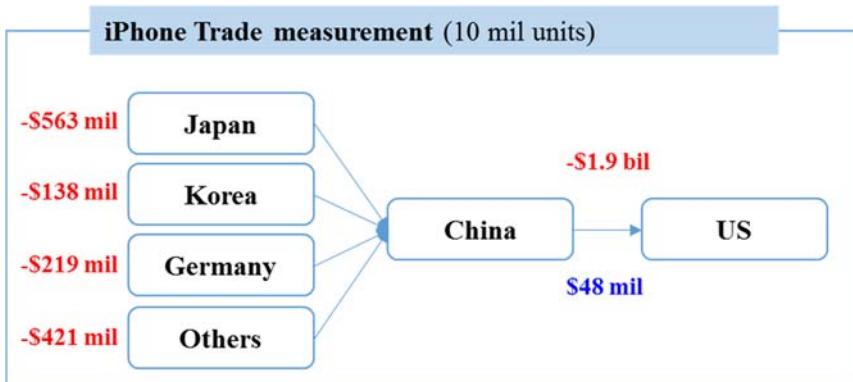
Source: UNCTAD Stat database.

The recent trend to reshore firms on national impact also only focuses on trade effects. Trade figures, however, can be misleading as the underlying logic of international trade does not reflect the reality of imperfect markets of factors, products and employment. The productions are also not taken place within the national borders which raises double or multi counting issues. The Figure 5.2 shows that the conventional trade measurement

shows that the US records USD 1.9 billion of trade deficits against China by its export of 10 million units of iPhone assembled in China in year 2009 (Meng and Mirodout, 2011). However, when the added value is calculated, parts and components are produced in countries like Japan, Korea and Germany and exported to China for a mere assembly. Disaggregating the estimated USD 178.96 for the wholesale costs, only 3.6 per cent or USD6.50, of the total goes to China. This amount is a composite of assembly and shipping costs to the US. Considering the other value added activities from the US, the US accounts of the USD 48.1 million for the same amount of iPhones (Batson, 2010). For parts and components, application processor, flesh memory and battery are produced in Korea, display in both Korea and Japan, e Compass from Japan, and power management, radio baseband, transceiver from Germany. The US firms attributed for Wi-Fi, memory, touch screen and touch screen controller and audio CODEC. Although the calculation may not be perfect, the Figure below shows the importance of global value chain activities in understanding the interconnectedness of businesses and where the value is created.⁵⁸

⁵⁸Some of the concerns arise with the calculation as the exact value added amount cannot be precisely calculated. For example, Toshiba Corp. and SEC that make components for the iPhone wholly assembled them in their home countries, but many other companies have factories in China or elsewhere. Some other countries that added value to the production of iPhone are Taiwan and France.

Figure 5.2. Trade Value Flow Measurement



Source: Meng and Miroudot (2011); Batson (2010).

Particularly, with multi-counting issues, the trade scholars have developed Input-Output measurements across national borders. The deepening businesses between nations make firm to re-export imported goods after some refurbishments. The World Input-Output Tables was developed to discount the calculations of the multiple counting from trade (re) exchanges, while the interconnectedness or the global value chain participation of one country are calculated by calculating the accumulation of the ratio of imported goods in exported goods with the ratio of exported goods in the exporting country's imports.⁵⁹ International trade and domestic employment are related in both microeconomic and macroeconomic ways (Escaith and Inomata, 2013). When nations export goods that require high skilled labor, the economy tends to show a high ratio of high skilled labor force (Escaith and Inomata, 2013). Similar results show in trade patterns as well. Although nations export goods and services that may be categorized under the same STIC digits, the products that are traded may be different in value-added. For example,

⁵⁹The skyline chart is calculated based on the World Input-Output tables to analyze the domestic economy's self-sufficiency and industry structure. The economy would be self-sufficient if it could satisfy all the demand by its own domestic production (Escaith and Inomata, 2013).

SEC has manufacturing in Korea and in Vietnam. The manufacturing in Korea is focused on high value added manufacturing where the workers are managing the entire production processes from Korea to Vietnam. Vietnam, on the other hand focuses, on goods that require low skills (Escaith and Inomata, 2013).

Such economic dependency within the same industry structure gives an important implication that trade measurement can be misleading as the flow chart of import and re-export of manufactured goods show multicity of particularly the intermediary goods, and second, the FDI does not necessarily lead to the substitution effect, but more of the complementary effect that postulate the importance of economic interdependency and connection through global value chain.

However, even the World Input-Output trade measurement does not also reflect the value chain activities that are connected through FDI. In the case of SEC's manufacturing investment in Vietnam, SEC produces USD 12.9 billion dollar of electronic goods and USD 12.6 billion is exported to other countries. Only the remaining USD 0.3 billion is consumed in Vietnam (Moon and Parc, 2014). In this case, the export of Vietnam does not reflect the role of the Korean firms contributing its exports and measures the trade balance between Korea and Vietnam. Thus, it downplays the role of FDI in trade measurement. FDI measurement, on the other hand, is not free from criticisms. The FDI measurement, originally accounts of equity investment, thus, it does not consider firm networks that are formed through arm's length transactions such as outsourcing and licensing.⁶⁰ While trade and FDI measurement reflects a certain level of global business activities, it is crucial that the global value chain analysis is taken into account to reflect

⁶⁰The UNCTAD reports that the measurement of FDI has three components: equity investment, reinvested earnings, and short- and long-term inter-company loans between parent firms and foreign affiliates. IMF Committee on Balance of Payments Statistics, Annual Report (1993) reports that “[t]he components of direct investment capital transactions are recorded on a directional basis (i.e., resident direct investment abroad and nonresident direct investment in the recording economy). The FDI net inflow records the net flow of nonresident direct investment in the recording economy, while the FDI net outflows records the net flow of resident direct investment abroad” while the OECD adopted the Benchmark Definition of FDI which reflects the “lasting interest evidenced when the direct investor owns at least 10 per cent of the voting power of the direct investment enterprise” (OECD, 2008).

the value added streams through trade and FDI means.

From the business ecosystemic perspective, firms need to form efficient measures to collaborate with each other in order to facilitate cooperation and minimize additional transaction costs that arise across national borders. In reality, particularly in the case of economic downturn, policy makers take protective measurements such as protective measurements towards firm and industries, heightening trade barriers (including non-technical barriers) which induces additional costs (Ahearn, 2009). Firms are also pressured to invest abroad and remain domestic which may not in the long run enhance national welfare. In fact, the industries in the US that has taken protective measurements have experienced downturn of the entire industry rather than to revive the industries. The manufacturing sector in electronics and shipbuilding are the best examples. While the US has enforced protective trade measurements, they have failed to stimulate the revival of the firms.

Policy measurement should not be also focused on specific factors in addressing the national competitiveness issue. Policy measures still focus on trade and employment, yet trade barriers are based on the Mercantilist view that measurements are implemented to encourage exports and restrict imports. The neo-classical trade perspective sees that import is good as long as the export is greater than the import. The studies of the business and economic perspective on FDI also aligns with the same logic that the competitiveness comes prior to the globalization that outward FDI represent competitive firms (Porter, 1990; Dunning, 1993). Inward FDI was regarded to be not positive in measuring competitiveness until Reich (1990) presented that inward FDI contributes to enhancing national competitiveness than outward FDI firms. Inward FDI creates employment and enhances the national wealth.

As seen from Chapter 4, the business ecosystemic perspective posits that both inward and outward FDI contributes positively to national competitiveness as they actively transfer input factors across national borders and, at the same time, their growth

contributes to welfare distribution of home country. The more firms are connected to competitive global value chain, the more the firms will create employment and upgrade labor skills. Moreover, both import and export contribute to the enhancing national competitiveness as the diversity from imports enhances the customer value and competition among firms that may make the market more efficient. If imports of intermediary goods are blocked, the complementary firms that use those intermediary goods face challenges at home. Therefore, the trade measures also need to take into account of the entire value chain analysis.

In order to reconcile the gap between academic point of view on globalization and the reality of nations taking protective measures, this chapter review key studies and their implications for building competitiveness. Extending on theoretical implication from international trade and FDI theories, the following section suggest that global value chain analyses present efficiency measurement towards building national competitiveness. Ironically, the existing studies of international transactions posit protective measurements, thus, the following sections suggest that the protective measures do not enhance value creation; rather enhanced compatibility, complementarity, connectivity and commerciality build the competitiveness of nations. In order to solidify the findings, this study presents case studies and suggest national strategic policies to be implemented toward orchestrating the global value chain from the ecosystemic perspective.

5.2. Enhancing National Competitiveness: From Trade to Global Value Chain

There are various perspectives on defining competitiveness. In international economics, national welfare (advantage) was determined by trade balance. If a country exports more than it imports, the country is coined as a competitive country. This is because the underlying logic is that there is no mobility of factor endowments across national boundary. The Mercantilist view on international trade flourished from the 1500s, as national competitiveness was considered as the amount of the resources in addition to

their military power. The way they can enhance their productions was either to acquire more resources, through military attack and enemy resources acquisitions, or through more diplomatic means of trade.⁶¹ One's gain comes from the other's expense led to the thinking that trade surplus (more gains of gold and silver holdings) is a relative gain over other countries, making countries to impose restrictions on imports to limit the scope of competitiveness of other (trading) party. The zero sum game, however, was refuted by Adam Smith, who insisted that countries can co-exist and grow together (win-win game) through trade if countries were to specialize in comparatively advantageous resources.⁶² Adam Smith's absolute advantage avers that nations may increase the net welfare through trade by specializing on their absolute advantages. Because nations allocate and utilize resources more efficiently than other countries, they reduce opportunity costs or any inefficiencies in productions within a national boundary. This makes the firm to gain via trade than attempting to allocate resources that they do not have advantages in (resource inefficiency). Here, trade gains are presumed to be equally distributed to the producers. Yet, as there are countries that do not have absolute advantages over other nations in any kinds of industries, David Ricardo introduced the concept of the comparative advantage to show that if a country were to focus on what they are relatively good at within the national boundary, they can specialize in such tasks with lower opportunity costs and gain via trade with others a country. The county increase its net welfare via trade not only in terms of the production efficiency but by increasing the scope and utility of the consumers.

Eli Heckscher and Bertil Ohlin complemented the studies to explain why there are differences in advantages of nations (H-O Model). Because the resources are allocated differently across nations, some sources are more abundant in certain locations. If

⁶¹The resources were regarded as gold and silver holdings as opposed to the size of the inherited input factors such as the land and the labor. The land size with more population were the sources of resources of productions which opened a bigger opportunities of the market.

⁶²The focus shift from the Mercantilism to Adam Smith's theory was from the total output amount to the input factors (resources). Reduction of cost per unit was based on the supply surplus in H-O Model and on productivity in Leontief Paradox.

nations focus on productions in abundant factor endowments, they can reduce costs and increase the net welfare through the distribution of the gains created through efficient (cheaper) productions. This shows that the greater the gap there is between the relative advantages (factor endowments within the nation and across nations) the greater the gain there will be from free trade. However, Leontief (1963) found that the cost of the resources are not simply regarded by the quantity of the resources but also by the quality of the resources. If the resources are more productive, they can increase the output more effectively.⁶³ Thus, international trade models have concluded that in order to increase trade gains, the countries need to allocate resources more efficiently and increase productivity of the endowed resources.

The international trade theories, the models may have been misleading by their stringent assumptions of free accessibility of the resources within the national boundary and no factor mobility across nations. First, the resources are scarce and they cannot be distributed equally to all sellers within the country. The competition of firms is limited to the domestic scope. Second, input factors can be readily mobilized across national borders by multinational firms and national competitive advantages can come from outside the national boundary (Moon *et al.*, 1995; 1998). In short, the international trade theories were shifted to and complemented by the theories of firm-based theories.

Modern trade theories deals with international trade between similar countries and that in the dynamic (long-term) prospect. Similar countries gain from international trade that are producing the same goods if they could target similar market segments. Linder's (1961) explanations were based on country similarity hypothesis: as market becomes more globalized, the demand for similar goods are enhanced among countries that have similar income, taste and the need.⁶⁴ While Linder (1961) examined that countries can

⁶³Leontief found that the US, despite the assumption that it is a relative capital intensive country, exports to a greater amount of labor-intensive industries due to higher productivity of labor in international market. This is known as the Leontief Paradox.

⁶⁴Country similarity hypothesis based on high income countries implies that country similarity can be affected by cultural, political and economic agreements, as well as the distance between the trading

trade among similar market to exploit economies of scale, Bhagwati (1982) explained that it is due to Schumpeterians “dynamic capitalism” that intra-industry trade is facilitated in search of new markets. They agree on the point that the market becomes similar that they increase the demand of similar goods.

The dynamic perspective of international trade is presented by Raymond Vernon in 1966 as an extension to H-O model (also referred to as the factor proportion theory) to explain different stages of trade balance. In the very beginning, a country (the US) would serve the domestic market first. As the market expands, the export increases due to increasing returns to scale until the production is moved to foreign countries that builds on to their comparative advantage. This decreases the utility of experienced consumers, pressuring manufacturers to seek lower cost countries and in return, increases the import to the original production country. The trend can be seen particularly in cost sensitive and manufacturing based industries such as manufacturing that tend to have a long lifecycle. Thus, as opposed to similar country hypothesis, Vernon (1966) asserted that the trading countries gain competitiveness in time series.⁶⁵

The development models to boost national competitiveness have basis on industry efficiencies in which countries compete. The level of efficiency is measured in terms of a finite amount of output versus the cost per unit which misleads countries to regard that cost reduction is the key to national competitiveness. This misleading indicator was pointed out by Porter (1990) when he studied one hundred industries across ten countries that it is not only about efficiency but also about the rate of progress. While productivity (increasing returns to scale) is measured in a static mode which can be easily imitated and caught up by other competitors, national competitiveness lies in the productivity

countries.

⁶⁵This is an extension to the static analysis of neoclassical economics which assumes constant returns to scale where the dynamic perspective takes into account of economies of scale (mass production) and the notion of learning. Though the learning aspect has not been explicitly incorporated in the product lifecycle part, this can be understood as the learning aspect of the latecomers to the industry, while on the other hand the forerunner countries can also accumulate knowledge and reduce costs associated to multiple productions of similar goods throughout a long period of time.

growth—how to create a higher value and foster environmental improvements (Porter, 1998). Thus, this brings to the core point that firms being the most efficient means to create value, it is not about what firms compete in, but how firms compete.

Porter (1990) states that national competitiveness is determined by interacting forces of four endogenous determinants with two exogenous factors (also known as the diamond model). The four endogenous factors are factor endowments, the sophistication of the market, the context for firm strategy and the cluster. Whereas the factor endowments in classical economics was considered only in terms of factor quantity and cost, Porter (1990) stresses on the factor quality and specialization. With sophisticated inputs, if there were no markets that can determine the value of the inputs, it would not be able to appropriate the full value of it (Rugman, 1981). In this regard, the sophistication of the market that can anticipate the needs of others in foreign markets. The business context for firm rivalry and strategy determines whether firms are willing to invest in upgrading capital equipment, skills, and technology.⁶⁶ The rivalry of the firm stimulates firms to imitate and consider not only cost but also differentiation which contributes to productivity progress. The last determinant is the geographical cluster. Despite the decreasing importance of location in globalized business world, the cluster of firms, universities, markets and other institutions increases productivity vis-à-vis outsourcing to another country as outsourcing may complement disadvantages of the nation/location but cannot create advantages. The cluster in agglomeration economics was rather considered in terms of cost reduction but cluster studies go far beyond it--“information, transaction costs, complementarities, and incentives as well as public goods that result from both public and private investments” (Porter, 1998: 10).⁶⁷

⁶⁶The business context also includes the investment climate and policies toward the competition of context which can be broadly defined as the macroeconomic and political stability, the tax system, labor market policies and intellectual property rules and their enforcement (Porter, 1998: 10).

⁶⁷Porter (1998) illustrates that cluster mean a group of companies, suppliers of specialized inputs, components, machineries, and services, and firms in related industries as well as the downstream activities and other institutions that provide specialized training, education, information, research and technical support such as universities, think tanks, vocational training providers, standard setting agencies, trade

The two exogenous factors of Porter's diamond model are the government and the chance event where the role of the former is perceived to have a great stake in enhancing productivity through heightened domestic competition, as opposed to industrial or economic policies, and decrease barriers for firms and pump up the quality of the consumers. The chance event, on the other hand, is the uncontrollable variable that may have a dire impact on businesses such as subprime mortgage crisis in the US, the financial economic stagnation in Europe and the US as well as nuclear disaster in Japan.

The competitiveness of nations, however, is not free from criticism. Paul Krugman had been the opponent to the concept of national competitiveness, stating that it is wrong and dangerous (Krugman, 1994). As opposed to the popularity that prevailed in the US from the 1980s that countries compete as firms do, Krugman (1994) asserts that countries do not compete and the productivity of nations do not reflect the real competitiveness of a country because they can be artificially manipulated easily with macroeconomic measures and policies which have already begun dangerously to distort economic policies. The competitiveness is not a matter of a zero-sum game where one's competitiveness rise is a relative decrease of another country. Domestically, the productivity does not matter if the purchasing power grows significantly slower than output. Moreover, the country is not as interconnected as firms are and international trade indicators matter only to countries whose economies are supported by international trade. Trade took only a small portion in the US economy during the 1950s when it was one of the most competitive in the world economy. In other words, the national competitiveness, if measurable, is determined by the domestic productivity growth rate, not the relative growth rate compared to others and the concept of competition among countries led governments to subsidize or set trade barriers in order to protect the domestic market.

However, both Porter (1990) and Krugman (1994) bases the terminology of national competitiveness to domestic realm. Particularly, the reason that the US was competitive

associations and other collective bodies covering cluster members (Porter, 1998: 10).

during the 1950s was because competition in global markets was not prevalent. The major economies with superior resources and the largest markets that could consume the products were limited to the Western parts. The production was also taken place in most of the Western areas. In short, in a unilateral global productions, competitiveness can come be analyzed in domestic scope. As the world was developing, the major productions and consumption market also shifted and there are increasing number of global players that posit compete and collaborate with the US firms. Indeed, the US is not self-sufficient in a ways to sustain its competitiveness. In order to be relatively competitive over other firms, to increase value creation, resource development and enhance productivity, firm activities need to be connected to the global value chain and collaborate with global combative players.

Additionally, nations do not always operate at the status of the best productivity frontier line. In reality, it is impossible for any industries of a nation to position themselves at the frontier line, meaning there are endogenous inefficiencies. Whether a nation has inefficiencies arising from infrastructure, macroeconomic policies, or human resources, the country may enhance the productivity by improving the interaction among the four determinants and fully utilizing the resources that are available at home market. In order for nations to gain competitiveness, not only full utilization of resources are crucial, but it needs to strategically position themselves at the productivity frontier line in order to create competitiveness, vis-à-vis with other nations and at the same time collaborate with them. As seen from the collaboration of Korea and Vietnam through the agent of SEC, the countries have strategically positioned themselves for collaboration. The choice of the Korean firm to choose Vietnam over other lower cost nations could be explained that Vietnam operates closer to the productivity frontier line compared to similar cost productions. As the transactional costs occur from geographical, psychological and institutional distances, it becomes ever more crucial for national policy makers to foster environment where firms can collaborate with lower transaction costs.

In neoclassical economics, the resource efficiency has been rooted from the studies of

Adam Smith's invisible hand and specialization. The basics was to use the national resources more efficiently. If a nation were to concentrate their production on the resources in which they have absolute advantage, they can increase the net welfare of the nation via international trade. The extended theory of David Ricardo of comparative advantage focuses on resource efficiency compared to another nation. If a nation does not have any absolute advantage over another then it needs to concentrate on the resources that can relatively create a better output and less opportunity costs. However, why there differences in the resource efficiency across nations was found by Eli Heckscher and Bertil Ohlin. The resource efficiency arises from the abundance of the factor endowments as the cost per unit of the resources diminishes. They presumed that the resource cost would be lower simply by the supply amount of the resources that are available to them. In the end, the resource efficiency was calculated in terms of "the lowest cost per unit" of the resources.

Table 5.2. Key International Trade Theories on Building National Competitiveness

Authors	Contents	Analysis
Smith (1779)	Absolute advantage	Abundant resources
Ricardo H-S-O Model	Comparative advantage Factor endowment	
Armington (1969)	Abundant resources (cheaper goods)	
Krugman (1989)	Abundant resources (diverse products)	Diverse resources
Leontief (1986)	Productivity	Superior resources
Melitz (2003)	Productivity (Profitability)	
Grossman & Helpman (1991)	Quality ladder (Vernon's PLC), time series	(Superior) Resource upgradability
Porter (1990)	Productivity growth (high value added industries)	

Table 5.3. Key GVC studies on National Competitiveness

Authors	Contents	Analysis
Grossman and Rossi-Hansberg (2006); Pilat (2013)	Trade in Tasks	Superior resources (High value added activities)
Meng and Miroudot (2011)	Value added amount (Input - Output Measurement)	
OECD, WTO, EUROSTAT, IDE-JETRO	Value added analysis (empirical)	

The major paradigm shift from the international traditional trade theories to new trade theories from Krugman (1989) lies in the definition of the sources of national welfare. Traditional theories have developed from absolute to comparative advantages where the advantage is created from lower cost production. The more abundant the resource there is, the more advantage the nation has on that resources. The new international trade theories, however, posit that the advantage is created from the scarcest resources which are closely translated to superior sets of resources. It is because the superior resources, in terms of technology improves the production costs and time which in overall reduces the cost per production. The third wave in the shift lies with the dynamic or competitive perspective. As nations compete through changing locational advantages, Grossman & Helpman (1993), and Porter (1990) averred that it is the ability for continuous growth of nations. However, their analysis still lies in the advanced factor conditions that superior resources facilitates (a rapid) growth compared to other nations, and therefore creates the competitive advantage of nations.

The economics theories behind FDI postulate that the more competitive nations have scarce resources such as advanced technology that firms invest abroad in order to exploit such resources similarly in home countries as they do at home (Hymer, 1976[1960]; Dunning, 1979; 1981; 1988). Such analysis have been complemented with the new FDI theories that emphasize on the complementation of the resources also focuses on the capability of the firms to develop superior sets of resources to enhance firm competitiveness (e.g., Pitelis and Teece, 2010). The extended imbalance theory presented in Chapter 4, and the four competitive sources presented in Chapter 3, suggest that in order for firms to be competitive, the resources may be just “good enough” resources but the combination of the resources that enhance the efficiency leads to building competitiveness of the firm and the entire ecosystem. Therefore, it is critical for firms to co-develop and allocate resources efficiently to address imbalances in resource portfolio and among the value added activities of collaborating firms. The resources of the complementary firms need to fit with the resources of the others which does not

require the resources to be superior to create entry barriers and generate monopolistic rents. In the end, the theoretical background to creating national competitiveness suggest that, despite the importance of globalization, nations need to take protective measures in order to create superior resources that are not readily imitated or substitutable by others. The resources should also be immobile in order to sustain the monopolistic rent creation which makes firms not to collaborate on resources sharing or developing. Particularly, the relationship with (foreign) firms was considered to be in a competitive than a cooperative manner.

Even from the innovation and strategic management field, developing superior resources in relation to innovation has been the core concept. In practice, industrial policies are tilted towards innovation-driven economy (Porter, 1990). Innovation has long been portrayed as the most important aspect at both the firm and national level. Firms have long pursued to be the innovative firm, not only to enhance firm performability but also to promote economic growth. As Schumpeter (1937) stated, innovation is at the heart of economic progress where it gives the new firms the opportunity to replace the incumbent ones yet firm innovation is the “perennial gale of creative destruction” meaning that innovation in overall creates benefits for the economy yet at the sake of other firms’ painful sacrifice (The Economist, 2009a). At the individual firm level, innovation means a unique position in the market where firms can either bring down the cost or deliver a differentiated value which is assumed to be automatically transferred to high profits of the firm.

The studies on innovation has been studied in dichotomy of several points: disruptive versus incremental, open versus closed, creation versus application, production versus commercialization, and final outcome (product) versus process. Despite various aspects, innovation has been analyzed from the firms’ perspective either at the macro level of technological trajectories (Dosi, 1985) or at the level of individual firm capabilities (Kogut and Zander, 1993). The outcome or the value delivered via innovation was mainly considered from the firm’s perspective, as it was in the economics theories.

However, if a firm failed to succeed despite technological development, it is judged as the failure due to management myopia or a lack of insights to market needs (Christensen, 2013). It is because as innovation makes the firm to set and prolong entry barriers against (potential) threats, it sets similar barriers against the consumers as well. Without a clear understanding of the market needs and the gap between the producers' expected utility and consumers' actual perceived utility put firms at risk. However, the studies do not go beyond the aspect that there is always unexpected market risk and thus needs a thorough market research.

What has been lacking in the studies of innovation and firm performability has been simply the notion of minimum input and maximum output. Although human kind is obsessed with maximization, it was only considered in terms of technological point of view, not the value it will bring to the overall technological development progress, or in terms of producer's point of view, and not the actual value perceived by the consumers. The study by Adner and Levinthal (2001) incorporates the perspective of the consumers—the interaction between technology development and the demand environment that evaluates the value of the progress. Due to diminishing utility of consumers on performance improvements throughout the technology lifecycle, the new technology is either well appreciated or belittled. As an extension to their solid empirical backup, innovation thus should be measured in terms of the actual value that is attained by the consumers versus the price they have to pay (Woodruff, 1997; Gale, 1994).

In strategic management, the addition of value added perspective has paved a way of the thinking on superior resources of the firm. Rather than making rational choices based on the cost factor, the firm is willing to invest in resources that have a higher expected value. The value is a very vague concept yet it can be best translated as the utility in economics term. If the utility satisfies the consumers compared to the price they have to pay, the choice of the consumers still remains as a rational choice, whereas it would not in economics. On the other hand, if the firm were to produce a higher value for the consumers, despite a higher cost structure compared to its competitors, the firms can

achieve a successful differentiation strategy.

However, by offering a differentiated value, the firm will be providing products that are targeting a different market segment (i.e., higher end market) which will reduce the competition in the market, and in the end bring a higher utility to the firm that stems from the monopolistic position of the market. This aligns with the RBV where firms gain competitive advantage by having valuable, rare, inimitable and non-substitutable resources of the firm (Barney, 1991).⁶⁸ The resources need to be protected by isolating mechanisms such as time compression diseconomies, historical uniqueness, embeddedness, and causal ambiguity (Barney, 1991; Dierickx and Cool, 1989; Peteraf, 1993; Bharadwaj, 2000).

The theories of strategic management and international business theories have gone through another aspect of change, to incorporate the dynamic perspective. The studies postulate that it is not about which (inherited) resources firms have but the capability of firms to “continuously create, extend, upgrade, protect and keep relevant the enterprise’s unique asset base” (Teece, 2007: 1319).

The orchestration of resources, or the dynamic capability of the firm has become crucial in the context of international activities. Whereas internationalization and foreignness has been less emphasized in the studies of MNE and FDI (Pitelis and Teece, 2010), competitiveness arises from firms’ capability to allocate and coordinate resources across national borders efficiently. In Chapter 3, the competitive sources come from efficient orchestration of value chain activities of the firm. The more firms that are connected to the competitive value chain, the more benefit will be transferred to national competitiveness (Giuliani *et al.*, 2005).

Therefore, the next section applies the concept of the business ecosystem to develop

⁶⁸ Industrial organization on the other hand did not much to say about the factor covering innovation as it was taken as exogenous (Pitelis and Teece 2010).

national competitiveness. Whereas existing studies on international activities have posit that in order for nations to be competitive is to have abundant or heterogeneous resources, this is based on the already-competitive economic model. The developed nations have long built heterogeneous resources that could exploit monopolistic rents and attract foreign firms. However, small economies or rapidly developed emerging economies such as Singapore and Hong Kong did not have resources to start from. Therefore the next section present the small or resource-scarce country's economic development model.

5.3. Competitive International Business Ecosystem: Application of Four Critical Factors at the National Level

Creating competitive advantage of nations comes from efficient utilization of resources. However, there are slack of resources (i.e., unemployment) that nations encounter inefficient problems. National policymakers in this respect dealt with the issues by constraining globalization activities to protect the domestic industries and firms. As seen from Chapter 4, setting the boundary to the activities of the firm further constrains resources efficiency (i.e., the Reshoring Initiative in the US).

So far, national policies have tilted towards enhancing only a few aspects such as unemployment, trade, and innovation, of competitive advantage. The few aspects cannot sustain or create national competitiveness as they are interacted with demand factors, related and supporting sectors as well as the business context (Porter, 1990). As firm activities are dispersed across national borders, their activities are affected by foreign' country's environmental and related industry factors (Moon *et al.*, 1998). If they become the barriers to firm operations they incur costs and erode competitive advantages of firms, despite competitive resources firms may possess. On the other hand, if nations could minimize cost and time for production and transactions, firms would be attracted to do business in the location.

Yet, locational advantages change over time. Though certain locational advantages may be attractive at some point of time to some firms, they evolve and deplete along with the economic and regional development. For example, competition in cluster can be beneficial at the initial stage of firm investment but can be unfavorable at a later stage as it creates additional congestions in doing business (Klepper, 2007).

Constant upgrade of locational advantages, however, in host countries is difficult to persist. The sustainability comes from the cooperation between the multinationals and the host countries. In order to maximize rent creation and technological spillover effects, firms cluster closely in attractive locations. In many cases, the host country gives preferential treatment to attract firms in a specific region to solve problems that they currently face. Yet, the argument presented in this Chapter is that the attractiveness of location that are small comes from not a mere tax policy or resources but from an efficient platform that facilitates the global value chain activities.

Singapore has become the hub of the Asian region in investment, trading, and logistics with lack of resources (Ariff and Debrah, 1995). There are multiple studies to how a small nations has become competitive yet the studies remain at the analyses of conventional resources, such as skill building of labor, the development policies, and favorable business policies or macroeconomic measures, and preferential treatments (Haley, Low and Toh, 1996; Abeysinghe and Yeok, 1998; Yue and Lim, 2003). However, their competitiveness building would not have been possible without the activities of the firm. Not only does these two countries have developed firms that could operate abroad, they have also attracted major activities of the firms, such as the Headquarters.

Reinterpreting Singapore's competitiveness through the business ecosystem metaphor, value creation comes from efficient transaction of value added activities. While the existing development model of economies were focused on the primary activities of the value chain analysis, this chapter presents that even nations with critical disadvantages could develop through developing the support activities of the of value chain. This is

similar to the metaphor of platform firms that create value through providing the architecture for module firms to come and exchange in the location. In this fashion, not only the policies need to be favorable, but also the exchanges need to take be cost effective and time effective. Nations thus could serve as the multi-sided firms which needs to enhance compatibility, complementarity, connectivity and commerciality in various firm activities, across diverse industries.

Singapore was able to constantly develop through developing efficient infrastructure with excellent roads, ports and air transportation along with the labor market efficiency and financial market development (WEF, 2013). The activities that Singapore is engaged in with small market size and input resources, were supporting activities of the firms which could serve the primary activities that are concentrated in the Asian region. Particularly, the primary activities regarding extracting raw materials and manufacturing are situated in Southeast Asian region, where it has formed regional ties with these countries. The connectivity of Singapore is enhanced through ports and airports and Singapore's. The studies are supported by hub-and-spoke integration, where the Krugman (1993) found that the benefits to the hub country are greater than to the spoke countries. Puga and Venables (1995) explains that this is because of the agglomeration of industries into the hub country as network effects in multi-sided firms.

When analyzing the industry structure, manufacturing accounts largely in Singapore yet the value added activities of Singapore are related to facilitating primary manufacturing activities and procurement activities. The activities conducted in Singapore are specialized services such as quality control, simple manufacturing, processing, sorting and packaging, and business services such as business coordination, sourcing of raw and semi-finished components, technical support, financing, and marketing, to their subsidiaries throughout the region. Thus, this shows how Singapore has become the hub of major multinational's headquarters, and serve as the multi-sided platform for global value chain activities.

Table 5.4. Analysis of Competitive Sources for Large and Small National Development

	US (Silicon Valley)	Singapore
Compatibility	Vertically and horizontally concentrated organizations Advanced firms, R&D centers, and institutions for training workforce Returning manufacturing sector	FTAs and RTAs High skilled workers and training programs Test bedding (increase standardization) Legal compatibility with advanced countries (e.g., IP, 35 investment agreements)
Complementarity	Linkage with Bangalore for lower price High living costs and housing deficiency, traffic	Shortest time of Doing Business Highly developed logistics and infrastructure hub Best living / working place Fusionopolis (live learn work play)
Connectivity	Investment in domestic linkages Concentrated working fields (computer, IT related service)	200 shipping lines linking to 600 ports of 123 countries 260 cities of 60 countries (6000 logistic providers) Headquarters of Asian region; control towers, Logistics and entrepot services
Commerciality	Connection to the global growing demand needed	High value added industries from (processing, service, finance and so on) Connected to large markets

In order for Singapore to become the hub of global value chain activities, it has enhanced compatibility, complementarity, connectivity and commerciality of the business activities. As illustrated in Table 5.4, Singapore has enhanced economic ties through forming regional trade agreements and preferential trade agreements. National policies have initiated several test beds for various industries for firms to test out different types of new technologies and products. The open platform firm companies has attracted firms to use the location to control and access Asian markets. Legal compatibility has also been critical. While nations in developing stages have not established strict IP regulations or legal rights, local firms would not benefit as much as the multinationals would hesitate to transfer technology in less strict regions (Maskus, 1998). Yet, Singapore has been ranked high for advancing legal and regulatory institutions to make compatible with the global standards, which attracted the quality value added activities.

Talents would not be attracted to Singapore if it did not have favorable living environment that needs to complement the activities of the work life. Living environment aspect is excluded from the regional or economic development models (i.e., industrial clusters) yet Singapore has been able to provide complementary advantages compared to its neighboring countries. Fusionopolis is a cluster designed to provide an environment for information and communications technologies, media physical sciences and engineering industries. Singapore integrated the “work-live-play-learn” aspect in the first phase of the development which provides serviced apartments, retail outlets, fitness club and technology showcases (EDB Website, 2015).

Singapore has also become one of the most connected areas through the development of ports and airports. The development of logistics and infrastructure as well as the network connectivity enhanced Singapore to become the entrepot of services and business activities. It serves as the region’s financial center as well, providing a secure support for backward and forward activities. The agglomeration of value added activities also creates network externalities in transaction and business costs (Fujita, Krugman and Venables, 1999). Currently, Singapore hosts thousands of foreign firms’ headquarters to

coordinate their regional subsidiaries and affiliates. With the growth of Chinese economy, Singapore has played core roles in global value chain connected to China. It has also become one of the leading re-export specialists with Hong Kong, in which their combined re-export amount represented about 11 per cent of Asia's total merchandise trade in year 2009 (Escaith and Inomata, 2013).⁶⁹ This in turn also helped Singapore to serve the largest markets, and enhance its commerciality. With its connection with the largest markets in Asian countries, multinational firms find Singapore more attractive for the headquarter place.

On the other hand, clusters were well developed throughout the US. Examples are ICT cluster in Silicon Valley, automobile industry in Detroit, motion pictures in Hollywood, financial services in New York in the US. Silicon Valley has been largely studied for its development of the region from a semiconductor based firm clusters to a world class ICT region, the existing studies have focused more of the interactions that take place within the region and with its connectivity with the major cluster (e.g., Bresnahan, Gambardella and Saxenian, 2001; Sturgeon, 2003), the Bangalore (Moon and Jung, 2008). In the case of Silicon Valley, universities and research centers were able to help firms to create and exchange new knowledge, financial firms and banking sectors were able to fund R&D activities and sell new technologies, where other suppliers and related firms were able commercialize the technologies. Whereas the interaction of firms in Silicon Valley was able to create the most advanced sticky resources of the location (i.e., social capital), the region faces limitations with regard to complementarity and connectivity. Whereas Silicon Valley (or the US) is known to be self-sustainable and sufficient country, some firms have failed that disregard commerciality of technologies or new products that could not meet the demand satisfaction (Bresnahan, *et al.*, 2001).

⁶⁹Singapore, together with Hong Kong (China), has been increasing commercial exchanges in regional production networks of China by facilitating the transshipment of Chinese intermediate goods from one location to another. Particularly, Chinese EPZs find that even for intra-regional transactions, it costs less and saves time to transport products through Hong Kong because of its advanced logistic and infrastructure capacity (Escaith and Inomata, 2013).

With increasing competition, the US has been losing competitiveness in labor that many firms are connected to Bangalore. Traffic congestion and housing problems have also become an issue which need to be dealt in order to complement the favorable workplace. The US were able to attract most of the value chain activities to a certain location such as Silicon Valley and Hollywood. However the domestic realm has not been able to make firms survive in the region. Particularly, where demand is important for growth of the location, it is crucial for firms situated in the region to be connected to the global value chain to enhance commerciality aspect of the location.

The failure of the development despite comparative advantages at national level are seen in many countries. In the case of Azerbaijan, the location has advantage in terms of climate where 9 out of 11 climate zones are present in the land of Azerbaijan. The country has comparative advantage in agricultural products as well as in renewable energies such as wind (the capital city Baku means the land of wind) or solar energy (Azerbaijan means the land of fire). However, due to lack of its connectivity with the global value chain, it was not able to develop industries or enhance its exportation of agricultural goods. Particularly, without any packaging and food processing industries, the agricultural products could not be commercialized, nor produced at a large scale. Although suggestions that are provided for the economic development of Azerbaijan are focused on enhancing the quality and the productivity of farmers through training programs, the farmers would not be able to commercialize the products without connected value added activities. Their targeted markets and are also limited to the region, which could not improve the demand for Azerbaijani products. While the country of origin effect would also have an impact on increasing the demand of goods and services, the complementary products such as packaging and branding would be able to enhance the competitiveness of the Azerbaijani products.

Table 5.5. The Development Barriers and Facilitator of Azerbaijan's Industry Structure

	Agriculture (Food Processing)	Oil and Natural Resources
Compatibility	9 out of 11 climate zones (e.g., best water quality) Compatibility with core competencies	Contract of the century (production sharing): 31 international contracts
Complementarity	No complementary industries for supporting agricultural products	Branobels,* Zoroastrianism SOFAZ (State Oil Fund of the Republic of Azerbaijan)
Connectivity	No connections to competitive multinationals or global value chain (e.g., packaging) No complementarity to overcome country of origin effect	400 firms (29 countries) of IFDI Baku-Tbilisi-Ceyhan oil pipeline TRASECA** 2,600 tankers with AGG crude (Ceyhan terminal)
Commerciality	High commerciality (low price, high quality) Small quantity Limited to regional trade (Russia, Ukraine, Turkey EU)	High commerciality (demand)

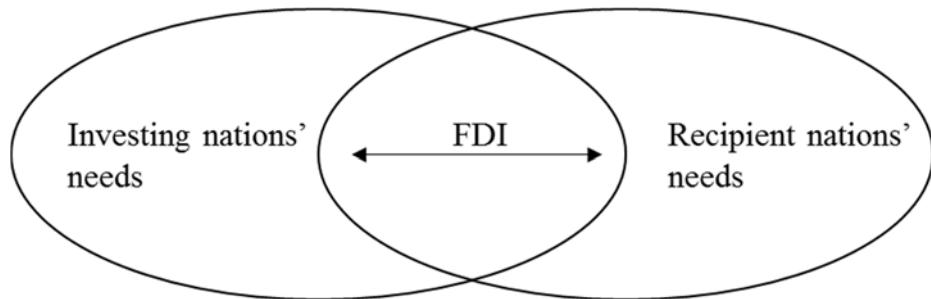
Note: * 50% of world global production, 75% of Soviet Union before the end of the world wars

** Transport Corridor Europe-Caucasus-Asia (the European Union and 14 member States of the Eastern European, Caucasian and Central Asian region)

On the other hand, Azerbaijan was able to develop rapidly by its natural resources industries such as gas and oil. Comparatively with the agricultural sector, Azerbaijan was able to develop connectivity with other countries through implementing Baku-Tbilisi-Ceyhan (BTC) pipeline, TRASECA and Baku-Novorossiysk, or Northern Route Export Pipeline (NREP). The oil industry also had complementary advantages. With the long history of oil industry in the country, the country has potential for cultural and tourism development. It has linkages to the development of Nobel Prize, where another kind is being revived. The disadvantages concern with environmental pollution from oil and chemical industries in Azerbaijan, which also affect the health care of the public. As elaborated in Table 5.5, the four factors are critical in enhancing strategic fit of the local activities to global value chain activities from business ecosystemic perspective. Without efficient management of the national resources, despite their comparative advantages, continuous value creation for economic and regional development would be obstructed.

While the existing studies on economic development suggestions are related to developing superior or abundant resources for primary or high value added activities, the business ecosystem perspective avers the building strategic fit of the value chain activities and enhance the supporting activities to attract diverse value added activities for diversification of business sectors and activities. For countries that do not have superior or abundant resources may be able to develop from supporting and complementing the activities of multinational firms, while the developed nations could also develop supporting activities for the primary activities that are operated in other parts of the world and enhance participation in global value chain activities. Competitiveness comes from the most efficient way of doing businesses (productivity level) through portfolio of firm networks. The competitiveness of firms is transferred to the welfare of the home country and enhances the competitiveness of home country. It is, however, not about the degree of globalization but about how to complement the disadvantages at home through enhancing the four criteria among the global value chain activities.

Figure 5.3. International Business Ecosystem Perspective on Regional Development



Source: Yim (2013).

The concept of international business ecosystem can be extended to regional and economic development strategies of the multinationals that have changed from exploiting advantages to creating mutual value between the investing firm's countries and the host country through the means of the multinationals from the international business ecosystemic perspective. By examining the intersection in the needs of the investing country and the host country, the two countries can enhance collaboration and fitness which could co-evolve together (Yim, 2013). While the four criteria are important in creating the shared value in economic ties, a critical deficiency in any of the four criteria may degrade the competitiveness of the industry, or may hinder the development of regions and economy, even with the comparative advantages of the country.

CHAPTER 6. CONCLUSIONS

Firms cooperate to construct the entire value chain across national borders and their competitiveness largely depends on the strategic fit of the entire value chain activities, compared to their competitors' value chain. For sustainability, firms need to expand the scope of ecosystem boundaries to attract new comers to the value chain to sustain their growth and upgradability. In order to incorporate both aspects, the concept of business ecosystem is adopted to emphasize how firms need to cooperate and co-evolve with each other to enhance strategic fit in the value chain activities, through four factors of compatibility, complementarity, connectivity, and commerciality.

However, as firm competitiveness is built across national borders, their strategies have been contradictory to national competitiveness policies (nations face problems regarding hollowing out effect and increasing unemployment). This paper first empirically proves that firms participating in competitive global value chains leads to national competitiveness. Furthermore, nations become the architecture of various value chain activities across diverse industries that come together as modules to create value which in turn transfer to national economic competitiveness. Applying the new critical factors of compatibility, complementarity, connectivity, and commerciality on global value chain, this dissertation shows that it is crucial that these value added activities need to meet four critical factors to be strategically fit to competitive global value chains. This model postulate that competitiveness does not come from high tech or value added industries but from efficient management and orchestration of competitive global value chain.

Innovation and economic wealth are created through reducing transaction costs, time and number. Efficient management of global value chain leads to both firm and national competitiveness. This is the case of small strong economies where they become the architecture of the value activities that are dispersed worldwide. Their national policies

and industries need to be developed in a way to enhance the strategic fit of value added activities across national borders.

Therefore, the presented international business perspective is critical for the following reasons. First, the dissertation links various studies of trade, FDI, business ecosystem (global value chain) and platform studies and builds on theoretically. The dissertation finds limitations to existing theories and suggests comprehensive analysis for critical factor for building competitive advantages. The theoretical extensions are made in two studies, one on competitive advantages and the other on international business studies. For competitive advantages, this paper presents a comprehensive and systematic framework of compatibility, complementarity, connectivity and commerciality. For international business studies, this dissertation postulate that global activities enhance firm and national competitiveness through addressing any imbalances in value chain activities and in home countries. Addressing imbalances could be done through the application of the four critical factors.

Third, by applying these critical factors at the national level (international business ecosystem), the dissertation analyzes why a few small countries have been successful becoming the most competitive economies in the world. Although these countries may have scarce resources, they have built the most efficient platform that connects with the most competitive global value chain activities and create network externalities.

Fourth, by conducting empirical analysis this paper validates that enhancing global firm competitiveness is critical for national competitiveness and thus gives strategic implications that national policies needs to be tilted towards open and efficient market economy, in order to enhance national and firm competitiveness. Any restrictive or protective measures does not create additional value or national competitiveness. Rather, they hurt the competitiveness in the long run from excluding themselves from the global value chains. Moreover, the analysis should be conducted in a global scope and domestic problems such as unemployment and economic concentration can ben also

addressed from adopting international business ecosystemic strategies. In short, this paper not only makes theoretical contribution but also conducts empirical studies to better reflect the business world and give strategic implication for both businessmen and national policymakers.

The main findings and contributions are important with growing concerns over economic dependency. While open economy has contributed largely to national developments, nations still take protective measures in the case of economic stagnation and domestic social problems. As the theoretical background to globalization was developed based on the exploitation of the monopolistic assets, concerns arose from the developed countries developing faster through high value added industries and the less developed countries depending on the developed countries, through complementary or peripheral industries. The increasing income gap as well as the relative gains between the South and the North present economic dependency which hinder a few countries to take protective measures on opening up the economy and fail to negotiate on free trade. With the concept of business ecosystem, however, the developing and the developed must collaborate to enhance fitness in the value chain in order to develop as many competitive value chain activities as possible. The developing countries may not be able to develop without the connections to the ecosystem while the developed countries would not be able to continuously enhance their competitive advantages without complementing the cost disadvantage they have at home markets.

Moreover, the county's role in orchestrating the global value chain gives strategic implications particularly for nations in scarce resources. Although the developing models of the countries were based on developing superior resources or possessing abundant resources, international business ecosystem perspective allows resource-scarce countries to gain competitiveness through developing competitive platform that connects and facilitates efficient value added activities of the multinationals.

This study provides foundations to various studies as well. First, the study can be

extended to official development assistance (ODA) studies. There have not been much systematic business approach in finding sustainable factors for ODA strategies. Recently, the ODA strategies have been shifted to transferring technological know-how and entrepreneurship to build self-sustainable capabilities. The government aids are transferred in association with private companies. They seek efficient and effective outcomes for both short and long term goals. For example, the Korean firms have collaborated with the governmental organizations to deliver strategic and rapid development of the recipient country. Thus, this study may provide meaningful implications for firms, governments and other institutions in allocating resources and implementing ODA strategies.

Second, this study can be extended and applied to corporate social activities. Porter and Kramer (2011) introduced the concept of creating shared value (CSV), emphasizing that CSR activities also require strategies to minimize costs and maximize output. CSV derives from finding the needs in the value chain of the firm and in that of the receiving party. By bringing in the concept of the platform, this can further be applied to giving strategic implications to the studies of CSV. The concept of platform and four criteria also suggest that CSV activities of firms should entail platform thinking; providing a portfolio of values to portfolio of recipients. Particularly, underdeveloped regions have multiple critical weaknesses that need to be addressed at the same time. Firms that can best solve each of the problems need to come together to build a portfolio of social activities.

Moreover, this study could further be developed for cluster planning. The concept of clusters entail cluster connections across regions, national borders and continents. IT clusters of Silicon Valley in the US and Bangalore in India are good examples. The clusters should also seek balancing out imbalances and fitness which can co-create mutual value in cluster networks.

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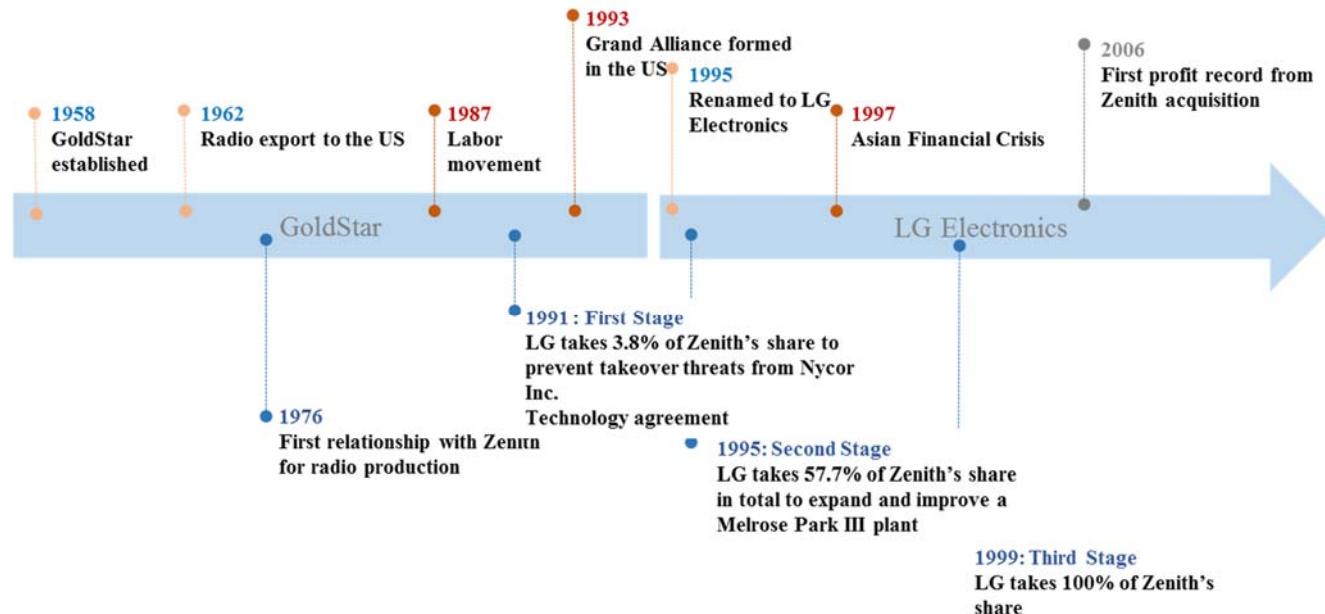
APPENDIX TABLES AND FIGURES

Appendix Figure 1.

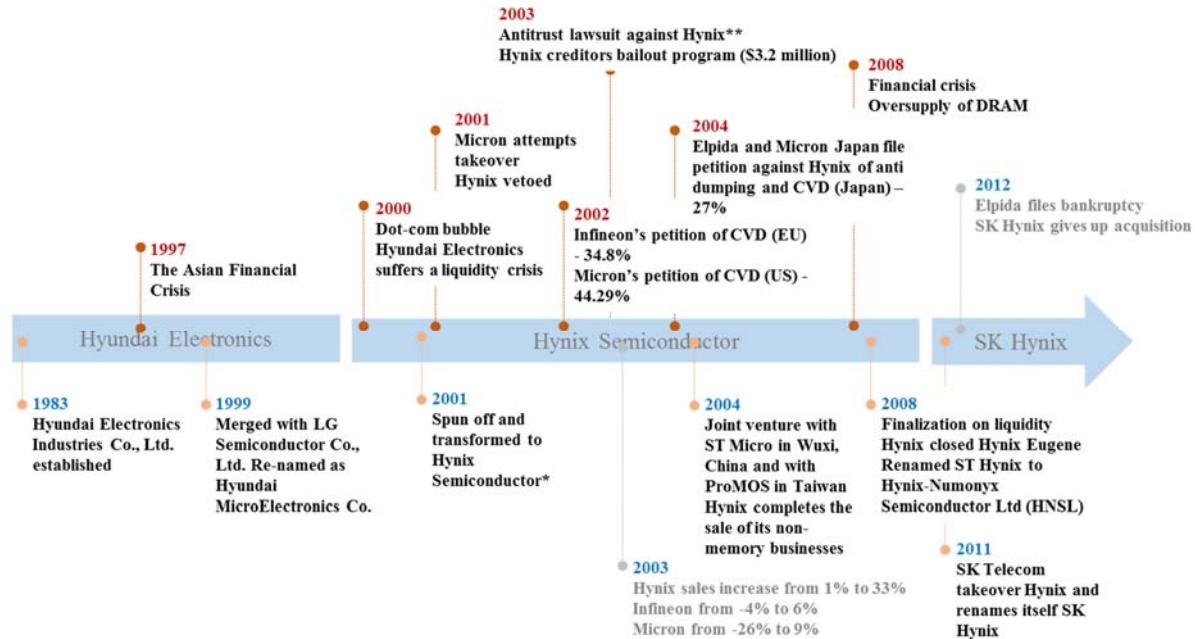
		CUSTOMER-BASED STRATEGY	
		Broad	Narrow
PRODUCT-BASED STRATEGY	Broad	Broad Differentiation	Customer-based Differentiation
	Broad	Broad Cost Leadership	Customer-based Cost Leadership
	Narrow	Product-based Differentiation	Narrow Differentiation
	Narrow	Product-based Cost Leadership	Narrow Cost Leadership

Source: Moon *et al.* (2014).

Appendix Figure 2.



Appendix Figure 3.



*Since 2001, Hynix has sold or spun off more than 20 subsidiaries, only holding on to the DRAM sector. ** In June 2005, the U.S. Department of Justice said that it had uncovered a longstanding conspiracy among the world's DRAM suppliers between 1999 and 2002. The DOJ's investigation, which is ongoing, resulted in hundreds of millions of dollars in fines against global chip makers. Hynix had to pay USD185 million antitrust fine

국문 초록 (ABSTRACT IN KOREAN)

해외직접투자 증가로 인한 국내 고용창출 효과와 기술 유출에 관하여 국가와 기업 경쟁력 강화방안에 대한 상충된 이론이 팽배한 가운데, 이 논문은 경영 생태학적 관점에서 기업의 글로벌 경쟁력은 기존의 경제와 무역 이론인 풍부한 자원 또는 이 질적 자원 개발이 아닌, 글로벌 가치사슬의 효율성을 통한 기업과 국가 경쟁력 창출 모델을 이론적으로뿐 아니라 실증적으로 분석하였다. 경영생태학적 관점에서의 기업의 경쟁력 창출은 기업 자원의 다양한 조합을 이루는 것에서 발생되며, 이는 기업의 가치사슬활동의 호환성, 보완성, 연결성 및 상업 성의 조건을 갖춰줘야 함을 강조한다. 이 네 가지 조건은 국제경영생태계에도 적용이 되어, 한 국가가 경제 발전을 하기 위해서는 국가간 글로벌 가치사슬의 호환성, 보완성, 연결성 및 상업성을 이뤄야 함을 보여준다. 따라서, 이 논문은 국제경영생태계 관점에서 국가의 경쟁력 창출을 위해서는 국가가 기업의 경쟁력 플랫폼역할을 하고, 기업의 글로벌 가치사슬간의 호환성, 보완성, 연결성, 및 상업성을 갖추기 위한 지휘가 중요함을 보여줌으로써, 국가 정책과 법적인 해석도 다르게 되어야 함을 강조한다.

주요어: 국제경영생태계, 글로벌 가치사슬, 플랫폼 전략, 경쟁력