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Doctoral Thesis

**Global Value Chains (GVCs):
Theoretical Integration, Extension, and Empirical
Analysis**

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ABSTRACT

Despite the rise of global value chain (GVC) as an important global phenomenon, the theoretical understanding on GVC has been underdeveloped and narrow in scope. There have been different approaches from various disciplines to GVC, yet these studies are segmented and limited in capturing the entire mechanisms of GVC. In this respect, this study aims to integrate three different approaches – trade, foreign direct investment (FDI), and non-equity modes (NEMs) – to investigate the strategic options of creating and transferring values in a more comprehensive and systematic way.

As the first step, this study proposes the three possible extensions for each of the three approaches (trade, FDI, and NEMs). Specifically, for trade approach, this study extends the unit of analysis from national to regional level by incorporating the cluster theory and suggests that it is not the comparative advantage based on traditional trade theories, but the cluster competitiveness which is a more fundamental factor that determines the locations of fragmented value chain activities. Secondly, for FDI approach, this study provides two possible directions for complementing the limitations of the current transnationality index (TNI) developed by UNCTAD to better assess and measure the degree of multinational corporations' (MNCs) globalization. Lastly, for the NEM approach, this study introduces a new framework to explain the conditions for firms' externalization decision to complement and extend the preceding studies which mainly focus on general drivers of globalization or FDI-related factors.

Among the three extensions of each approach, this study particularly goes in more detail on the third extension by proposing three conditions for firms' externalization governance mode (e.g., NEM). The three conditions comprise fast-growing business, commercial best practices, and multiple competences. This study further argues that if firms satisfy at least one of the three conditions, they are more likely to choose the externalization mode or NEMs. In order to prove the explanatory power of the integrated approach and the conceptual framework of the three conditions for externalization, this study conducted rigorous case studies of Apple and Samsung Electronics, by focusing

on their smartphone sector.

The case study finds that although Apple and Samsung Electronics are well known for their high degrees of externalization and internalization across GVC, both firms perform many of the value chain activities by combining both internalization and externalization modes simultaneously. This proves the usefulness of the integrated approach. On the other hand, the three conditions can also well explain their externalization choices in many different value chain activities. In addition to the case study, this research conducts a quantitative test for further generalization by expanding the scope of the industries and the number of sample firms. To be specific, this study tested the effects of the three conditions for the R&D partnership choices by Korea's high growth firms. The results support all of the three hypotheses developed on the conceptual framework of three conditions.

Key words: *global value chain (GVC), trade, foreign direct investment (FDI), non-equity modes (NEM), externalization, internalization, Samsung Electronics, Apple, research and development (R&D), partnership*

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ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GVC	Global Value Chain
IMD	International Institute for Management Development
MNC	Multinational Corporation
NEM	Non-Equity Mode
OECD	Organization for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
OS	Operating System
PRD	Pearl River Delta
R&D	Research and Development
SME	Small and Medium-Sized Enterprise
TiVA	Trade in Value-Added
TNI	Transnationality Index
UNTAD	United Nations Conference on Trade and Development
US	United States
WEF	World Economic Forum
WTO	World Trade Organization

CHAPTER 1. INTRODUCTION

The global value chain (GVC) is not a new phenomenon; what have changed over the past decades are the speed, scale, depth, and breadth of global interactions (Elms and Low, 2013). The concept of GVC has been used by different schools of economic theory, development studies, and international business disciplines, and each adopts different definitions and boundaries of analysis. For more effective understanding, this study takes on a business perspective at the firm level, particularly from an extended perspective of Porter's (1985) value chain, which is an important reference for analysis by international business scholars (Cattaneo et al., 2013). Porter's (1985) value chain¹ focuses on value adding activities within a firm in the domestic context.

Gereffi and Fernandez-Stark (2011) said value chains will be global when activities are carried out in inter-firm networks on a global scale. Therefore, GVC extends the original value chain concept in two dimensions. First, Porter's value chain emphasizes the value activities within a firm, while the GVC activities can be performed either by the firm itself or external firms. Therefore, in addition to the intra-organizational collaboration, the governance of value chain is extended by incorporating the inter-organizational collaboration. Second, since the value chain activities are dispersed around the world, the scope of Porter's value chain is extended from domestic to international scope.

There is no comprehensive framework that theoretically encompasses the specificities of GVC (Amador and Cabral, 2016). Among various studies from different

¹ The value chain activities are divided into two broad categories – *primary* and *support activities*. *Primary activities* are those involved in the physical creation of the product, as well as its sale and transfer to the buyer and post-sale assistance. *Support activities*, on the other hand, support primary activities and the entire value chain. Primary activities are divided into five categories (inbound logistics, operations, outbound logistics, marketing & sales, and services) and support activities into four generic categories (infrastructure, human resource management, technology development, and procurement).

disciplines, this study focuses on strategic options (or governance modes) for creating and transferring values across the GVC. GVCs are often governed and managed by multinational corporations (MNCs) through internalization (ownership) and externalization (without ownership) (UNCTAD, 2011). In general, firms have three options in organizational governance for each activity in the value chain, and they are trade (i.e., arm's-length transactions), foreign direct investment (FDI), and non-equity modes (NEMs) (Gereffi et al., 2005; UNCTAD, 2013). Trade and NEMs are typical externalization modes, while FDI is a typical internalization mode.

Trade refers to the transaction of final and intermediate goods, and FDI refers to the transactions of production factors, such as capital, technology, and human resources. FDI involves a certain level of equity holdings, creating an internalized system of affiliates owned and managed by the parent firm. NEMs include contracts, outsourcing, franchising and licensing, and strategic alliances. There have been a long history and extensive studies for trade and FDI while NEM approach has an increasing number of studies in more recent years.

In practice, the three approaches are interlinked with each other. More than 80% of the global exports are linked to the international production networks of MNCs, driven by either FDI or NEM (UNCTAD, 2013). The huge amount of exports of smartphone from Vietnam since the 2008 Global Financial Crisis has been driven by FDI of Samsung Electronics and their affiliates. About 96% of Samsung Electronics' smartphones produced in Vietnam were exported to the global market (Moon and Parc, 2014). On the other hand, billions of dollars from iPhones exported from China are driven by the strategic partnership between Apple and Foxconn, where Apple outsourced to Foxconn as its contract manufacturers for assembling its products in China.

On the other hand, MNCs also shift between the alternative options due to the environmental changes to increase profits. For example, in response to the new government's (e.g., Trump administration) protection policy on MNCs in the automotive industry, MNCs in the automotive industry changed their previous trade option (manufacturing in low-cost countries and re-export to the US) into FDI (producing and

selling in the US) to get access to the US market. Similarly, Korean film makers changed their trade strategy into NEM (co-production with local firms) in order to catch business opportunities from the fast-growing Chinese film market. Therefore, no single theory out of the three approaches (trade, FDI, and NEM) can satisfactorily explain MNCs' strategic options in the context of GVC. We need an eclectic approach which combines the three theories from three different perspectives.

Moreover, there are rooms to further develop each of the approaches. As for the trade approach, there are numerous studies that use different terminologies which aim to explain the growing trade in intermediate goods. These studies mainly focus on the international fragmentation of production processes. Also, they focus on the determinants of national comparative advantages on trade patterns in the GVCs. However, trade driven by MNCs' investment and NEM modes is often not located in the countries with cheapest labor when offshoring the production activities abroad. Within both developed and developing countries, there is some degree of unbalanced regional development which are fostered by the government's regional policies. Trade is concentrated in certain regions such as export-oriented clusters or specialized economic zones. In particular, for developing countries, governments often establish these clusters and pursue faster and earlier development in these regions. Therefore, in order to better examine GVCs from trade perspective, we need to extend the unit of analysis from national to regional level (*extension 1*). One typical approach at regional level is the cluster analysis. Furthermore, trade scholars have developed a series of measures at the national level in order to track the sources of value added for parts and components and services involved in the final products. However, as mentioned earlier, majority of global trade are linked to MNCs' international production networks. Therefore, the second direction in further improving the trade perspective is to expand the unit of analysis of trade in value added from national to the regional level.

Unlike the trade approach, which mainly deals with the production or upstream activities, the FDI approach incorporates all types of activities in the value chain at the firm level. In specific, the FDI literature can be divided into two categories in general:

(1) studies on the conventional FDI (i.e., downward FDI) which is about the investments by developed country firms in developing countries; (2) studies on unconventional FDI (i.e., upward FDI) which is about the investments by developing country firms in developed countries. Unlike GVC measurements at national level (mostly from trade perspective), the empirical studies using firm-level are still relatively scarce although they are increasing (Amador and Cabral, 2016). Among numerous measurements at the firm level, the Transnationality Index (TNI) developed by UNCTAD is the most popular index. TNI is composed of three elements, including the ratio of foreign assets, foreign sales, and foreign employment. However, one of the critical limitations of this index is that it covers only two out of three types of transactions in the GVCs. This is why Apple, which is considered one of the most globalized companies, is excluded from the world's top 100 non-financial TNCs. Therefore, the second extension in this study aims to conceptually extend the current TNI index by adding NEM-related elements to the existing three elements (*extension 2*).

In contrast to the FDI approach which emphasizes MNCs' control through the ownership of their subsidiaries, the NEM approach focuses on explaining how the leading firms in GVCs control and coordinate all of the involved organizations, including those in which they do not have any ownership. However, the conditions of externalization (i.e., NEM) stressed by the preceding studies are mostly FDI-related determinants (e.g., transaction cost) or more superficial drivers of general globalization. These determinants of externalization cannot satisfactorily explain some cases in practice, such as Apple's outsourcing of manufacturing related activities to China. This limitation requires us to introduce new, NEM-specific elements to explain the growing inter-organizational governance in the GVCs. To this end, this study introduces a new framework comprising three elements to explain the conditions under which firms are more likely to externalize certain parts of their value chain activities instead of internalizing all of the activities within the firm (*extension 3*).

For other extensions (i.e., trade and FDI), this study presents many practical examples and cases to illustrate and support the arguments raised in Chapter 3. For trade

approach, I took the example of Samsung Electronics' investment in Vietnam and growing agglomeration of FDIs in this country despite its increasing labor costs compared to other ASEAN countries. Moreover, I took the example of cluster effects on the upgrade of Guangdong Province in China for its sustainability in attracting global MNCs' investments in this regions, Pearl River District in particular, in spite of the substantial increase in the income level and falling supply of labor force. On the other hand, regarding the extension of FDI approach, I took the examples of FDI by Korean MNCs and small and medium-sized enterprises (SMEs) in ASEAN and found that their FDIs are usually associated with other governance modes in terms of trade and NEMs, and such combination of various governance modes help Korean MNCs and SMEs generate and enhance their production networks in ASEAN.

However, this study focuses more on the third extension by introducing three conditions for MNCs' choice of externalization. There have been extensive studies on firms' externalization choice, but the determinants proposed by those studies are mostly based on the FDI-related theories. The theory of transaction cost economics (TCE) dominates among many theories for explaining the choice between externalization and internalization. According to TCE, firms are more likely to select the externalization mode instead of internalization, if the market failure is lower. However, in reality, MNCs sometimes externalize parts of their value chain activities in spite of high market failure. This suggests that there are other critical conditions to explain firms' externalization choice. In this respect, this study proposes three conditions which are fast-growing business, the existence of commercial best practices, and multiple competences.

In order to strengthen the two main theoretical frameworks – integrated GVC approach and the three conditions – this study further conducted a case study of Apple and Samsung Electronics by focusing on their smartphone business, and empirical test to complement the case study and also strengthen the explanatory power of the conceptual framework by including more samples. Specifically, for the case study, this research showed that although Samsung and Apple are well-known for pursuing opposite strategies in terms of producing competitive smartphone product, there are also

some similarities between the two firms when analyzed with the integrated GVC approach. Although Samsung internalizes more activities in the value chain activities, both firms pursue a combination of internalization (domestic in-house development, or FDI) and externalization (trade, NEM) for more than half of the entire value chain activities (Apple: 6 activities; Samsung Electronics: 5 activities).

Moreover, drivers of both firms' externalization can be well explained by the three conditions. Apple's outsourcing to Foxconn for the manufacturing operations and Samsung's increasing trend in outsourcing to local firms in Vietnam for some parts and components are not just driven for cheap labor, but for fast and flexible adaptation to the market changes. In addition, Apple and Samsung's outsourcing activities to key parts and components suppliers from world's well-known MNCs occur not because those MNCs possess highest technology but because their products are the commercial best practices which create highest values. Furthermore, Apple and Samsung Electronics externalize some activities across their GVCs not just to exploit the benefits of specialization, but to maximize values through co-specialization and co-development with their partners.

In addition to case approach for explaining *why* and *how* Apple and Samsung combine various governance modes to perform their GVCs in smartphone businesses, the empirical test proved that Korea's high-growth firms from other industries' R&D partnership decision can also be well explained by the three conditions. The higher the degree of the three conditions, the more likely the observed firms make partnership for more effectively implementing their R&D activities.

The remainder of this study is organized as follows. Chapters 2 and 3 deal with GVC theories on the logic behind the integrated approach for GVC and three extensions, respectively. The following three chapters from Chapter 4 to 6 deal with GVC practices with case studies. In order to better explain the first two conceptual extensions (trade and FDI), Chapter 4 shows many examples and cases for the first two extensions. Chapter 5 conducts the case study of Apple and Samsung Electronics and aims to prove the two main theoretical frameworks proposed in this study (integrated approach of GVC and

three conditions). Chapter 6 then adopts a quantitative approach by using the logistic regression to test the effects of the three conditions on Korea's high-growth firms' decision on R&D partnership. The final part (Chapter 7) concludes by emphasizing the contributions of this study, implications for enhancing firms' competitiveness, and suggestions for further study.

CHAPTER 2. THEORETICAL INTEGRATION

As illustrated in Chapter I, the concept of GVC is the extension of Porter's (1985) value chain which aims to explain the sources of value creation both geographically and organizationally. The literature on GVC can be categorized into the following five main topics: governance, location, coordination among value chain activities, firm performance, and upgrading along the value chains (Hernández and Pedersen, 2016). Among various topics on GVC, this study focuses on the governance modes in the context of GVC. Whereas preceding studies mainly aim to describe the different types of governance modes as well the conditions affecting these governance structures, this study aims to integrate different approaches (or theoretical ground) to GVC governance.

To address this issue, this study first reviews the main issues of each approach in the context of GVC, and discusses the limitations of each approach. Based on the above analysis, it then suggests an eclectic approach by combining the three approaches to analyze the strategic options for organizing value creation and transfer in a comprehensive and evolutionary way. Lastly, this section presents meaningful implications of this integrated approach from two perspectives: (1) the necessity of combining various strategic options for higher value creation, (2) shifting from one to another option in order to adapt to the environment and maximize their value creation. Specific examples are also shown to illustrate the arguments.

2.1. The Trade Approach

GVC studies from trade approach mainly aim to explain the increasing trade in intermediate goods. While the trade in parts and components is not new, its share in the total trade has grown dramatically in more recent years. About 60% of global trade, which amounts to more than \$20 trillion, consists of trade in intermediate goods and

services that are assembled at various stages in production for final consumption (UNCTAD, 2013). Moreover, trade in intermediate goods is rising much faster than the overall trade. This rise is most dramatic after the late 1980s when the developing world was linked more systematically through GVCs (Sturgeon and Gereffi, 2009). The classical trade theories discuss comparative advantage in terms of end products and international specialization in terms of complete industries and integrated products (Arndt and Kierzkowski, 2001). Although many of the insights of traditional trade theory continue to hold, they cannot satisfactorily explain the patterns of trade in components and parts which call for a vast body of research and multiple labels. The following section shows several prominent studies and highlights some of the key arguments.

2.1.1. Literature on Trade Theories

Until the late 19th century, factories normally had an integrated production structure, which is characterized as parts and components being manufactured in sequential units, often clustered locally near consumers (Amador and Cabral, 2016). Hence, the classical trade theories have long emphasized comparative advantages in terms of end-products and international specialization in terms of complete industries and integrated products (Arndt and Kierzkowski, 2001). For example, Adam Smith's trade theory based on absolute advantage suggests all nations through trade can gain some benefits by exporting goods in which they have absolute advantages, and importing those goods with absolute disadvantages compared to their trading partners. David Ricardo, on the other hand, complemented the trade theory of Smith by introducing the concept of comparative advantages. Even if a country has many areas of absolute advantages, it should better focus on the areas of comparative advantages, and import goods with more disadvantages vis-à-vis the trading partners. Heckscher and Ohlin's trade theory from the factor endowment perspective stresses the comparative advantages of nations from the perspective of factor endowments. They argued that nations should specialize in the

sectors where they have abundant factors, which can contribute to maximizing the wealth of nations through trading with other countries.

In addition to the above classical trade theories, some other theories and models were developed by the later scholars in order to explain the increasingly complex world, such as factor price equalization theorem, Stolper-Samuelson theorem, inter-industry trade, intra-industry trade, country similarity theory, and product life cycle (Cho and Moon, 2013). Despite the contribution of these trade theories in explaining the trade patterns among countries, they have a common assumption that the entire production process of transforming raw materials and other intermediate goods into the final consumption goods is completed within the nation.

However, since the 1980s the production process have become more fragmented and dispersed internationally. There are only a few goods or services which are purely domestically made. The primary input factors often pass through several stages for further processing with some value-added from other countries before reaching the consumers. For example, 40% of Mexico's exports to the US are value-added made by US firms (Economist, 2016/12/10). Similarly, GM exported 700,000 automobiles from Mexico to the US in 2016, but 70% of these parts and components were imported from the US. Due to the dramatic growth of trade in parts and components, GVC studies from trade approach mainly aim to explain the increasing trade in intermediate goods.

Although many of the insights of traditional trade theory continue to remain valid, they do not comprehensively explain the patterns of trade in intermediate goods. In fact, the intermediate goods trade is rising much faster than the overall trade. This rise has been most dramatic since the late 1980s. The limitation of traditional theories based on the final goods has stimulated a vast body of research, to explain the disaggregation and dispersion of production activities, and their impacts on production and trade patterns, factor prices, and national welfare as well (see Table 2.1).

Table 2.1 Key Studies on Trade in Intermediate Goods

Labels	Studies
Two-stage model	Balassa (1965), Bhagwati and Srinivasan (1973), Corden (1966)
Multi-stage production	Dixit and Grossman (1982)
Slice-up of the value-added chain	Krugman (1995)
Disintegration of production	Feenstra (1998)
Vertical specialization of trade	Hummels et al. (2001)
Fragmentation of production	Antrás and Rossi-Hansberg (2009), Arndt and Kierzkowski (2001)

The two-stage production model discussed in earlier studies (e.g., Balassa, 1965; Bhagwati and Srinivasan, 1973; Corden, 1966) suggested that the entire production process is divided into upstream and downstream stages. At the upstream stage, the intermediate goods were produced by utilizing the primary factors and then further processed by combining with other primary factors at the downstream stage for producing the final goods. Some other studies (e.g., Melvin, 1969; Vanek, 1963) provided more practical implications for this by investigating the inter-industry flows; they found that the final products in certain industries are used as the intermediate goods or inputs from other industrial goods.

On the other hand, Dixit and Grossman (1982) analyzed the production processes with multiple stages. The inputs are shipped from one country to another and sometimes shipped back again for additional value adding process; such integrated and complicated production processes are coordinated by multinational companies (MNCs). The pattern of production specialization is determined by the nation's comparative advantages. Therefore, the common traits of both two-stage and multiple-stage production theory are that the production process is integrated through a series of vertical stages, each of which adds a certain degree of values for the following stages in the manufacturing processes.

Other studies such as Hummels et al. (2001) and Sanyal (1983) explained the same phenomenon using different terminology of “vertical specialization,” which explains how countries are sequentially linked with each other through the *value-added* in a number of stages of production processes which contribute to yielding the final goods. Hummels et al. (2001) constructed the measure of vertical specialization by using the imported inputs in producing goods for exports. Using this criterion, they conducted empirical tests for 10 OECD and four emerging countries and found that there was a significant growth in vertical specialization for these countries during the period of examination from 1970 to 1990.

On the other hand, Krugman’s (1995) concept of “slice-up of the value-added chain” aims to explain the reasons behind the substantial growth in global trade. The production process is broken into a number of steps located in various countries; the production components comprise numerous subcomponents manufactured in many other countries. The geographical spread among a number of countries requires many exchanges in exports and imports, which increase the volume of global trade. Krugman’s concept is also useful in explaining the emergence of super-trading economies such as Hong Kong and Singapore, which have a quite high percentage of trade to GDP (often the trade value exceeds GDP by several times). These economies play the role of platform by re-exporting goods with little or no additional value to the imported goods. Such trade pattern cannot be well explained by the classical trade theories based upon the comparative advantages or factor endowments.

Feenstra (1998) stressed that the disintegration of production process has driven the integration of global economy through trade coordinated by MNCs. MNCs outsource low-valued added activities which demand a large of number of low-skilled workers to the developing country firms, and then imported these manufactured intermediate inputs back home country for further valued-added on these goods through activities such as advertising, marketing, and research and development (R&D). MNCs’ outsourcing strategy has not only encouraged the substantial increase in trade for the US economy but also the structure of trade shifting from agriculture and raw materials to

manufactured goods or intermediate inputs. The author further argued that globalization through trade in intermediate goods has much more impacts on employment and wages than trade in final goods.

Compared to the traditional trade theories on final products, the theories on trade in intermediate goods have the following characteristics. First, in contrast to the traditional trade theory which considered import as a negative item to GDP, trade theories in intermediate goods emphasize more on the positive effects of imports, because imported inputs determine the quality and competitiveness of the exported final products (OECD et al., 2013). Second, since the production process becomes more fragmented and dispersed globally, it provides more opportunities for developing countries participating in MNCs' international production networks through trade (Sturgeon and Gereffi, 2009). For example, the share of intermediate goods imported from developing countries grew from 5.2% in 1988 to 29.6% in 2006; and the share of intermediate goods exported from developing countries increased from 3.9% to 31.7% during the same period (Sturgeon and Gereffi, 2009). Therefore, developing countries can achieve economic development by increasing the degree of their participation in GVC and upgrading their roles in GVC participation (OECD et al., 2013; UNCTAD, 2013).

Despite the meaningful and influential contributions of these new theories, there are still some critical limitations for explaining GVC. According to these theories, the production and trade patterns are still determined by the comparative advantages, or factor endowments of the nations, which is consistent with the traditional trade theories. Therefore, countries should specialize in the intermediate goods where they have comparative advantages. However, this approach cannot explain the upgrade in the value chain from lower value-added to higher value-added activities for developing countries. Although some studies have suggested the trade impacts on factor prices, they did not show a more comprehensive spillover effects which lead to the structural changes or industrial transfer and upgrade. These effects often involve MNCs' investment activities and inter-linkages with local firms. In this respect, theories of foreign direct investment

(FDI) can complement the trade approaches by investigating the firm activities across national boundaries.

2.1.2. Empirical Trade Literature

In addition to the conceptual development for trade in intermediate goods, the empirical trade literature has introduced various methods for measuring the GVC, due to the limitations of the traditional trade statistics. However, one of the most critical problems is the double or multiple counting. Since traditional trade statistics are measured in gross terms, the intermediate inputs are counted many times whenever they cross a border for further processing (OECD et al., 2013; UNCTAD, 2013). According to UNCTAD (2013), about 28% of global exports are foreign value-added, which also represent the amount of double/multiple counted in global trade figures. For example, although China exports billions of dollars' worth iPhones to the US, which leads to a significant trade deficits of the US against China, majority of the values are not added by China but are from the third countries such as Japan, Korea, and Germany. The value-added by China only accounts for 3.6% of the entire value per iPhone device (Wall Street Journal, 2010/12/15). Therefore, traditional statistics of simple export values from China do not well reflect the extent of a country's real value-added.

Second, traditional trade statistics which are biased toward the trade in goods neglect the role of services (e.g., finance-insurance, R&D, accounting) in creating goods. For example, the factory-gate price based on the manufacturing costs is only around \$200, but the retail price is nearly \$700 when incorporating the costs of services such as design, R&D, and advertising and marketing. Third, using the traditional measurements, we cannot figure out the detailed information about value-added for each process of production. Take the iPhone for example again. The factory-gate price of an iPhone is largely determined by the third country's parts and components. Therefore, when China exports more sets of iPhones, the real beneficiaries are the suppliers of these parts and components more than China. In order to solve these issues, three main methodological

approaches have been introduced by existing studies – international trade data on parts and components; customs statistics on processing trade; and input-output tables (Amador and Cabral, 2016).

Among the three methods, input-output based measures are increasingly adopted by the recent studies for tracking the source country of the value-added. Table 2.2 summarizes some features of the key initiatives by international organizations for mapping the value-added. IDE-JETRO is one of the earliest agencies to develop international input-output matrices. Also, these projects cover various countries and industries. UNCTAD/Eora's project covers the most number of countries and industries as well. Moreover, OECD-WTO's I-O tables were developed more recently and have been used mostly in policy-oriented studies and some other recent exploratory research (Amador and Cabral, 2016).

Table 2.2. Key Initiatives for Measuring Trade in Value-Added

Project	Institution	Data sources	Countries of coverage	Industries of coverage	Time span
GTAP	Purdue University	Individual researchers and organizations	129	57	1997, 2001, 2004, 2007
WIOD	Consortium of 11 institutions (EU funded)	National supply-use tables	40	35	1995-2011
TiVA database	OECD/WTO	National I-O tables,	57	18	1995, 2000, 2005, 2008, 2009
GVC Database	UNCTAD/Eora	National supply-use and I-O tables, Eurostat, IDE-JETRO, and OECD	187	25-500 depending on the country	1990-2010
Asian International I-O tables	Institute of Developing Economies-Japan External Trade Organization (IDE-JETRO)	National accounts and firm surveys	10	76	1975, 1980, 1985, 1990, 1995, 2000, 2005

Note: (1) GTAP: Global Trade Analysis Project, WIOD: World Input-Output Database, TiVA: Trade in Value-added.

(2) The table is reorganized and modified by UNCTAD (2013) and Amador and Cabral (2016).

Based on the above I-O database, indicators related to trade in value-added are developed to complement the traditional gross measures. The data on trade in value-added consider two sources of statistics, including domestic produced value-added and imported (foreign) value-added. The exports of the value-added goods then have two objectives: either for final consumption or intermediate inputs for other goods. There are three most common indicators: foreign value-added as a share of exports, domestic value-added, and GVC participation (see Table 2.3 for definition). A country's total amount of exports consist of foreign and domestic value-added. Since GVC participations index comprises two components (i.e., upstream and downstream perspectives), GVC participation index can complement the two indices of foreign value-added and domestic value-added.

Table 2.3. Key Indicators of Measuring Value-added

Indices	Definitions
Foreign value-added	Part of a country's gross exports consisting of inputs that are produced in other countries
Domestic value-added	Part of exports created within the country, which also contributes to a country's GDP
GVC participation	The share of a country's exports that is part of a multi-stage trade processes, by adding (1) to the foreign value-added used in a country's own exports (<i>upstream perspective</i>) and (2) the value-added supplied to other countries' exports (<i>downstream perspective</i>)

Source: UNCTAD (2013: 126)

2.1.3. Limitations of the Trade Approach for GVC Analysis

Although these studies are useful in explaining the cross-border production sharing, they are limited and still based on the standard traditional trade model. They regard international trade mainly as a multitude of arm's-length, market-based transactions

(Gereffi et al., 2001). For instance, the role of MNCs in offshore production activities is neglected by trade theories. In fact, 80% of global trade (in terms of gross exports) is linked to the international production networks of MNCs, either as intra-firm trade, NEM-generated trade, or arm's-length transactions involving at least one MNC (UNCTAD, 2013).

Second, standard trade theories regard the offshoring production to exploit the cost advantage of foreign countries, which is mainly dependent on the national factor endowments (Arndt and Kierzkowski, 2001). However, in reality, the factor endowments or inherited advantages of a country (e.g., cheap labor) are often not the key consideration of MNCs' location decision for offshoring production. For example, the manufacturing locations of two largest smartphone makers – Apple and Samsung – are China and Vietnam², respectively. The monthly minimum wages of China and Vietnam are not the lowest in the world; their wage levels are similar or even higher than other Asian countries such as Bangladesh, Indonesia, and Philippines. Moreover, both of the two MNCs' manufacturing plants are located in the clusters, in or near the large cities within China and Vietnam. The income level in these clusters, in the case of both Apple and Samsung, is the highest, rather than being the cheapest. This thus implies that there are more important strategic factors which should be considered for the determinants of production locations. This also suggests that the location selection analysis should be better conducted at the regional level (i.e., cluster) rather than the national level.

Third, trade in intermediate goods and services primarily concern the international fragmentation of production activities of a certain industry. However, due to the emergence of multiple functional products, manufacturing of a product requires knowledge from various industries, and the boundary of industry becomes blurry. For example, the automotive value chain encompasses many industries including automobiles, electronics, ICT, and shipping (Giround and Hirza, 2015). Therefore,

² Samsung's assembly plants are dispersed across six countries in the world, and more than 50% of the total production are located on Vietnam.

industry-based analysis of trade approach, the measurement of trade in value-added in particular, cannot capture the entire transactions in the value-added activities.

2.2. The FDI Approach

This section explains the drivers of GVC activity at the firm-level, particularly by focusing on the FDI perspective. In contrast to trade approach, FDI approach assumes the possibility of factor transfer across national boundaries. FDI approach investigates the value creation inside the MNCs comprising the parent companies with their subsidiaries across countries.

FDI theories were first introduced to explain the overseas investment from developed country firms, which is often labeled as conventional FDI (or first generation FDI). However, the investment by firms from emerging countries³ have witnessed explosive growth since the 1990s (or second generation FDI)⁴. Emerging country firms invest both in developing and developed countries. Therefore, whereas the former type of FDI can be well explained by the conventional FDI theories, the latter type (unconventional FDI) possesses distinctive characteristics and needs extended or new theories to explain this (see Figure 2.1). The unconventional FDI has attracted growing attention by scholars particularly after mid-2000s, driven by the numerous Chinese firms' outward FDI.⁵ Scholars have tried the modified or extended conventional FDI theories,

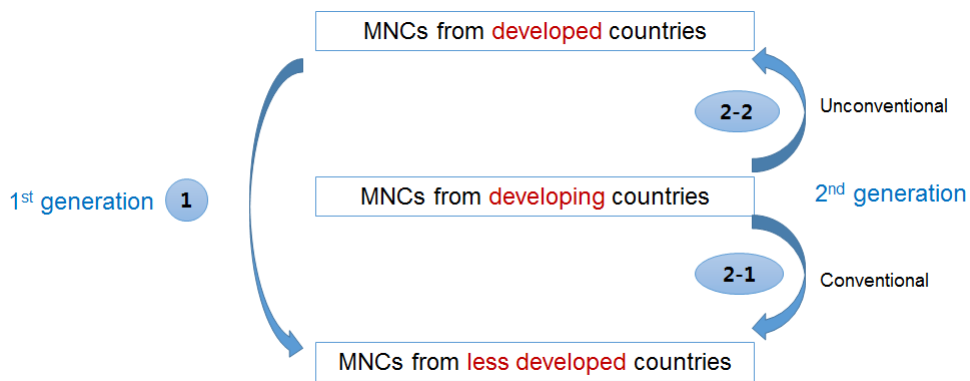
³ According to Hoskisson et al. (2000), emerging markets include 64 transition economies and developing countries. Luo and Tung (2007) defined emerging MNCs using the following three characteristics: 1) firms must engage in outward FDI, 2) firms must effectively control their international activities, 3) firms' international expansions must focus on value-adding activities.

⁴ The percentage of FDI outflows by emerging country firms rose from 5.4% in 1990 to 33.8% in 2014, although decreased a little to 25.6% in 2015. Yet, the growth rate in the recent 10 years (2005-2015) by emerging country firms' FDI is 245%, which is significantly higher than that of previous ten years (1995-2005), which has the growth rate of 110%.

⁵ There has been a steep rise in articles dealing with emerging-country firms published in the leading international business journals since 2007 (2 articles in 2006, 20 articles in 2007, and 29 articles in 2012) (Luo and Zhang, 2016).

or developed new theories to explain the unconventional FDI. The following provides literature review on both conventional and unconventional FDI theories, and then presents the limitations of this approach in the context of GVC.

Figure 2.1. Conventional and Unconventional FDI Theories



2.2.1 Literature on Conventional FDI Theories

The conventional FDI theory initiated by the Western scholars, aimed to explain the MNCs' overseas investment from developed countries to less developed or developing countries. The conventional FDI theories can be categorized into the two classifications depending on their different focuses (see Table 2.4). The first category including the three classic FDI theories commonly explains the FDI determinants or the drivers of going abroad. Therefore, these theories stress the exploitation of ownership advantages developed in their home countries. However, MNCs often create new values during their process of global expansions by combining their extant ownership advantages and local assets/resources. Therefore, in order to complement the traditional FDI theories, since the 1990s, scholars have tried to develop the concept of firm-specific advantages (or ownership advantages) by borrowing the theories of organizational capability view from

the field of strategic management to examine how MNCs build up their firm-specific advantages. The following explain each of the above theories in more detail.

Table 2.4. The Evolution of Conventional FDI Theories

	O advantage	L advantage	I advantage
1. Classical FDI Theories (FDI determinants; exploitation of O advantage)			
1.1. Hymer's (1976[1960]) theory	√		
1.2. Internalization theory			√
1.3. OLI paradigm	√	√	√
2. Organizational Capability View (Sources of firm competitive advantages; creation of O advantage)			
2.1. Resource-based view	√		
2.2. Dynamic capability view	√		
2.3. Cantwell's Evolutionary theory	√	√	√

Both of the previous two perspectives focus on the MNCs' internal elements but less concern the relationship outside the firm. The degree of value creation which depends much on the strategy and organization structure is often affected by the environmental factors. In this respect, some other scholars have incorporated the theories (e.g., contingency theory, business network theory, and institutional theory) dealing with the relationship between the environment and the firm to enrich the FDI theories. Since these theories, particularly the business network theory, are much related to the NEM approach of later section, more details will be explained in Section 2.3

2.2.1.1. Classical FDI Theories

Stephen Hymer, the grandfather of the conventional FDI theory, initially analyzed MNCs from industrial organization perspective in his doctoral dissertation (Hymer, 1976[1960])⁶. Hymer found market failure (i.e., market structure imperfections) as the main driver of MNCs going abroad to exploit their ownership advantages through internalization.

Internalization theory explains the existence and growth of MNCs by using a different type of market failure (i.e., transaction-cost imperfection) based on transaction cost analysis. The conventional internalization theory was first developed by Buckley and Casson (1976), and extended by Rugman (1981) and Hennart (1982). MNCs perform activities internally, rather than through the external market, because of the additional costs from market failure. Any type of market imperfection for intermediate products will pressure MNCs to bypass the market transaction and create their internal markets from the efficiency perspective.

Dunning (1977) introduced a more comprehensive framework (i.e., the eclectic theory or the OLI paradigm) for explaining the choice of entry mode. OLI paradigm is composed of three factors – ownership (O) advantage of the firm, location (L) advantage of the host countries, and the internalization (I) advantage of integrating transactions inside the firm. Dunning (1981) argued that internalization theory emphasizes more the static efficiency of the MNC while the OLI paradigm can better explain the evolutionary growth of MNCs (Rugman and Verbeke, 2008).

⁶ Hymer's doctoral thesis was submitted to MIT in 1960, but was refused to be published as a book. However, later his thesis was recognized by the academia and finally was published in 1976.

2.2.1.2. Organizational Capability View (OCV)⁷

The main objective of organizational capability view is to conceptualize the firm-specific advantages of Hymer's approach and internalization in a different way. The classical FDI theories are mostly based on the economic perspective on FDI. First, cost efficiency (or transaction costs elimination) is the main reason for MNCs going abroad based on the hierarchy instead of transactions of firm-specific assets through market. Second, the firm-specific advantages are examined based on the industrial organization theory (Porter, 1980), which argues the market power is determined by the bargaining power (or market position) against a broader scope of competitors (i.e., five forces of an industry). Such market power is manifested mainly in the firms' final product (e.g., market share) (Forsgren, 2013). Third, although Dunning's firm-specific advantages are based on the business perspective, they still lack an explanation about how these firms' assets are created. In this respect, the OCV can complement the earlier theories by focusing on conceptualizing the firms' ownership advantages from the business perspective. The following adopts the three main theories in the field of strategic management dealing with the sources of firms' competitive advantages with different focuses

Resource-based View (RBV)

The RBV is useful in explaining why some firms have superior performance at a specific point in time, which is often argued by traditional FDI theories as the base for MNCs' going abroad to overcome the costs of foreignness. The RBV argues that in order to maintain a superior advantage against the rivals, firms should have some resources which are difficult to be replicated and imitated. Barney (1986) theorized the RBV, while

⁷ The information of section is abstracted, reorganized, and extended from Forsgren (2013), Moon (2016a), and Moon (2016b).

Penrose (1959) provided the preliminary idea of RBV. Barney (1991) categorized the resources into physical capital resources, human capital resources, and organizational capital resources⁸, and introduced four criteria (i.e., valuable, rare, inimitable, and non-substitutable) for resources that can make firms sustain their competitive advantages.

Some other scholars (e.g., Peteraf, 1993; Priem and Butler, 2001) criticized that Barney's interpretation on the RBV mainly focuses on the resource itself, which is not sufficient to guarantee firms to sustain their competitive advantages, and argued that the concept of capability of exploiting, leveraging, and managing resources should be incorporated. Moreover, RBV is also criticized for being static and cannot satisfactorily explain firms' capability of achieving competitive advantages in the volatile and fast-changing business environment.

Dynamic Capability View (DCV)

DCV is developed by Teece et al. (1997) to complement the RBV for explaining how firms' heterogeneity arises and how to sustain competitive advantages in a rapidly changing environment. According to Teece et al. (1997), DCV is defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Although there are various definitions on dynamic capabilities, they commonly stress firms' capability of reorganizing, modifying, and creating resources to upgrade the current resources and achieve new and innovative form of competitive advantages (Winter, 2003).

⁸ Physical capital resources include physical technology used in a firm, a firm's plant and equipment, its geographic location, and its access to raw materials. Human capital resources include training, experience, judgement, intelligence, relationships, and insight of individual managers and workers in a firm. Organizational capital resources include a firm's formal reporting structure, its formal and informal planning, controlling, and coordinating systems, as well as informal relations among groups within a firm and between a firm and those in its environment (Barney, 1991).

Unlike resources, dynamic capabilities cannot be bought through market transactions, but are built within a firm, and thus they are path dependent. However, there is still no consistent conclusion regarding whether dynamic capabilities can lead to the sustainable competitive advantages. For example, Eisenhardt and Martin (2000) argued that dynamic capabilities can make firms achieve new competitive advantages but cannot make firms sustain such competitive advantages in the long run, particularly in high-velocity and unstable markets.

Evolutionary Theory

A critical issue of OCV is MNC's ability to replicate such capabilities across geographical locations and various cultural contexts. However, it is always not possible for MNCs to transfer their organizational routines and skills from home country to foreign countries. In this respect, evolutionary theory can address the transfer issues in a more detail manner. Kogut and Zander's (1992) combinative capabilities and Cantwell's (1989, 1991, 1994) evolutionary theory are useful to address this issue.

Compared to other theories from OCV perspective, Kogut and Zander's (1992) combinative capabilities stress the need to combine firms' extant knowledge and resources with external knowledge outside the firm. By reconfiguring and recombining the extant available stocks of resources and knowledge, firms can create new values and competitive advantages. The external knowledge is derived from the consumer markets, a certain location (i.e., clustered firms) or firm's networks. MNCs thus can combine knowledge from different locations through transfer within the firm. Unlike the internalization theory, Kogut and Zander (1993) argued that the internalization of cross-border activities by MNCs is not because of the market failure, but because of its superior efficiency in knowledge transfer within the firm hierarchy. The authors suggested that MNCs are the vehicle of knowledge generation and transfer, and firms will not choose external but internal transfer of tacit knowledge and know-how which are difficult to codify and teach.

Consistent with the logic of Kogut and Zander's combinatory theory, the main idea of Cantwell's evolutionary theory is that the superiority of MNCs comes from their globally dispersed networks of production, which allows MNCs to access to various and valuable local resources and capabilities. The inter-linkage between location-specific advantages combined with MNCs' foreign subsidiaries and their own core competences can help MNCs create new values and advantages. However, compared to Kogut and Zander's theory, Cantwell's theory not only concerns the organizational advantages, but also how these advantages develop over a certain period of time.

2.2.2. Literature on Unconventional FDI Theories⁹

2.2.2.1. Distinctive Characteristics of Unconventional FDI

The unprecedented rise of MNCs from emerging economies since the 1990s have inspired a huge number of studies over the past three decades. The traditional FDI theory led by Dunning's OLI paradigm is often criticized for not fully explaining the international behavior of multinationals from emerging economies (Moon and Roehl, 2001). The following will explain the distinctive characteristics stressed by preceding studies on emerging country MNCs' outward FDI in terms of three elements of Dunning's OLI paradigm (see Table 2.5).

⁹ This section is abstracted and extended from Yin (2015).

Table 2.5. Comparison of Studies on Conventional and Unconventional FDI

Conventional	Unconventional	Studies
Ownership advantage	<ul style="list-style-type: none">• Different types of O advantages• To address competitive disadvantages	Cui et al. (2014), Luo and Tung (2007), Makino et al. (2002), Mathews (2006), Moon and Roehl (2001), Rui and Yip (2008), Ramaurti (2012)
Location advantage	Distinct determinants of location choice (e.g., home country related factors, network)	Buckley et al. (2007), Chen and Chen (1998), Cuervo-Cazurra and Genc (2008)
Internalization advantage	Risky and aggressive internationalization process for catch-up	Liang et al. (2012), Liu et al. (2008)

The differences between developed and developing-country MNCs regarding ownership advantages are mostly stressed by the previous studies. MNCs from emerging countries do not possess any significant firm-specific advantages when they engage in the overseas investment in more developed countries. Moon and Roehl (2001) introduced a new theory – imbalance theory – to explain the different patterns of motivations of emerging firms' FDI. The essence of this theory is that the motivation of FDI does not have to be the ownership advantages, but also the disadvantages, or the balance between the two. The upward investments undertaken by emerging firms towards advanced countries are mainly driven to compensate for their disadvantages. By acquiring and learning foreign technologies and other strategic assets which are not available at home countries, they can build up their resources and strengthen other competitive advantages. The FDIs motivated by the ownership advantages are often regarded as the conventional ones, while the FDIs motivated by the disadvantages are the unconventional ones. Emerging MNCs' OFDI should include both conventional and unconventional FDIs, but traditional FDI theories are only concerned with the conventional motivations.

Moon and Roehl's (2001) work has provided a theoretical foundation for later studies on emerging firms' FDI. Although they utilized different terminologies or developed alternative frameworks or models, the basic argument is consistent with Moon and Roehl's (2001) imbalance theory. For example, Li (2003, 2007) argued that the emerging firms' FDI is not to exploit their ownership advantages abroad, but to address their ownership disadvantages and seek the advantages which are necessary for competing in the global arena. Another important study (Luo and Tung, 2007) also argued that emerging MNCs use international expansion as a springboard to acquire strategic resources and reduce their institutional and market constraints.

Hedlund and Ridderstrale (1997) incorporated *exploitation* and *exploration* (March, 1991) in the international business research and argued that the existing dominant theory mainly explained about exploitation but ignored the exploration perspective. Mathews (2006) then introduced the LLL (Linkage, Leverage, and Learning) framework and illustrated how the latecomer MNCs, even without prior possession of significant resources, improve their competitiveness and catch up with the industrial leaders. Makino et al. (2002), on the other hand, showed that FDI from the newly industrialized economies had the characteristics of both asset-exploiting and asset-seeking FDI, depending on the country-specific factors of the host country as well as the firms' degree of the capabilities. Makino et al.'s (2002) asset-exploiting FDI can be linked to conventional FDI and the asset-seeking FDI linked to unconventional FDI.

Regarding location advantages, Buckley et al. (2007) found that in addition to the traditional location factors that attract Chinese FDI (e.g., host market size, natural resources, geographic proximity), Chinese firms tend to invest more in host countries with high levels of political risks and cultural proximity to host countries. Chen and Chen's (1998) study extended Buckley et al. (2007) in terms of the influences of network linkage on emerging firms' FDI location choice. This study distinguished the network into strategic linkages and relational linkages. They found that the former type motivated Taiwanese FDI in the US, while the latter type facilitated Taiwanese FDI in Southeast Asia. Cuervo-Cazurra and Genc (2008) argued that emerging country MNCs are more

prevalent among the largest foreign firms in the least developed countries, especially in those countries with poorer regulatory quality and lower control of corruption. This is because compared to the developed country MNCs, developing country MNCs are more familiar with the underdeveloped institutional environment of developing countries, and thus they can better deal with such difficult situations.

Lastly, unlike conventional FDI by developed country MNCs which pursue more gradual global expansion, developing country MNCs adopt more aggressive internationalization processes for catch-up. Liang et al. (2012) found that the relative advantages and disadvantages of Chinese private enterprises against state-owned enterprises and foreign-invested enterprises at home affect their risk-taking tendency when going abroad. Liu et al. (2008) found that in spite of the lack of knowledge and international experiences, the entrepreneurship promoted Chinese firms to expand abroad without the need to wait until they accumulate enough knowledge on foreign markets and international operations and management. One of the reasons behind this is that the highly motivated entrepreneurs could help them identify the international business opportunities and develop the needed international operations through all available means and resources.

2.2.2.2. Motivations of Chinese Outward FDI

Although several studies have investigated Chinese motivations for investing abroad, they have not fully covered a comprehensive picture of Chinese OFDI. Yin (2015) provided a new comprehensive framework to examine the various FDI motivations of Chinese firms (see Table 2.6). Among the 10 types of motivations, four types are categorized as conventional FDI, while the other six types are considered unconventional FDI. This framework not only incorporated the motivations mentioned by the existing studies, but also added two new ones: market-learning¹⁰ and labor-management

¹⁰ The motivation of market-learning by emerging firms has been mentioned by earlier studies

relations. Various types of investments can now be succinctly contrasted in this new framework.

Table 2.6. Types of Chinese FDI Motivations

Factor conditions	1-1 Natural resource
	1-2 Cheap labor
	1-3 Strategic asset-seeking *
Demand conditions	2-1 Market-seeking
	2-2 Market-learning *
Related & Supporting Industries	3-1 Network relations
	3-2 Infrastructure *
	3-3 Regulation-bypassing *
Firm Strategy, Structure & Rivalry	4-1 Labor-management relations *
	4-2 Strategic location *

Source: Yin (2015)

Note: (1) * represent the unconventional motivations. (2) The framework describing Chinese firms' FDI is modified and extended by Moon's (2007) framework for explaining Korean firms' FDI.

This study has found that both the conventional and unconventional motivations significantly affect Chinese Outward FDI. Existing empirical studies perceive each motivation separately. This paper, however, by utilizing the factor analysis and regression, conducted an empirical test to explain which motivations have more similar locational distributions when Chinese firms engage in overseas investment. Therefore, not only conventional but also unconventional investment activities appear at the early stage of Chinese FDI.

of Moon and Roehl (2001) Moon (2007).

Yin (2015) also distinguishes the asset-seeking FDI of scientific and commercial technologies. It finds that the former one (asset-seeking FDI of scientific technology) tends to flow into advanced countries that have advanced institutions, developed infrastructure, and sophisticated market, while the latter (asset-seeking FDI of commercial technology) goes to both developing and developed countries that possess large market and overseas Chinese populations. Therefore, unlike the general assumption that the asset-seeking motivation only occurs among advanced countries, the empirical test shows that it also happens in the developing countries.

2.2.3. Limitations of FDI Approach for GVC Analysis

Ever since the popularity of GVC, it has been widely incorporated in various disciplines such as international political economy, economic geography, and managerial studies, but less discussions are made in the literature of international business (IB) (De Marchi et al., 2014). However, some studies (e.g., Vahlne and Johanson, 2013) suggested that IB literature, centered on explaining the value creation and transfer within the MNC boundary, needs to be enriched by incorporating the literature on non-equity modes of MNCs' internationalization strategy, in order to better understand how MNCs orchestrate and manage the dispersed activities around the world. The challenges of FDI literature can be summarized from the following several perspectives.

First, FDI literature mainly concerns the knowledge and value creation and transfer with the MNC boundary. Therefore, MNC becomes the center of the intra-firm (or internal) network of cooperation. However, in the GVC context (or global networks of value-added activities), which includes both internal and external networks of cooperation, MNCs are no longer located at the center of the intersecting networks, and there could be multiple centers (Giroud and Mirza, 2015). The key component suppliers could also be positioned as the leader of the value chain networks.

Second, many topics of FDI theories (e.g., motivations, location choice, entry modes) are often discussed at the level of investing firms (or MNC) or their entire value

chain level. However, as the activities or functions comprising the value chains shift toward more fragmented and modularized, these topics face rising challenges. Giroud and Mirza (2015) suggested a general idea that determinants of motivations, location choices, and modes should be different depending on the functions in the value chain. For example, regarding the determinants of governance mode of R&D activity, intellectual property regime could be more influential factor for FDI mode, whereas R&D capabilities of partner affect more for non-equity modes. Some other studies (e.g., Azmeh and Nadvi, 2014) found that Asian pivotal garment firms have expanded their operations through FDI mode, but the location choices for their foreign investment are determined by their GVC engagements. Despite these challenges, the above two main limitations can be complemented by the literature on NEM approach.

2.3. The NEM Approach and Its Limitations

At the firm level, there are two main types of value chain relationships, through which firms create and transfer values and knowledge among actors involved in the value chains. One is intra-firm network through FDI (or vertical relationship), and the other is inter-firm network through non-equity modes (or horizontal relationship). In the past, MNCs established their international production networks mainly through equity holdings or FDI mode, by owning and controlling their overseas affiliates in host countries. However, nowadays, MNCs increasingly externalize parts of their activities in their global value chains, thereby incorporating both affiliates and partners firms from both home and host countries (UNCTAD, 2011). In spite of the importance of non-equity modes for value creation, this has been less incorporated in the FDI theories. Instead, the inter-firm relationship through various contractual agreements is theorized by other various studies, using different terminology such as business network, commodity chain,

supply chain, and value networks.¹¹ The following will explain and discuss the key idea of each concept and the differences as well.

2.3.1. Business Network Theory

The network theory was proposed by scholars from the field of strategic management to explain the sources of competitiveness of the firm. The business network is defined as “the structure of interdependent relationships between the activities of a given firm and those of other firms in its competitive environment that influence each other’s strategies.” (Kambil and Short, 1994). Traditionally, there are two main theoretical streams, namely industry-based view and resource-based view, to explain the different performances among firms within the same industry. The former focuses on the influences of external factors, or industry structure on firms’ competitive advantages, whereas the latter emphasizes the internal factors, or the sources possessed by the firm which lead to the heterogeneity among firms. In contrast with both views on competitive advantages, network theory looks at the inter-firm relationships for the sources of competitive advantages. Firms can enhance their competitiveness by exploiting the synergy created among firms, and such relationship is often difficult to be emulated by the rivals, and can lead to superior performance in the market.

The inter-firm relationship can be distinguished into two types depending on whether they are intentionally or unintentionally formed (Moon, 2016a). The former type is formed through various format of contractual agreements, which defines and requires a certain engagement of involved parties. The latter type of network is often established when firms are geographically close to each other, or through clusters. Krugman (1979, 1980, and 1991) introduced three main benefits of locating in a cluster

¹¹ The current literature on GVC mainly focuses on the inter-firm relationship established through contractual agreement. The GVC concept in this study, on the other hand, refers to a more comprehensive concept, including all governance modes for explaining the value creation and transfer both within and outside the firm.

which are economies scale, greater consumption diversity, and lower transportation costs. Porter (1990), on the other hand, introduced a more comprehensive framework – named diamond model – in order to explain the cluster effects and competitiveness (see more details in Chapter 3 and 4 for cluster theories and practices). Thus, the cluster perspective can explain why firms prefer to situate themselves in the competitive clusters to exploit the knowledge or resources which cannot be found otherwise.

The above business network theory is limited to the relationship with business partners. Portes and Sensenbrenner (1993), on the other hand, extended the relationship by incorporating the network with competing firms and customers. They also defined the inter-firm network in a broader scope by incorporating the social capital (e.g., social norm and values). Through these social network, firms can have better access to special resources (e.g., capital, government support, special information), which facilitate them to create higher values than those without these channels and networks. Such social networks particularly play an important role in underdeveloped market system and institutional system. For example, during Korea's earlier development stage, the inter-relationship between the government and large firms played a significant role in nurturing *Chaebol* and efficient allocation of resources.

2.3.2. Global Commodity Chain

Global commodity chain (GCC) (Gereffi, 1994), based on world-system theory and organizational sociology, aims to analyze the dynamics and structure of global industries, and the issues of authority and power relationships among participating firms (Bair and Gereffi, 2001; Mahutga, 2012). The leading firm refers to the firm that shapes, controls, coordinates, and distributes values in the industry value chain (Hernández and Pedersen, 2017; Mahutga, 2012). The power relationships determine the allocation and flow of financial, material, and human resources in the chain (Gereffi, 1994).

Depending on the drivers of the chain, Gereffi (1994) distinguished into two types of governance structure for GCC: producer-driven and buyer-driven commodity chains.

There are two main differences between the two types of GCCs. First, industry distribution is different. Producer-driven commodity chains arise from capital intensive and durable goods industries (e.g., automobile industry), whereas, buyer-driven commodity chains mainly arise from non-durable and labor intensive industries, such as garment, footwear, and toy. Second, the role of leading firms is different. In the producer-driven GCCs, producers conduct the activity of manufacturing, design, R&D, and marketing, and control the backward linkages (with suppliers of raw materials and components), and forward linkages (with distribution and sales agents). On the other hand, in the buyer-driven GCCs, the leading firm is the main buyer of the final products, while mainly taking charge in the activities of design, marketing, and retail, whereas the production related activities are decentralized to numerous outside suppliers.

However, the typology of producer and buyer-driven GCCs is often criticized for its static description of a given industry. Azmeh and Nadvi (2014) summarized the main limitations as follows. First, oftentimes a certain industry shifts from producer to buyer-driven or vice versa, or even mixed of both governances. Second, the relationship between the leading firm and suppliers is not fixed, and sometimes the first-tier supplier shows increasing power and ultimately emerges as the leading firm. Third, due to the growing degree of outsourcing across various industries, the distinction between buyers and producers erodes over time. By stressing the above issues, Gereffi et al. (2005) introduced three alternative network-types of governance modes, including modular, relational, and captive governance structures. These governances are determined by three criteria: complexity of transactions, ability to codify transactions, and capabilities of suppliers.

However, these alternative governance structures are still limited to the industry analysis, and thus a good analytical framework for governance structure for activity based at the firm-level is needed. Moreover, these criteria focus on the economizing conditions (i.e., transaction costs) and less on the benefits of value creation through transactions.

2.3.3. Global Supply Chain

Supply chain concept is derived from Porter's (1985) value chain, which comprises five primary activities and four support activities. The supply chain then incorporates the three out of five primary activities, including inbound logistics, operation, and outbound logistics (Priem and Swink, 2012). Supply chain management emphasizes the relationship between a firm and suppliers outside and inside the firm which collectively transform the raw materials into the final products and deliver them to the customers (Hult et al., 2007).

As the growing influences on the management of supply chains, firms realize that suppliers, partners, and customers who have great potential to value creation to their operations do not necessarily locate within the national borders. This encourages a growing research extending the dimension of supply chain management from domestic to international scope (Connelly et al., 2013). Priem and Swink (2012) argued that the efficient supply chain management can be sources of sustainable competitive advantages for firms. However, in contrast to popular practice in global supply chain management among MNCs, the concept and theoretical perspective are still underdeveloped and fragmented (Hult, 2004).

2.3.4. Value Networks

A value network is defined as value generation through complex dynamic exchanges among firms, customers, and suppliers, and the community (Allee, 2000). It is an organizational network, composed of various actors collaborating for a service delivery (de Reuver and Bouwman, 2012). It is different from business network, which is a broader concept, encompassing both cooperative and competitive relationship.

The concept of value network (Peppard and Rylander, 2006) is developed to address the limitations of Porter's (1985) value chain in explaining firms' practices in the real world. Porter's value chain emphasizes the flow of value creation in the traditional

manufacturing industry, by transforming the tangible/physical raw materials and components into the finished products. However, nowadays the consumer products in many manufacturing sectors require a certain degree of service content. For example, Porter's inbound logistics mainly refer to procurement of inputs for hardware (raw materials and components), but manufacturing of some devices (e.g., smartphone) also requires the procurement of software inputs and other intangible content as well. These intangible inputs are not well addressed in Porter's value chain (Campbell and Wilson, 1996).

Moreover, Porter's value chain emphasizes the linear flow of value generation from inputs to outputs, whereas the value network has non-linear, horizontal, and dynamic relationships (de Reuver and Bouwman, 2012). Each unit or actor in the value chain has its own position or role, but the value network's distinction becomes less clear as value is co-created by a combination of various players (Allee, 2000). For example, customers can also participate in the production process for developing and improving the quality of the products.

2.3.5. Activities to Be Outsourced

The literature on outsourcing has emerged under the NEM approach to explain which areas should be maintained within the firm, and which areas should be externalized for value maximization. With the rising GVC, MNCs' activities become more finely sliced. The value chain is not just divided into nine general activities (five primary and four support ones), but each activity is also sliced up further into numerous smaller sub-activities (Contractor et al., 2010; Moon, 2010). Not just the low-end activities but also high-end functions are increasingly outsourced. For example, in the past MNCs often internalize the entire R&D function (considered as the core activity by many firms) within their parent firms in the home country, but currently it becomes more disaggregated and firms often outsource some sub-activities of the R&D function to their partners (Grimpe and Kaiser, 2010).

In the past, scholars explained that firms' activities are divided into core and non-core activities, and non-core activities are often selected by firms as the areas of outsourcing in order to reduce the cost and enhance the efficiency of those activities. However, nowadays the core activities are further sliced into true core activities and essential activities (e.g., Contractor et al., 2010; Quinn, 1999). The true core activities are often the core competences of the company which perform better than others and are internalized within the firm, but essential activities are outsourced along with the non-core activities. This thus requires MNCs to select appropriate governance and even combine various governances to effectively perform each function of the value chain and create higher values to the consumers. Therefore, the entry mode decision should be made at more finely-sliced activities. In reality, a pure form of governance is seldom found in the firms' value chain; instead, firms always maximize the utility of each mode through various combinations of different scales of governance depending on the firms' status and their surrounding environment.

2.3.6. Limitations of NEM Approach for GVC Analysis

Various theories from the NEM approach commonly stress the role of relationship among actors involved in the value chain in value creation. Despite the advantages of NEM approach, there is a critical limitation. As the NME approach shifts the focus of research from firm-specific analysis to inter-relationship among various actors, the nature of the firm, MNC in particular, is neglected. For example, Gereffi et al.'s (2005) framework for determining the three network-based governances in the value chain mainly concern the nature of knowledge to transfer and the capabilities of suppliers or partners. For the governance mode analysis, there could be four strategic parameters to concern: what is to be produced, how it is to be produced, when it is to be produced, and how much is to be produced (Saliola and Zanfei, 2009). Without regarding the firm's nature, the NEM approach cannot well explain when and how much to be produced, which are highly influenced by the firm's organizational characteristics.

2.4. Implications for Theoretical Integration

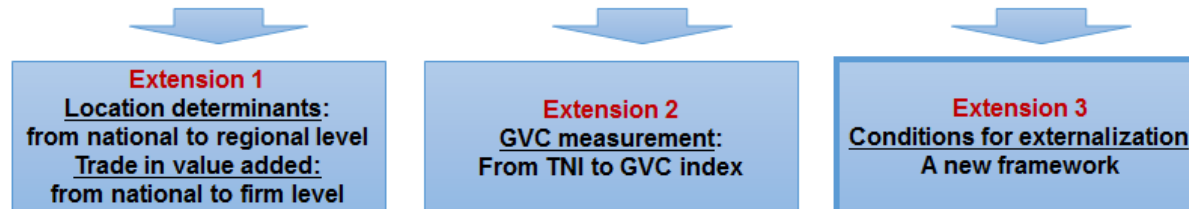
This study combines three different streams of literature (trade, FDI, and NEM) for analyzing the strategic options of value creation and transfer in the context of GVC in a more comprehensive way. The three approaches highlight different elements but they are in fact complementary to each other (see Figure 2.2). First of all, the trade approach emphasizes the value added in intermediate inputs at each stage of internationally fragmented production networks (what to be produced), but does not concern how these values are created and by whom. In this respect, FDI and NEM approaches can complement with trade approach. FDI approach focuses on the value creation through the internal organizational network across national boundaries, whereas NEM approach investigates the influences on the inter-organizational network on value creation.

Secondly, trade approach mainly deals with the international production network, or the upstream activities in the value chain. FDI approach encompasses a broader scope of value chain activities, but focuses primarily on the value creation of manufacturing industries and service sectors are far less concerned. In this respect, the NEM approach complements the other two approaches by incorporating the value creation of all value chain activities and giving equal weights for both manufacturing and service industries.

Thirdly, for trade approach, the trade and production patterns are mainly determined by the comparative advantage of nations, which is less sensitive to the external changes over time. On the other hand, the focus of FDI approach is the internal linkages and organizational structure within the firm hierarchy, and the relationship with environmental factors is not the key issues. However, the focus of NEM approach is the nature of relationship with both business partners from different industries and actors from non-business sector (e.g., community). Therefore, it can better capture the dynamic flows or the changes of activities along the chain.

Figure 2.2. Three Different Approaches to GVC

	Trade	Foreign Direct Investment (FDI)	Non-Equity Mode (NEM)
Literature	Trade in intermediate goods <ul style="list-style-type: none"> Multi-stage production (Dixit & Grossman, 1982) Slicing up the value chain (Krugman, 1995) Disintegration of production (Feenstra, 1998) Vertical specialization of trade (Hummels et al., 2001) Fragmentation of production (Arndt & Kierzkowski, 2001) 	Conventional FDI <ul style="list-style-type: none"> Hymer's (1976) theory Internalization theory (Buckley & Casson, 1976; Rugman, 1981; Hennart, 1982) OLI paradigm (Dunning, 2001) Unconventional FDI <ul style="list-style-type: none"> Imbalance theory (Moon & Roehl, 2001; Moon, 2016a) LLL model (Mathews, 2002, 2006) Springboard perspective (Luo & Tung, 2007) Global factory (Buckley, 2004, 2007, 2009, 2011)	Relationship with other firms <ul style="list-style-type: none"> Global supply chains (Al-Mudimigh et al., 2004; Connelly et al., 2013; Priem & Swink, 2012) Global Commodity Chains (GCCs) (Gereffi, 1994, 1999) Global Value Chains (Gereffi et al., 2005) Value networks (de Reuver & Bouwman, 2012; Stabell & Fjeldstad, 1998)
Focus	<ul style="list-style-type: none"> Production activity National level (comparative advantage) 	<ul style="list-style-type: none"> All value chain activities Firm level (control with ownership) 	<ul style="list-style-type: none"> All value chain activities Firm level (control without ownership)
Measurement (Examples)	<ul style="list-style-type: none"> Trade in value added (Global I-O matrices) 	<ul style="list-style-type: none"> Transnationality index (TNI) 	<ul style="list-style-type: none"> N/A



Last but not least, the three strategic options for value creation are not fixed forever. MNCs often flexibly combine two or all the three options for conducting one specific value chain activities or shift from one to another option. The following section will discuss the two issues in more detail.

2.4.1. Combination of Various Options for Value Maximization

Existing studies on MNCs' entry mode when entering the host country mainly consider the entire value chain or even without distinguishing whether it is for the entire value chain or specific value activities. In other words, their studies on the determinants of entry mode are about choosing one dominant mode of governance to another. However, each governance has its own disadvantages in dealing with the public goods and externalities (Erkus-Öztürk and Terhorst, 2010). For example, externalization modes (e.g., trade, NEMs) lack internal control and enforcement authority; internalization (e.g., FDI) has higher control for the internal divisions, thereby lacking the flexibility in responding to the markets and incurring higher costs than benefits. Therefore, combining various modes of governance can better and more flexibly respond to the environmental changes.

For example, after the 2008 financial crisis, Samsung Electronics accelerated its investment in Vietnam and currently almost 50% of its smartphones are assembled in Vietnam and many of its high value-added parts and components are imported from China and Korea. However, due to the local government's pressures to employ more local suppliers to improve their production network and capabilities, Samsung also began to outsource to more Vietnamese firms. By the early 2016, 63 Vietnamese firms joined Samsung's supply chain, out of which 11 are first-tier suppliers, and the other 52 are second-tier suppliers.

Samsung's investment in Vietnam shows that for procuring the parts and components Samsung has extended its major governance of trade and FDI to externalization mode by incorporating more local suppliers for producing some

intermediate inputs. The addition of externalization mode helps Samsung not only reduce the production costs but also flexibly respond to the market changes.

2.4.2. Shift in the Strategic Option from Trade to FDI Approach¹²

In order to induce MNCs' (including the US local firms) investment to the US and retain US-based firms from shifting their manufacturing plants outside the country, the Trump administration proposed high tariff rates for imported goods produced overseas whereas low corporate tax for companies doing business in the US. Specifically, during the election period, Trump announced the reduction of corporate tax from 35% to 15%, the second lowest to Irish among OECD countries. He also proposed imposing 45% of tariff against the imported goods from China and 35% of tariff against the imports from Mexico.

The automotive industry is the first target of Trump's protectionist policy. He pressed on by saying that if the US firms (e.g., Ford) or even foreign automotive firms in the US (e.g., BMW, Toyota) offshored their production facilities to overseas countries, those cars produced in foreign countries and exported to the US will face high tariffs. In order to effectively respond to the US government and not to lose the business opportunities in the US, MNCs flexibility changed their extant export (or manufacturing in overseas countries and export to the US market) oriented strategy to FDI strategy. Table 2.7 lists the main automotive companies which announced to expand their extant scale of manufacturing plants or pursue new investments in the US.

¹² This section is abstracted and modified from Moon and Yin (2017b).

Table 2.7. The Key Investments in the US in Response to Trump's Trade Protectionist Policy

Firm	Investment (\$ billion)	Motivation
Ford	0.7	<ul style="list-style-type: none"> • The US: To produce electric cars and SUVs • Mexico: To produce small passenger cars
GM	1	To increase vehicle production (decision made years before the Trump administration)
Fiat Chrysler	1	To upgrade plants
Toyota	10	To meet demand and upgrade plants to build more fuel-efficient models.
Hyundai	3.1	To develop self-driving and eco-friendly cars
Daimler	1.3	To expand production facilities in Alabama (The increasing demand for SUV in the US)

However, what should be noted is that the shift by MNCs from trade to FDI strategy needs some additional conditions. Their strategic changes are not simply the results of the government pressure and threats, but based on business reasons. Ford's case can be a good example. On January 3, 2017, Ford announced that it would cancel its \$1.6 billion investment project in Mexico and initiate a \$700 million investment for establishing factories producing electric and self-driving cars. However, the Economist (2017/1/5) analyzed Ford's investment strategy as not "a U-turn" but "a wheel-spin." The products planned to be produced in Mexico and the US factories are different. The Mexico factories mainly produce the small-sized and fuel efficiency cars. Due to the recent decreasing demand in small cars, Ford in fact has already considered reduction in the scale of small-sized cars. Therefore, the cancellation of investment in Mexico is consistent with the interests of Ford, instead of being a reluctant response to the Trump pressure.

By looking at the investment cases of other industrial companies, we can find an important logic behind MNCs' decision making for changing the governance mode from

trade to FDI. The shift toward the strategic option of FDI is largely affected by the investment attractiveness of host countries. As the US is one of the most attractive countries in the world for investment, MNCs need to flexibly consider their strategic options for entry, including FDI as well as exporting.¹³

2.4.3. Shift in the Strategic Option from FDI to NEM Approach

Samsung Electronics is well known for its internalization strategy (i.e., FDI) when going abroad. Recently, it is rumored that Samsung will expand the portion of production of low- and medium-end smartphones, because of the saturation of high-end smartphone market but fast-growing demand from emerging markets such as China, India, and Vietnam. However, the result appears the opposite. Samsung seems to shift its strategy by accelerating outsourcing production of low- and medium-end of smartphones to Chinese firms, whereas it concentrates on producing high-end smartphones (Ubergizmo, 2013/11/13). It was estimated that the percentage of outsourcing would be over 10% out of its total smartphone production (ET News, 2013/11/12).

One of the most successful examples is Galaxy Trend Duos, the smartphone that Samsung outsourced to the subcontractor of Zhonghuan Telecommunication in Tianjin, China. This model is exported to many developing countries including India, and the price sold in India is only around \$150. The accumulated production of this smartphone model has exceeded 10 million units. Although the subcontractor of Zhonghuan Telecommunication is a joint venture created by Samsung in Tianjin, it shows a Samsung's production strategy shifting away from the full internalization (e.g., FDI) towards partial externalization. It needs further investigation whether it will remain the current model of outsourcing to joint ventures or passing the production to the completely independent third subcontractors in the following years.

¹³ This is consistent with location of Dunning's OLI paradigm.

Through outsourcing, Samsung could relieve the pressure from the trade-off between sales and profits. Many argue that the major reason behind Samsung's outsourcing decision is driven by the cost reduction. In spite of the importance of cost factor, this perspective does not capture the entire picture. Another important driving force for Samsung's opt to outsourcing is to quickly adjust to the substantial growth of demand for low- and medium-end smartphone from emerging markets. In addition to the speed factor, there are some other driving forces for consideration. More details regarding the conditions for firms' externalization will be discussed in the following Chapter 3.

CHAPTER 3. THEORETICAL EXTENSION

The previous chapter discussed the theoretical integration by combining three main streams of literature on the organizational governance for value creation and transfer along the GVC. Each of the three approaches provides significant contributions with different focus, but also shows limitations which can be effectively complemented by one another. On the other hand, there are also rooms for further development of each approach, which is the focus of this chapter.

Specifically, the trade approach stresses the comparative advantage (e.g., cheap labor) of nations for determining the locations of fragmented international production networks. However, this cannot well explain why many MNCs do not move their extant manufacturing bases in spite of the substantial increase of labor costs in some developing countries (e.g., China) compared to other cheaper countries. In this respect, this chapter suggests the cluster perspective for analyzing the location choice of MNCs. Second, for foreign direct investment (FDI) approach, this chapter mainly deals with the limitations of the most widely cited index for measuring the degree of MNCs' globalization, which is UNCTAD's transnationality index (TNI), and suggests a direction for further improvement. Lastly, as for the non-equity mode (NEM) approach, this chapter stresses the issue of conditions of MNCs for choosing NEM mode, which cannot be sufficiently explained by existing studies. After proposing the three possible theoretical extensions, this chapter particularly focuses on the third extension by introducing three conditions for firms to choose the NEM approach instead of internalizing the activities in the GVC.

3.1. The Trade Approach: From National to Regional Level

3.1.1. Two Important Scholars in Cluster Theory

The study on cluster has been initiated since Marshall (1920[1890]), yet Paul Krugman and Michael Porter are the two well-known scholars for their significant contribution to the development of cluster theories.

3.1.1.1. Krugman (1979, 1980, 1991)¹⁴

Paul Krugman, the Nobel Prize winner in Economics in 2008, made a substantial contribution to linking the two fields, trade and economic geography. International trade and the location of economic activity have been two important research topics in economics. However, the two streams of literature on trade theory and economic geography have been separated for centuries. Scholars have paid greater attention to combining the two areas, by emphasizing the same drivers that simultaneously determine the specialization of a country in the international production networks (trade theory) and the location of economic activity (economic geography).

Among his numerous articles published in the fields of trade and economic geography, the three articles published in 1979, 1980, and 1991 are the most influential for linking the two literature.¹⁵ His 1991 article introduced a core-periphery model, which analyzes the allocation of population and economic activity between the regions of core and periphery. He explained that firms tend to locate themselves in larger markets to exploit *economies of scale* and reduce *transportation costs*, and individuals tend to

¹⁴ The literature review on Krugman's contribution in cluster theory is abstracted and modified from Moon and Jung (2010) and Prize Committee of the Royal Swedish Academy of Sciences (2008).

¹⁵ The 1991 article is regarded as the seminal work, but the origin of the idea can be found in his 1979 article.

move to more populated regions, which offer higher welfare benefits coming from greater *consumption diversity*. This diversity can further strengthen the market size, which provides incentives for firms to migrate. Krugman highlighted the relationship between economies of scale and transportation costs that can result in either concentration or decentralization of communities. This perspective became the foundation of the cluster theory.

Krugman's (1991) general idea in his new approach to economic geography comes from his earlier articles of 1979 and 1980 which discuss the determinants of trade patterns. The traditional trade theories stress the importance of comparative advantage in determining the patterns of international trade. However, Krugman (1979) argued that even lacking the significant comparative advantage, trade can still occur due to *economies of scale* and imperfect competition. This article served as the seed to a new geography by showing that economies of scale can also explain the location of economic activity. He argued that firms can obtain cost reduction by exploiting economies of scale (i.e., expanding the production), and then he explained that firms tend to locate themselves in larger markets to exploit economies of scale.

Krugman (1980) extended his 1979 article by incorporating transportation cost factors which are important to international trade, because lower costs in transportation will encourage higher growth in trade. On the other hand, firms tend to locate the production near the largest market, and transportation costs can thus be minimized.

3.1.1.2. Porter (1990, 1998, and 2008)¹⁶

Porter (1990) expanded the view on the cluster theory from Krugman's economic geography. In fact, the key elements that Krugman proposed for geographic concentration are just three of the four determinants of Porter's diamond model – factor

¹⁶ The literature review of Porter's cluster's theory is abstracted and modified from Ketels (2011), Moon (2016a, 2016b), Moon (2017a), Moon and Jung (2010), Moon et al. (2013).

conditions, demand conditions, and related & supporting industries, in particular. Porter's work on clusters is the most influential compared to other works by economic geographers, and his notion of cluster has since become the standard in the field (Martin and Sunley, 2003). Previous studies emphasize specific aspects of clusters, but Porter's framework is more comprehensive and focuses more on providing practical implications for policy makers. He tried to link the cluster to the competitiveness of firms, regions, and nations. His work is also easier to understand and more readily applicable in practice, effectively filling the gap between theory and practice (Martin and Sunley, 2003). Accordingly, his work has attracted a broader attention from business managers, governments, and other cluster practitioners (Ketels, 2011).

Porter's cluster study was informally introduced in his well-known book, *The Competitive Advantage of Nations* (Porter, 1990). He found that the competitiveness of a nation usually draws on some internationally competitive industries¹⁷, rather than all the industries. These competitive industries are often concentrated in a particular region within a nation. Porter then systematically organized the cluster theory in Chapter 7 in his 1998 book *On Competition*, and later expanded it in 2008. His cluster studies have shifted the economic focus from industries/firms to regions/nations, and from competition to embracing both cooperation and competition for building competitive advantages.

Porter (1998: 199) defined cluster as "a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities." Therefore, the two core elements of cluster can be identified—geographical proximity and inter-linkage among the involved companies and organizations. The geographical scope of cluster can be a city (*e.g.*, Bangalore's IT cluster), a state (*e.g.*, California's wine cluster), or a country (*e.g.*, Italy's nation-wide fashion cluster). Porter categorized the players within the cluster into four types: (1) the

¹⁷ By cooperating with international scholars from 10 countries, Porter studied the most competitive industries of each of the 10 countries, including eight developed countries and two developing countries (Korea and Singapore).

end-product or service companies; (2) suppliers of specialized inputs, components, machinery, and services; (3) financial institutions, firms in related industries and other intuitions (*e.g.*, universities, government); and (4) downstream industries (*e.g.*, consumers). The linkage among these players is created through either competition or cooperation. On the other hand, although proximity is important, what is more critical is the inter-linkage among firms and organizations.

Due to the increasing globalization and decreasing cost of transportation and communication, firms nowadays can easily outsource capital, information, materials from abroad on the global scope. Hence, many argue that the locational advantage or the role of location in competition will necessarily diminish. However, Porter (1990, 1998) argued that, ironically, the location will still matter despite globalization of business. This is because the internationally competitive firms tend to co-locate in a specific place or region, such as the financial companies in Wall Street, IT firms in Silicon Valley, automobile companies in southern Germany, and fashion shoe firms in northern Italy.

Porter (1998) explained the reasons for cluster's crucial role in enhancing firms' competitiveness from the following three perspectives. First, clusters increase the productivity of firms within the area. By locating oneself in the cluster, firms can get easier access to specialized and experienced employees and suppliers, specialized information, and institutions and public goods. Hence, firms can save time and costs of seeking them in other locations. The linkage with the complementarities can also create potential synergy effects. The complementarities can rise from the related products or services and marketing effects (such as attracting more customers from related products). Firms within the cluster can also benefit from powerful psychological effects of becoming better motivated because of the intensified competition compared to outside firms. These favorable factors collectively contribute to enhancing the productivity of the firm.

Second, clusters drive the direction and pace of innovation. The sophisticated buyers within the cluster often play a vital role as the window or early signal of future market trend. There are other pressures, such as competitive pressure and peer pressure,

which promote the introduction of more competitive products. Moreover, easier access to various resources required for innovation could also make it possible for firms to expedite the plans or strategic designs in practice. Porter (1990) argued that firms' local outsourcing has competitive advantage in terms of reduced risks, costs, flexibility, and sustainability compared to distant outsourcing and development.

Third, clusters encourage the formation of new businesses. Barriers to entry are lower in the cluster than other places. The concentrated consumers also proliferate the creation of new businesses. Firms can easily get access to the needed staff, skills, capital, and other inputs, which are available from the external market or acquired from the established companies. Some empirical studies (*e.g.*, Gilbert et al., 2008; McCann and Folta, 2011) have shown that young firms or new ventures, in fact, benefited more than the incumbents in clusters due to their easier accessibility to the needed resources.

Therefore, it is not advisable for firms to choose a location simply by considering particular input costs alone; rather, firms should choose their location based on the costs from the entire system, including both hard (*e.g.*, labor cost, infrastructure) and soft factors (*e.g.*, finance, education, and health system).

3.1.2. Extension of Porter's Cluster Theory

Despite Porter's useful and comprehensive framework for analyzing the cluster, it is limited to the scope within a country and neglects international factors (Moon and Jung, 2008; 2010). Identifying the limitations of Porter's cluster concept, Moon and Jung (2008) extended the boundary of cluster from domestic to international ones. They distinguished the cluster into two stages based on the degree of internationalization of clusters: regional cluster, regional-linking cluster, international-linking cluster, and global-linking cluster (see Table 3.1). The first two types are domestic clusters, and the other two clusters are international. Porter's concept of cluster is relevant to the first type, which has been discussed in the earlier section. This is because Porter emphasized the aggregation of firms and other organizations within a certain area or region, but

concerned less on the linkages with other regional or national clusters. Such linkage concept is particularly important in the context of GVC. This is because no country or region can be competitive enough to host all the value chain activities in one single region. The following will illustrate the characteristics of other three types of clusters in more detail.

Table 3.1. Characteristics of Four Stages of Clusters

Domestic Clusters		International Clusters	
Regional clusters (stage 1)	Regional-linking clusters (stage 2)	International-linking clusters (stage 3)	Global-linking clusters (stage 4)
Independent and separate clusters (e.g., Silicon Valley)	Regionally linked by neighboring clusters (e.g., entertainment clusters in California, linking Hollywood, Disneyland, and Las Vegas)	Internationally linked by neighboring countries (e.g., SIJORI growth triangle)	Globally linked by neighboring/ non- neighboring countries (e.g., Linking Silicon Valley and Bangalore)

Source: Moon and Jung (2010), Moon (2016b)

Regional-linking cluster refers to the interconnection of clusters located in different regions in a country. The entertainment cluster in the state of California can be a good example. In the southern region, Hollywood and Disneyland in Los Angeles are connected with the zoo of San Diego, a neighboring city. Such linkages among these attraction resources from different cities have contributed to enhancing the competitiveness of the entire tourism industry of the region of California. Moreover, these areas are also connected with the tourism resources of neighboring state of Nevada (e.g., Las Vegas, Death Valley), which facilitates the formation of even larger tourism cluster (Moon, 2017b).

International-linking cluster represents the clusters located and interconnected in the neighboring countries. The SIJORI growth triangle linking Singapore, Malaysia, and Indonesia is a good example. The different areas of comparative/competitive advantages strengthened the complementarity of these economies and have strengthened the linkages among each other. The sustainable growth of Singapore requires sustainable supply of food, water, and other natural resources which can be sourced from Indonesia and Malaysia that both have rich natural resources. On the other hand, the continuous upgrade of Indonesia and Malaysia needs the inputs of advanced technology and talented human resources in addition to the capital inflows by MNCs. All of these resources can be well solved by leveraging the strengths of Singapore. According to the National Competitiveness Reports by two internationally well-known organizations, IMD and WEF, Singapore ranked the top on the list. Moreover, it is one of the most attractive locations for MNCs' overseas investment.

The final stage of global-linking cluster is defined as the network dispersed in different countries but not adjacent to each other: the global network of India's Bangalore and the Silicon Valley in the US in the IT industry. Despite the physical distance, the comparative advantages of language (i.e., English), a large and cheap pool of engineers in IT technology, time-zone of Bangalore serve as the base for the long-run sustainable linkages between the two. Bangalore clusters can benefit from upgrading their current skills, technology, and knowledge in IT and related industry, whereas Silicon Valley can continuously upgrade to higher value-added activities by shifting the low-value added activities to Indian firms.

The determinants of a country's competitiveness are shifting from the perspective of a single country to the concept of cluster, which is beyond the country boundary (Cho et al., 2016). The high competitiveness of Bangalore compared to other regions in India is remarkable because it has extensive global linkages with Silicon Valley in the US, through which it can better access to talents, technology, and knowledge. Similarly, although Singapore has limited natural resources, the linkages with neighboring countries can complement such disadvantages and also contribute to creating new

advantages. For example, many MNCs select Singapore as the platform (e.g., regional hub) for connecting the investment in other ASEAN countries.

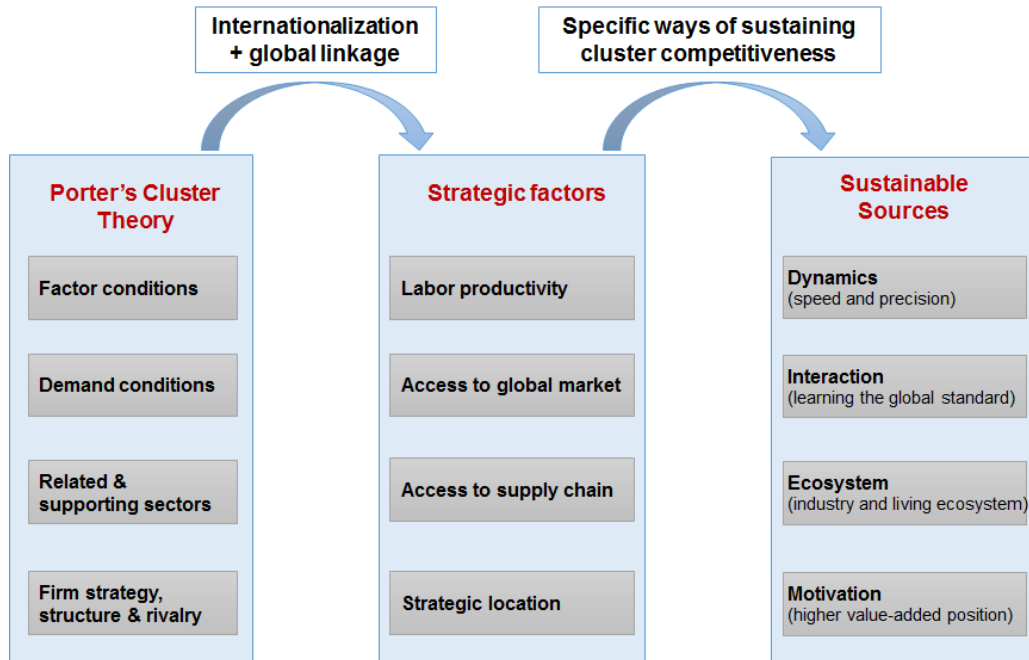
The four-stage model is also very useful for explaining the creation and upgrading the clusters in the developing country (Moon et al., 2013). Porter's cluster is useful to explain the sources of competitive clusters, but cannot explain how to create or develop such competitive factors for establishing a globally successful cluster. In this sense, developing countries can follow the order of four stages, through which they can achieve economic development, by exploiting the advantages of partner country's clusters and complementing one's disadvantages.

3.1.3. The competitiveness determinants of clusters in GVC

While Moon and Jung's (2010) four-stage cluster model is useful by extending Porter's (1990) cluster theory from domestic to international scope, we need to specify the changes in the sources of cluster competitiveness in the global context. Since Porter's four determinants – factor conditions, demand conditions, related & supporting sectors, and firm strategy, structure & rivalry – are limited to domestic scope, this study suggests an extended framework for explaining the determinants of cluster's competitiveness in GVCs.

The newly proposed factors are abstracted by examining the location choices of Samsung Electronics' manufacturing plants in Vietnam and Apple's contract manufacturing factories in China. Based on the information collected from related academic articles, newspapers, and periodicals, this study developed four elements, which are labor productivity, access to global market, access to supply chains, and strategic location (see Figure 3.1).

Figure 3.1. Sustainable Sources of Competitiveness for Clusters



Note: The concept of the four factors for explaining the sustainable sources of cluster competitiveness is adopted from Moon's (2016b) ABCD model and Moon's (2017b) framework for explaining the sources of competitiveness of Silicon Valley.

The basic difference between Porter's four factors of the diamond model and those of this new model is the addition of internationalization, global linkage in particular, which plays a critical role in the context of GVC. The modified four factors are obtained by borrowing the concept of Moon et al.'s (1995, 1998) generalized double diamond model, which is an extended model of Porter's single diamond, by incorporating the international context. Each factor will be discussed in more detail in the following section by taking the examples of Samsung Electronics and Apple.

3.1.3.1. Four Strategic Factors of Competitive Clusters

Labor Productivity

Cheap labor, in particular, of the factor conditions of Porter's diamond model is commonly stressed by extant studies when MNCs choose their production locations. However, in addition to cheap cost, labor productivity is also an important factor. The price for unskilled labor for Samsung's manufacturing plants in Vietnam is only one-sixth of that of Gumi factory in Korea, but there is almost no difference in terms of labor productivity (Moon and Parc, 2014). Another advantage of production offshoring in Vietnam is the large pool of labor force, which Samsung can take advantage of. In 2012, Samsung hired 21,000 new employees in Samsung Electronics Vietnam (SEV) assembly plant, but such employment scale in Korea is impossible (Moon and Parc, 2014).

It is the same for Apple's assembly factory in China. China's factories are far bigger and more nimble than those in the US (Business Insider, 2012/1/22). They can hire (and fire) tens of thousands of workers practically overnight. Also, since many of the workers live on-site, they can come to work at a moment's notice. Most of all, they can change production procedures and speed very quickly. The high labor productivity makes both China and Vietnam distinct compared to other developing countries which are normally characterized by low labor costs but low productivity as well.

Access to Global Market

Porter's demand conditions emphasize local market size, but concern less the connectivity with other countries. Since Vietnam is a member of ASEAN countries, Samsung can easily access its member states by taking advantages of lower trade barriers. Also, the launch of the ASEAN Economic Community (AEC) in December 2015 has contributed to further development of market integration and the business environment in the region. According to the 2012 statistics, the foreign sales of SEV were \$12.9

billion; only \$0.3 billion were sold in Vietnam, while the other \$12.6 billion were exported from Vietnam to the global market, including Korea.

Similarly, Apple's first manufacturing plant was located in the export-oriented cluster, in Guangdong Province (Economist, 2012/3/10). Majority of Apple's products are sold outside China. According to 2016/1Q statistics, Chinese local market sales only contributed to one-fourth of the total revenue, while the other 75% foreign sales were gained from non-Chinese market.

Access to Supply Chains

Among many locational advantages of Vietnam, one of the important advantages is its easy accessibility to the Chinese supply chain. This is why the two mobile phone assembly complexes are located in the northern cluster near Chinese borders. As local supplier infrastructure is underdeveloped, Samsung has to rely on the Korean and other foreign suppliers, and many of the higher value-added parts and components are manufactured in China.

On the other hand, Apple's manufacturing plants in China can have easy access to iPhones and iPads components within the country. According to 2015 statistics on the suppliers of Apple, there were 198 companies and 759 subsidiaries. Although these subsidiaries were widely dispersed in 30 countries, almost half (336 suppliers) were located in China (Grimes and Sun, 2016). This demonstrates why China is the most important location for achieving sustainable supply of parts and components.

Strategic Location

Vietnam accounted for 50% of Samsung's global smartphone production, and China almost accounted for 100% of Apple's global production. Therefore, Vietnam and China serve as the manufacturing hubs for both Samsung and Apple. In particular, Samsung's

manufacturing factories used to be concentrated in China, but recently Samsung has increased production activities in Vietnam within its entire global production system. Therefore, Vietnam is not a separated manufacturing site, but it is highly coordinated with Samsung's other value chain functions in other locations.

3.1.3.2. Four Factors for Sustainable Development of Clusters

The above four strategic factors are concluded mainly through the considerations of Samsung and Apple when they chose the production sites at the beginning. However, over time, new problems emerge and thereby new strategies are needed. Hence, for continuous upgrading of cluster competitiveness, I suggest four strategies, which are dynamics, interaction, ecosystem, and motivation.¹⁸

Dynamics.

Vietnamese and Chinese labor forces have been competitive in speed, although for manufacturing higher-value added products, they need to improve the degree of precision. Samsung Electronics outsourced parts and components to very few local suppliers in Vietnam, because of their lack of capability in terms of precision and technology. The majority of Samsung's suppliers are Korean subsidiaries located in China, Korea, and Vietnam. Similarity, although Chinese suppliers take a large portion in Apple's total number of suppliers, many high-value added parts and components suppliers are outside China.

¹⁸ The concept of the four factors for explaining the sustainable sources of cluster competitiveness is adopted and modified from Moon's (2016b) ABCD model. Moon (2017b) then applied the model to explain the competitiveness sources of Silicon Valley.

Interaction

Both clusters located in these two countries are typical export-oriented clusters, but for sustainable growth, they also need to attract more inward FDI, through which local suppliers can enhance their interaction with globally competitive MNCs. Such interaction can facilitate the learning of global standard and competition within the cluster. For example, Samsung Electronics is currently actively engaging in transferring its technology and knowledge to local suppliers and help them enhance their production capability. Thanks to the knowledge transfer, local Vietnamese suppliers can provide their products not only to Samsung but also to other MNCs doing business in Vietnam.

Ecosystem

The current clusters of both countries are mainly developed based on the improvement of manufacturing-specific industry infrastructure. However, referring to the most successful innovation cluster (e.g., Silicon Valley), the cluster development depends on the existence of sophisticated service sectors, such as financial and legal services. In addition to the industrial ecosystem, the living ecosystem is required to attract talented people who are working and living there. The living ecosystem should include both basic living conditions (e.g., food, residence) and cultural living conditions (e.g., education, entertainment, sports). The current problem in high turnover rate of SEV is actually due to its lack of cultural living conditions.

Motivation

This strategy refers to the upgrade of the strategic goal of the cluster to higher value-added. Although both Vietnam and China were originally chosen as manufacturing sites, both companies are now strengthening their existing clusters by establishing R&D

centers to support local or even global production development and services. Currently, both countries have shown some signs of upgrading their locational advantage in adaptation to attracting higher-value added activities. Samsung Electronics has recently decided to establish the second R&D center in the Northern area of Vietnam to strengthen its capability of serving global market. Similarly, Apple has established a R&D center near its manufacturing plants in Guangdong Province in 2016, and also announced recently its plans for establishing additional R&D centers in other regions in China to help strengthen the capability of local suppliers, which in turn contribute to the enhancement of the product quality.

3.2. FDI Approach: From TNI to GVC Index

The degree of MNCs' globalization is highly influenced by MNCs' global strategy. This is because whether the value activities of MNCs are geographically concentrated or dispersed on a global scale depends on MNCs' strategic design of their international production networks and the target markets (Moon, 2016a). Hence, the following section will first review the types of MNCs' global strategy. Then, the key studies on measuring MNCs' globalization are presented and their limitations for the analysis in the context of GVCs are discussed. Based on the above critical review and analysis, this section suggests the directions for further improvement of MNCs' global expansion.

3.2.1. Different Types of MNCs' Global Strategy

In 1980s, when MNCs' business activities were becoming increasingly globalized, managers began to realize the importance of globalization for enhancing firm performance. However, they were often confused with where and how to effectively

globalize their value activities. The following provides a historical review for describing the types of MNCs' global strategy.

3.2.1.1. Configuration-Coordination (C-C) Model (Porter, 1986)

Porter (1986) first provided a useful and systematic framework for distinguishing MNCs' different types of global strategy. Porter categorized MNCs' global strategy into four types based on two criteria: configuration and coordination. Hence, Porter's model is also known as Configuration-Coordination (C-C) model. Configuration refers to the location of value activities in the value chain in the world, whereas coordination refers to how closely these activities in different countries are coordinated with each other.

Based on the degree of configuration (i.e., geographically concentrated or dispersed) and coordination (i.e., low or high), there are four strategies in general: country-centered strategy, export-based strategy, high foreign investment with high extensive coordination strategy, and global strategy. Both country-centered strategy and export-based strategy are commonly characterized with low coordination. Firms with country-centered strategy pursue a dispersed configuration, but firms employing export-based strategy locate their production activities only in one country which serves the global market. The other two strategies – global strategy, and high foreign investment with extensive coordination – are characterized with high coordination strategy. Firms applying global strategy concentrate as many activities as possible in one country and serve the global market through high coordination. On the other hand, the other strategy has both high coordination and geographical dispersion.

3.2.1.2. Three Dimensional Framework (Moon, 1994)

Despite the usefulness and great contribution in academia, Porter's (1986) model has two critical problems, which were well pointed out by Moon (1994). First, Porter argued

that firms with global strategy, which is geographically concentrated and highly coordinated among value activities, are mostly globalized as seen in the examples of Japanese MNCs – the most successful companies in the world at that time. However, according to Porter's logic, MNCs with more dispersed geographical locations are less globalized, and this does not sufficiently reflect the real world. Second, Porter did not distinguish the nature of coordination between production-related activities and marketing-related activities. For example, GM and Toyota, the two examples taken by Porter (1986), pursued production-seeking coordination and market-seeking coordination, respectively. Without differentiating the types of coordination, the result could be misleading as Porter suggested Toyota was more globalized than GM.

In order to solve the two main issues, Moon (1994) introduced a three dimensional framework, comprising three criteria: number of countries, production coordination, and marketing coordination. The author further suggested that MNCs could take different paths for global expansion by considering either the production or marketing perspective. For example, GM focused more on production-oriented expansionary path, whereas Toyota pursued market-oriented expansion. In contrast with Porter (1986), this framework suggests that MNCs are more globalized with higher (either production or marketing) coordination and more dispersed locations (i.e., larger number of countries).

3.2.1.3. Integration-Responsiveness Framework (Prahalad and Doz, 1987)

Prahalad and Doz (1987) developed the Integration-Responsiveness (I-R) Framework, based on two dimensions of *global integration* and *local responsiveness*, to describe the pressures on the global business. Global integration refers to the management of geographically dispersed activities on a global scale. The managerial integration is necessary in order to respond to the pressures of reducing costs and optimization of foreign investment. The other dimension of local responsiveness refers to the automatic decision making by MNCs' foreign subsidiary in order to adapt to local customer demands.

Based on the varying degrees of the two dimensions, the authors distinguished MNCs' global strategy into three types: integrated product strategy (high integration and low responsiveness), multifocal strategy (simultaneous focus on both aspects of integration and local responsiveness), and locally responsive strategy (low integration and high responsiveness). Comparing with Porter's C-C model, the dimension of global integration can be linked with Porter's coordination parameter and responsiveness can be linked with Porter's configuration parameter, because the higher degree of local responsiveness will be more likely to encourage MNCs to spread their value chain activities in more number of countries. However, both Porter (1986) and Prahalad and Doz (1987) did not fully distinguish the coordination between production and marketing (Moon and Kim, 2008).

3.2.1.4. Different Organizational Models (Bartlett and Ghoshal, 1989)

Some other scholars approached the issue of global strategy from other perspectives. A seminal work by Bartlett and Ghoshal (1989) presented different organizational models in the context of global business. They outlined the characteristics of four types of organizations, namely multinational, global, international, and transnational firms, based on three criteria – (1) configuration of assets and capabilities, (2) role of overseas operations, and (3) development and diffusion of knowledge. They further suggested the evolutionary path transforming from domestic and transnational firms: domestic → multinational → global → international → transnational. Thus, according to the argument of the authors, transnational firms are the ideal choice for MNCs to maximize the benefits of globalization.

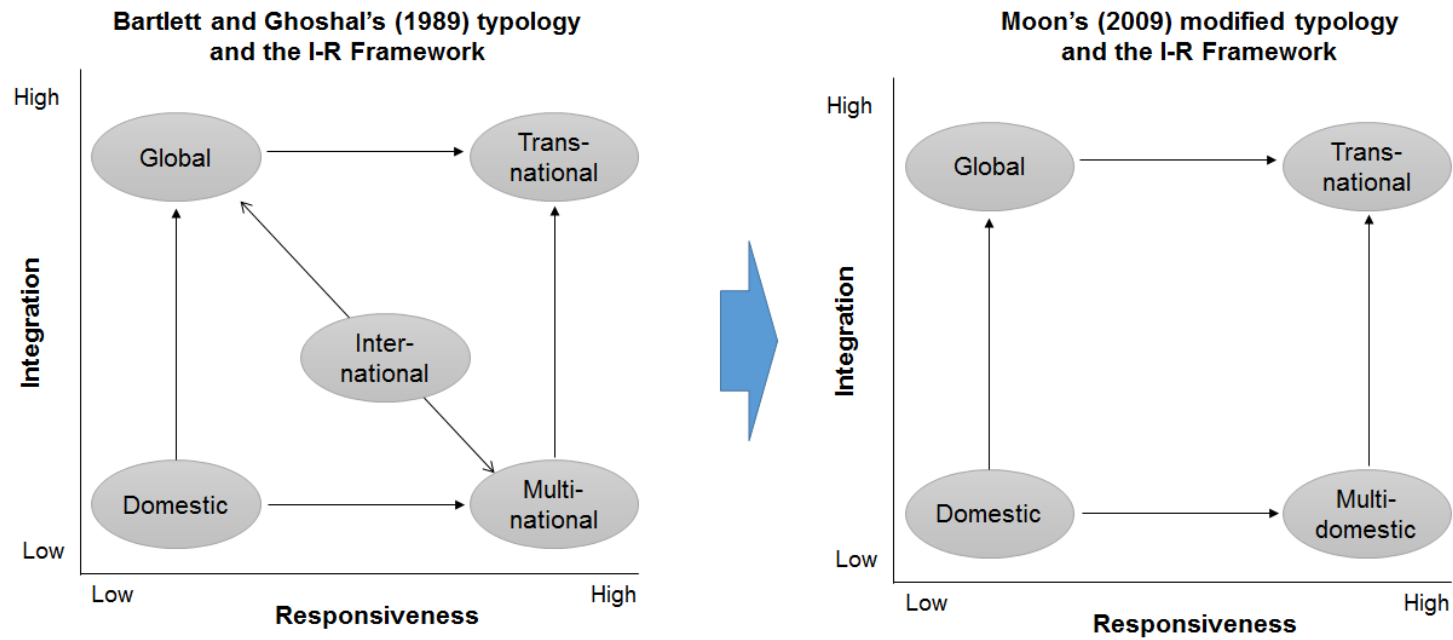
3.2.1.5. Modified Framework of Bartlett and Ghoshal (1989) (Moon, 2009)

In spite of the significant contribution of Bartlett and Ghoshal (1989), Moon (2009) pointed out several problems and introduced a modified model to better understand the characteristics of different types of MNCs' strategy as well as their evolution stages over time. Moon first incorporated all of the five organizational models of Bartlett and Ghoshal into the I-R framework (See left side of Figure 3.2). From the figure, problems can be easily found. The evolution from multinational firms, to global, and then to transnational firms means that the evolutionary path of the firm moves from low integration (multinational) to high integration (global), and then back to lower integration (international); this seems complicated and inefficient.

For this, Moon (2009) reduced five types of organizational models into four. Two specific changes are made. The type of international firm is deleted; the form of multinational is changed into "multi-domestic" which is characterized as high degree of responsiveness to individual markets. Based on the newly modified typology, Moon (2009) suggested an updated evolutionary path from domestic to transnational firms (see right side of Figure 3.2).

Moon and Kim (2008) further argued that transnational firm model is not necessarily the ideal one. Firms at different stages of development should have different models which maximize the benefits from globalization. In fact, when firms have superior ownership advantages (e.g., Apple's iPhone), they do not need to respond too much to local consumption needs, and thus standardization (i.e., global firm) is more appropriate in terms of cost reduction and efficiency. On the other hand, if firms have weaker ownership advantages, they might be more likely to be pressured to consider local consumption needs, and thus multi-domestic model is appropriate for an effective penetration into the local market.

Figure 3.2. Types of Organizational Models and Evolutionary Path



Note: The figure is modified from Moon (2010).

3.2.2. Measurement for MNCs' Globalization

Over the past decades, there have been many studies which tried to find a better measurement for the degree of firms' globalization. Table 3.2 selected some key studies. Some studies (e.g., Collins, 1990; Geringer, et al., 1989; Grant et al., 1988, Rugman and Verbeke, 2004) employed a single criterion which is foreign sales. Among these studies, Rugman and Verbeke (2004) is the most recognized one. They examined the world's largest MNCs (Fortune 500) and distribution of their sales across the world. They found that among the firms listed in Fortune 500, only a few firms are truly global and have sales in all three regions (i.e., the EU, the US, and Japan); most of other firms operate only in their home region.

Table 3.2. Key Studies on the Measurement of Firms' Globalization

Studies	Indicators
Collins (1990), Geringer et al. (1989); Grant et al. (1988), Rugman and Verbeke (2004)	Foreign sales
Ramaswamy (1993)	Ratio of foreign assets
UNCTAD (1995)	Ratio of foreign sales to total sales, foreign assets to total assets, foreign employment to total employment
Lu and Beamish (2004)	The number of overseas subsidiaries, the number of countries
Porter (1986), Moon (1994), Moon and Kim (2008)	The number of countries, the degree of coordination
Sullivan (1994)	Performance, structural, and attitudinal

Ramaswamy (1993), on the other hand, assessed the degree of firms' globalization using the ratio of foreign assets. UNCTAD (1995) also utilized the relative measurement including three elements – the ratio of foreign sales to total sales, the ratio of foreign

assets to total assets, and the ratio of foreign employment to total employment. Therefore, UNCTAD's measurement is more comprehensive than those studies using a single item, either foreign sales or foreign assets. Over the past years, the approaches of measurement have been advanced using from single one to multiple criteria.

Another aspect of improvement is by using financial dimension and other non-financial dimensions. For example, Lu and Beamish (2004) assessed firms' internationalization using two variables – the number of overseas subsidiaries and the number of countries where their foreign subsidiaries are located. Hence, Lu and Beamish emphasized the dimension of firms' geographical configuration (or the locus of destination) aspect. On the other hand, some studies (e.g., Porter, 1986; Moon, 1994; Moon and Kim, 2008) added one more dimension which is the degree of coordination of MNCs' activities distributed around the world. Sullivan's (1994) measurement is also a multi-dimensional including three attributes, which are performance, structural, and attitudinal.

Among the above numerous measurements, UNCTAD's (1995) transnationality index (TNI), first introduced in the World Investment Report 1995, is the most popular measurement among scholars and policy makers. This index has been adopted by business scholars in several countries to study internalization of national companies. Integrating the three dimensions into a single framework can balance different types of internationalization among various industries. TNI index is also the most feasible among various approaches due to its simplicity. However, despite many advantages or superiority of TNI index, it is not without criticism; the major limitations or problems of TNI index will be illustrated in the following section.

3.2.3. Limitations and Improvement of TNI Index

TNI index is one of the most popular and comprehensive indices for measuring firms' globalization, but it neglects some key activities such as technology development, which is particularly important for high technology industry. Furthermore, although firms adopt

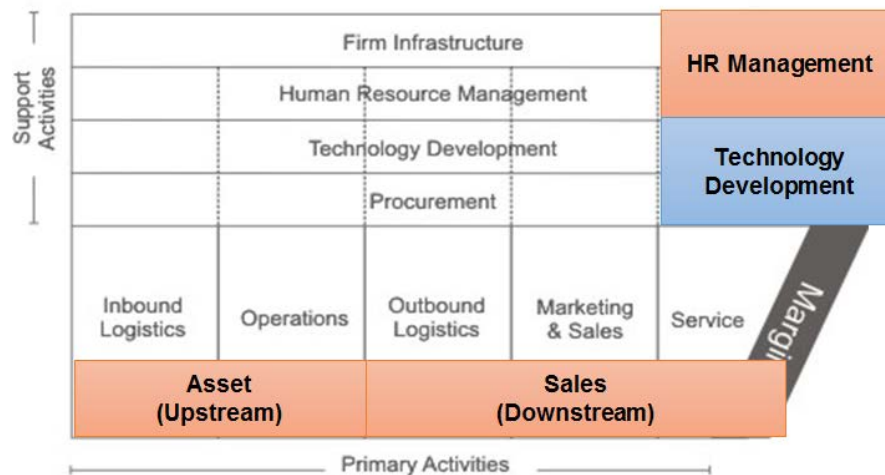
various types of transactions – trade, FDI, and NEMs, this index incorporates only trade (foreign sales of TNI) and FDI (foreign assets and employment of TNI), thus it cannot well reflect the reality. One of the typical evidences is that Apple is excluded from the top 100 non-financial TNCs. This is because Apple does not possess a significant scale of foreign assets through FDI. The majority of its foreign employment in China is through NEMs and thus cannot be captured in TNI. Therefore, we need to develop an improved TNI index, which can better assess the globalization of MNEs with the rising GVCs.

Porter's (1985) value chain framework includes nine activities – five primary and four support activities. Some studies (e.g., Mudambi, 2008; Mudambi and Puck, 2016; Nicovich et al., 2007; Pananond, 2013; Singer and Donoso, 2008; Verbeke and Asmussen, 2016) classified the activities in the value chain into three types based on the function in the value chain: upstream, middle-end, and downstream activities (Hernández and Pedersen, 2016). Upstream activities refer to those that mainly aim to exploit natural resources and raw materials or those related to design, R&D, as well as the commercialization of the creative efforts. Middle-end activities are those related to manufacturing and logistics. On the other hand, downstream activities are those relevant to ultimate consumer, which add values to the product and those activities related to marketing, advertising, brand management, and after sales. However, the critical limitations of this classification are that it incorporates the support activities into the outbound logistics, which are categorized as a larger concept of upstream logistics. However, the support activities (e.g., R&D) also contribute to the downstream activities, hence the basic distinction between primary and support activities is necessary.

This study thus first adopts Porter's classification of primary and support activities, and each is further classified into two, thereby four types of activities in total (see Figure 3.3). Specifically, the five primary activities are re-categorized into two – upstream and downstream activities; those related to production are often referred to as upstream activities, and the other sales related activities are referred to as downstream activities. On the other hand, the four supporting activities can also be further reduced into two

main types – human resource management (HRM) and technology development (see Figure 3.3).

Figure 3.3. TNI vs. GVC Index



The reorganization of Porter's nine value chain activities into four categories is more realistic because it is difficult to measure the degree of firms' globalization in terms of all nine activities. Considering the above mentioned problems of TNI index, GVC index by extending the current TNI can develop into two perspectives. The first method is to add elements related to technology development. The second method of extension is to add outsourcing related elements (see Figure 3.4). The following will explain more about the logic behind adding the two elements.

Figure 3.4. GVC Index: Two Possible Extensions of TNI

Activities	Trade	FDI	NEM
Production		TNI	
Sales	TNI		
Human resource		TNI	
Technology			

- **GVC1:** Foreign sales + Foreign assets + Foreign employment + **Technology**
- **GVC2:** Foreign sales + Foreign assets + Foreign employment + **Outsourcing**

Table 3.3 represents the data for the top 100 TNCs in terms of the three elements of TNI, most of which are from developed countries. For foreign sales, the growth rate shows upward trend from 2.0% in 2012 to 2.7% in 2013. However, this is contradictory with the growth trend of foreign assets and foreign employment. Regarding foreign assets, although the growth rate still maintained positive, it slowed down from 3.3% to 1.9%. On other hand, as for foreign employment, the growth rate witnessed minus growth in both 2012 and 2013, despite the slight improvement shifting from minus to positive growth in 2013. The opposite development trend (i.e., increase in foreign sales but decrease in foreign assets and employment) partly explains the increasing trend where MNCs control their foreign production through contracts instead of FDI.

Table 3.3. The Top 100 Largest Non-financial TNCs Worldwide (2011-2013)

	2011	2012	2013
Foreign Sales (billions \$)	5,783	5,900 (2.0%)	6,057 (2.7%)
Foreign Assets (billions \$)	7,634	7,888 (3.3%)	8,035 (1.9%)
Foreign Employment (1000)	9,911	9,821 (-0.9%)	9,810 (-0.1%)

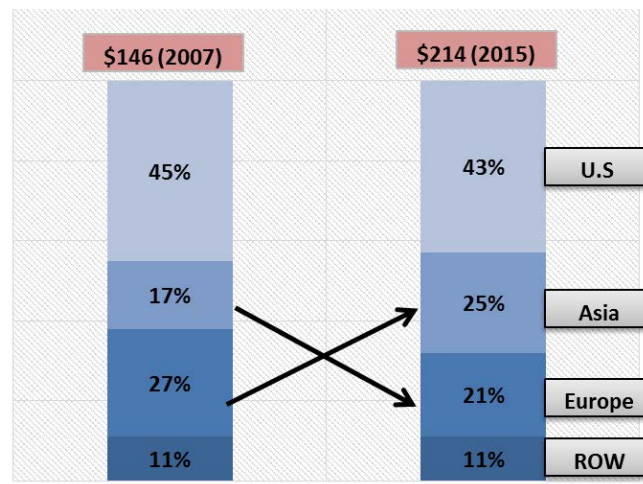
Source: UNCTAD (2014)

Note: Figures in the parentheses represent the growth rate compared to the previous year.

On the other hand, regarding technology development, in the past MNCs primarily developed their technology in their home countries and exploited them in foreign countries through FDI. However, the recent report by PwC which examined the geographical footprint of innovation by top 1000 firms in terms of R&D spending, found that firms with higher global R&D footprint had a better performance in terms of various financial indicators than their less globalized competitors. However, the report did not find significant evidences for the relationship between the level of spending and firm performance. Therefore, PwC concluded that it is not *how much* the firm spends on R&D, but *how* it spends. For example, Apple was ranked as the most innovative company in 2015, but its percentage of R&D spending of the total revenue was only 3.3%, which was only 50% of Samsung Electronics, and about 1/3 of Google and Tesla Motors (PwC, 2015).

Figure 3.5 shows the changing trend of locational distribution of US firms between 2007 and 2015. In 2007, about half of the R&D spending by US-based firms were allocated in the US (45%), followed by Europe (27%). However, in 2015, Asia became the most preferred region outside the US for R&D spending, which accounted for one-fourth of the total of \$214 billion by US-based firms. This percentage is 4%p higher than R&D spending in Europe. In particular, US firms significantly increased R&D spending in low-cost Asian countries such as China and India. The above statistics shows the importance of adding particular elements regarding MNCs' global expansion in R&D related activities.

Figure 3.5. US HQ Firms' R&D Allocation (US billions)



Source: PwC (2015)

Note: ROW: rest of the world; HQ: headquarters

Moreover, it becomes more popular for MNCs not only to offshore R&D related activities outside their home countries, but also to outsource the entire or sub-part of R&D related value activities. Such changing trend of outsourcing has attracted growing attention in academia in more recent years. Table 3.4 lists the main studies recently published that examined firms' outsourcing in higher value-added activities. The technology development, in particular, is often argued for in-house development in order to maintain one's core competence. These studies have suggested some conditions or drivers for firms' choosing outsourcing mode for technology development. The next section will discuss in more detail the conditions for firms choosing NEM (or externalization), which can be applied not just for technology development but for all activities in the value chain.

Table 3.4. Studies on Firms' Outsourcing R&D Activities

Studies	Content
Mol (2005)	R&D intensity and partnership relationships
Calantone and Stanko (2007)	Drivers of outsourced innovation
Oxley (1999), Hagedoorn et al. (2005), Belderbos et al. (2006), Lewin et al. (2009)	Institutional environment
Song and Shin (2008)	Relative technological capability between home and host countries
Contractor et al. (2010)	Outsourcing the core segments of value chain
Martinez-Noya and Garcia-Canal (2011)	The role of firm capability

3.3. NEM Approach: From Traditional to Three Conditions for MNCs' Externalization Choice

Conventional FDI theories suggest that MNCs prefer the mode of high-level (*i.e.*, internalization) to the low-level control and ownership (*i.e.*, externalization) in transferring and exploiting their home country-based ownership advantages to foreign countries (Moon, 2016a). In the current real world, however, there are many counter examples showing that MNCs choose contract-based governance instead of internal hierarchical ones despite their strong ownership advantages for various motivations.

Preceding studies on firms' externalization choice focus on the outsourcing motivations, and the theoretical basis on externalization relies much on FDI literature (e.g., Bunyaratavej et al., 2007; Graf and Mudambi, 2005; Gereffi et al., 2005), such as Transaction Cost Economy (TCE) and resource-based view (RBV) (e.g., Liesch et al., 2012; Ortiz-de-Urbina-Criado et al., 2014). Since the same theories are employed to explain firms' two distinctive options, internalization or externalization, they basically underline the assumption that the two options are substitutes with each other. However, MNCs often combine these options for a better implementation of one value chain

activity or higher value creation. Sometimes internalization can even be the driver of the externalization activities of MNCs. (the evidence can be seen in the cases of Apple and Samsung Electronics; see Chapter 5 for details). Therefore, the increase in the degree of firms' internalization does not necessarily lead to the decrease in the degree of externalization; they can co-evolve simultaneously. Such reality is not satisfactorily explained by the conventional FDI-related theories or determinants.

On the other hand, some other studies (e.g., Kedia and Mukherjee, 2009; OECD et al., 2013; UNIDO, 2015) suggested that the macro-environmental changes (e.g., globalization, technological advancements, liberalization of emerging economies, and hyper-competition) affect firms' strategic changes toward externalization of value chain activities. However, the macro-environmental factors also positively affect MNCs' international business including the internalization (e.g., FDI) choice. Therefore, externalization-specific elements are necessary to distinguish the effects on MNCs' externalization versus internalization choice.

In this respect, this section provides a conceptual framework to explain MNCs' externalization choice. This framework consists of three elements, namely fast-growing business, the existence of commercial best practices, and multiple competences. These are externalization-specific factors, which means that the higher degree of these factors will increase the likelihood of firms' externalization decision. Moreover, unlike the majority of the previous literature on externalization addressing the externalization advantages of cost reduction, process improvement, and capability building (Hätönen, 2009), this article stresses the role of externalization as a strategy for effectively responding to the competitive environment. In other words, firms may face difficulty if they do not externalize certain resources or activities given the three conditions. Such motivation of externalization is inspired by a few preceding studies (e.g., Gleich et al., 2017; Mol, 2005). The previous studies have emphasized one or two of these three conditions, but no study has integrated all of the three factors into a single framework in a systematic way. More details and specific evidences will be discussed below.

3.3.1. Externalization: Definition

The organizational governance of firms' business activities can be dichotomized into *internalization* and *externalization* (Kojima, 1992). This classification has its origin in Coase (1937) that explained market and hierarchy as alternative governance structures. The conventional FDI theories (e.g., internalization theory, OLI theory) commonly assume that firms first develop their monopolistic or ownership advantages in their home countries, and then extend their business abroad by exploiting their superior advantages (Moon and Roehl, 2001). Therefore, the conventional FDI theories prefer internalization to externalization mode by focusing on how firms sell their ownership advantages in the market (e.g., franchising/licensing) (Moon, 2016a).

However, the complex and fast-changing business environment in today's world make it difficult for MNCs to internally develop all of the necessary resources for maintaining or enhancing their competitive advantages (Ortiz-de-Urbina-Criado et al., 2014). Even some MNCs possessing strong capability sometimes prefer externalization mode of buying compared to in-house development (Mudambi and Tallman, 2010). Therefore, few MNCs pursue pure internalization or externalization strategy for their international operations. Rather, it has become more common for MNCs to pursue both modes of internalization and externalization simultaneously to exploit both of their ownership advantages and explore complementary ones.

MNCs' externalization choice has been examined extensively under the literature of outsourcing since both are commonly concerned with "make-or-buy" (make in-house or buy from outside) decisions (Elfin and Baven, 1994; Loh and Venkatraman, 1992; Mol, 2005). Unlike internalization theory (Buckley and Casson 1976), however, there is no established theory regarding externalization. Consistent with Buckley (2004), externalization and outsourcing are interchangeably used in this paper, and thus the literature review below will focus on outsourcing, although a broader scope of externalization includes other entry modes such as trade and licensing.

Outsourcing is commonly defined as “the transfer of activities and processes *previously* conducted internally to an external party” (Ellram and Billington, 2001). However, this definition does not capture the entire picture of firms’ outsourcing activities. For example, manufacturing activities outsourced by Apple to the third party have never been conducted in Apple before. In this sense, Giley and Rasheed’s (2000) definition is more comprehensive; they distinguished outsourcing into two types which are *substitution* and *abstention*. The former one occurs when firms substitute external purchases for internal activities, whereas the latter one arises when the purchase activities have not been completed within the firm before. Similar definition can also be found in other important works on outsourcing such as Kotabe and Mudambi (2009) and Liesch et al. (2012).

Outsourcing has been examined extensively in the disciplines of economics and management, but it has become an important topic in the field of international business only since the 1990s when global sourcing began to increase substantially (Hätönen and Eriksson, 2009; Kotabe and Mudambi, 2009; Mol et al., 2005). The research on global outsourcing strategy has mainly focused on manufacturing industry (e.g., Cavusgil et al., 1993; Mol, 2005; Swamidass, 1993), but more recently there have also been increasing studies on service industry (e.g., Gleich et al., 2017; Grote and Täube, 2007; Javalgi et al., 2009).

The geographic scope of outsourcing can be either domestic or international. International outsourcing has often been referred to offshoring or offshore outsourcing, which involves the transfer of both ownership and location of operations (Hätönen, 2009; Hätönen and Eriksson, 2009; Kedia and Mukherjee, 2009). On the other hand, the organizational governance of outsourcing can be either contractual modes or alliance-based modes (Contractor et al., 2010). Mudambi and Tallman (2010) argued that most outsourcing transactions are conducted through alliances instead of “buying from the market.” This is because collaboration through alliances can reduce costs compared to full internalization and lower risks compared to pure market transactions. It also

facilitates knowledge transfer when the knowledge is complex and involves much tacit element (Phene and Tallman, 2012).

3.3.2 Literature Review on Externalization: Externalization Advantages and Theoretical Background

The strategic rationalization of outsourcing has evolved over the past decades: from cost reduction in 1980s, to capability building and competitive advantage in 1990s, to survival since 2000s (Hätönen and Eriksson, 2009). Given the complex and evolving traits in outsourcing phenomenon, various theories have been created to explain the motives of outsourcing.

The outsourcing decision was first driven by cost reduction, which has been traditionally explained by the TCE (e.g., Coase, 1937; Williamson, 1975). If the transactions costs in the external market are lower than those of internal production, firms should *buy* them from the market (Williamson, 1975, 1979). Williamson (1975) further specified the factors that influence TCE such as asset specificity, uncertainty about contract parameters, and frequency of transactions. Hence, firms are suggested to outsource their non-core activities to the third parties that have comparative advantages so they can utilize the resources for other activities.

However, TCE has gradually lost its relevance for explaining firms' practice of outsourcing (e.g., Loh and Venkatraman, 1992). The criterion for outsourcing does not only rely on the costs of transaction but also the value of creation through transaction. For this, resource-based view (Barney, 1991; Wernerfelt, 1984), competence-based view (Prahalad and Hamel, 1990), and knowledge-based view (e.g., Grant, 1996) emerged as popular theoretical grounds behind outsourcing. In addition, firms not just focus on the outsourcing of standardized and low-value added activities (e.g., production operations), but recently there is an increasing trend of outsourcing high value-added activities (e.g., R&D) in foreign countries (Calantone and Stanko, 2007; Contractor et al., 2010; Martínez-Noya and García-Canal, 2011; Mol, 2005; Mudambi and Tallman, 2010; Rao

et al., 2012). Therefore, outsourcing is a strategic means of gaining access to external skills, competences and knowledge, to create new competitive advantages.

More recently, outsourcing has become a tool for transforming firms towards becoming more flexible organizations. This means loosely coordinated networks with various external partners are often employed, rather than traditionally tightly controlled hierarchy, for agile and flexible response to the volatile external environment. Such outsourcing activities are named as “transformational outsourcing” (Linder, 2004; Linder et al., 2002; Mazzawi, 2002). On the other hand, organizational learning, co-evolutionary approach, network theory, and modular systems theory also have contributed to the evolution of literature (Hätönen and Eriksson, 2009). Inter-firm and cooperative relationships such as strategic alliance are often stressed by scholars for this motivation of outsourcing (e.g., Kedia and Mukherjee, 2009; Mudambi and Tallman, 2010).

In spite of various theories proposed to explain the drivers of outsourcing, many of the literature for the externalization advantages have been much influenced by the conventional FDI theories that stress the internalization advantages (see Table 3.5). However, this FDI-based approach has a critical limitation in that externalization choice is regarded as the opposite selection of internalization. Hence, the increase in the degree of MNCs’ internalization excludes the possibility of externalization choice. However, in reality, the two options can co-evolve, and internalization can also encourage externalization for the same or different value activities, or vice versa.

Table 3.5. Studies on Outsourcing: Theories and Advantages

Items	Description	Study
Theories	Transaction cost economics, Resource-based view/competence-based view, Transactional value approach, Organizational learning, Co-evolutionary approach, Modular systems theory, Resource dependency theory, Global factory, Global commodity chain/Global value chain	Gereffi (1994, 2001), Calantone and Stanko (2007), Grote and Täube (2007), Kedia and Mukherjee (2009), Hätönen and Eriksson (2009), Javalgi et al. (2009), Mudambi and Tallman (2010), Martínez-Noya and García-Canal (2011)
Advantages of Outsourcing	Cost reduction/profit maximization, Process improvement/Co-specialization, Strategic/competitive advantage, Organizational learning, Relational rents, Corporate transformation, Flexibility/speed, Survival	Kotabe (1992), Cavusgil et al. (1993), Quinn and Hilmer (1994), Tayles and Drury (2001), Kakabadse and Kakabadse (2002), Quélin and Duhamel (2003), Trent and Monczka (2003), Buckley (2004), Kedia and Mukherjee (2009), Javalgi et al. (2009), Hätönen and Eriksson (2009), Kotabe et al. (2009), Contractor et al. (2010)

For example, for both marketing & sales and technology development activities in the value chain, Apple has increased both of its internalization and externalization modes. Specifically, Apple increased the investment and expenditures on the two activities to enhance its sales and technology capabilities, and at the same time, it also expanded its partnership with external parties to enhance the effectiveness of both activities in the global scope and scale. In other words, MNCs' externalization choice is not a trade-off with internalization choice. Since both options have their own advantages and disadvantages, firms can exploit and maximize advantages and minimize disadvantages by combining the two in the most effective manner.

Some studies (e.g., Contractor and Lorange, 2002) introduced a comprehensive framework which highlighted how the contextual and environmental changes (i.e., changes in government policy, knowledge management in firms, and production and distribution) favor firms' externalization through alliance formation. However, many of the factors emphasize the increased degree of globalization, such as deregulation and liberalization of economy, the growing role of IT, and deconstruction of the value chain. These factors can be useful in explaining the decreasing trend of market failure, but they do not necessarily lead to firms' decision towards externalization unless there are significant advantages of externalization over internalization (see Table 3.6). Therefore, we need to find externalization-specific determinants which are independent of the effects of internalization choices. In this regard, this research has aimed to fill the research gap by introducing a more comprehensive framework for firms' choice of externalization, which will be detailed in the following section.

Table 3.6. Literature on Determinant Factors for Externalization

Studies	Determinants
Contractor and Lorange (2002), Sturgeon and Gereffi (2009), Amador and Cabral (2016), OECD and World Bank (2014), UNIDO (2015), Hagedoorn et al. (2005), Belderbos et al. (2006)	Macro-environmental changes (e.g., technological advancements, liberalization of emerging economies, IPR, and hyper-competition)
Williamson (1975), Rindfleisch and Heide (1997), Geyskens, Steenkamp and Kumar (2006)	Asset specificity, uncertainty of contract parameters, frequency of transactions
Holcomb and Hitt (2007)	Asset specificity, technological uncertainty, small number's bargaining
Gereffi et al. (2005)	Complexity of transactions, ability to codify transactions, capabilities of suppliers
Song and Shin (2008), Calantone and Stanko (2007), Martinez-Noya and Garcia-Canal (2011)	Level of current firm capability
Gleich et al. (2017)	Level of competition (i.e., existence of foreign rivals in home)

3.3.3. A New Framework for MNCs' Externalization Choice

This study introduces a new framework composed of three factors that affect firms' externalization choice by incorporating and reorganizing some factors from preceding relevant studies, and by adding new factors. I argue that under these conditions, firms are more likely to externalize some of the value activities to the external parties even when the firms possess the capability to internalize the activities. The three elements are

fast-growing business, commercial best practices, and multiple competences (see Table 3.6)¹⁹.

3.3.3.1. First, Fast-Growing Business

Fast-growing business can be characterized by two aspects – production and market side. Many of the fast-growing businesses are viewed as technology leaders (Lundquist et al. 2008). In this regard, this paper examines the technological change as a proxy variable for explaining the *production side* of fast-growing businesses and its influences on firms' externalization choice.

In the fast-growing business, the introduction of new technology can make the existing technology obsolete in a short time (Folta, 1998; Robertson and Gatignon, 1998). However, the new technology is often developed through alliance between new and old firms, rather than completely displacing the incumbents like Schumpeterian “creative destruction” (Contractor and Lorange, 2002). Moreover, externalization can help firms speed up the rate of R&D, which is hard to be achieved by firms alone. Teece et al. (1994) thus emphasized that it is rarely an attractive proposition to try to develop a collection of novel skills rapidly, because it is likely to be extremely difficult to interpret and guide the learning process when many interrelated procedures are changed simultaneously.

In addition, the shorter product life cycles also impose greater risks on individual firms to bear the burden of undertaking internal R&D. This encourages firms to outsource to appropriate partners for selective R&D activities, not only for sharing the risks and investment burdens, but also for flexible and quick response to the environmental changes (Dess et al., 1995). The previous empirical studies (e.g., Geyskens et al., 2006; Walker and Weber, 1984) have also shown the evidences that high technological uncertainty increases the likelihood of firm's choice in market governance

¹⁹ The concepts of these three elements are adopted and modified from Moon's (2016b) ABCD model, and applied to the field of international business.

(i.e., externalization). This is because firms can flexibly switch suppliers when the new and more effective technologies are available in the market. By contrast, internalization would increase the costs associated with bureaucracy for a large firm in particular. For example, the self-driving car industry is growing extremely fast, thereby driving traditional automotive producers to cooperate with IT firms to achieve first-mover advantages in the emerging market, as seen in the partnership between Apple and Didi Chuxing, and BMW with Intel/Mobileye.

On the other hand, fast changing technology promotes the fast transition of the product features and rapidly-changing environment in competition (Giachetti and March, 2010). When the technology is applied at a faster pace, a greater number of products will be introduced to the market (Lundquist et al., 2008; Tasse, 2000). In such market, *speed-to-market* becomes an increasingly important factor of determining firms' success, which is often measured by the market share (Contractor and Lorange, 2002; Kotabe et al., 1996). However, it becomes more difficult for a single firm to dominate the market. Hence, the explosive growth in demand is one of the powerful driving forces of outsourcing (Quinn, 2000).

Moreover, the fast growing market demand also suggests that the catch-up speed becomes faster by latecomers through benchmarking strategy (Giachetti and March, 2010). Therefore, in order to maintain the current competitive position, the market leaders have to consider the externalization as a strategic tool for continuously moving forward. The increasing market competition facilitates the emergence of various externalization arrangements (Holcomb and Hitt, 2007). Based on the above discussion, we can develop the following proposition.

Proposition 1. The faster the growth of business the firm is in, the higher the tendency to choose the externalization mode in order to obtain the needed resources timely and adapt more flexibly to the changing environment.

3.3.3.2. Second, Commercial Best Practices

“Fine-slicing” of activities makes it possible for firms to compare and evaluate every element of the firm activities with the market suppliers, and decide whether to outsource or not to achieve lower costs or higher quality (e.g., Buckley, 2009; Kedia and Mukherjee, 2009). Some studies (e.g., Kotabe and Mudambi, 2009; Martínez-Noya and García-Canal, 2011) suggested outsourcing of inputs when they are available only for certain firms or to best-in-the-world providers. Hence, these arguments often assume that firms have no capability to produce these inputs or tasks, and thus outsourcing is not a choice but an imperative.

However, if the industry has best practices or global standard, firms should better adopt the industry standard instead of creating a new standard even if the company has the capability to provide better standard. This is because if such best practices are widely disseminated within the industry, the market will be sticky to shift to another supplier. Technology leader does not always lead to the market leaders (Moon, 2016b), but those which can provide higher value to the consumers achieve success in the market. In the past, facing challenges and taking risks were regarded as necessary to become an innovative leader, but in the current environment, this strategy is not always useful (Moon, 2016b). Pursuing only new and state-of-the-art innovation while disregarding the current best practices leads to a waste of time and money.

Best practices can create the highest commercial values, although they may not be scientifically the best. A good example is the contrasting results between Apple’s failure and IBM’s success in the personal computer (PC) industry during the 1980s and 1990s. Apple first introduced the innovative computer, Macintosh in 1984. In the following years, Apple continuously and consistently promoted “Think Different” advertisements by emphasizing its unique and creative features compared to other rivals while ignoring the huge popularity of IBM PCs in the industry. Apple was the pioneer in the PC industry, and its products were scientifically and functionally more advanced but the price was quite high, so not many consumers could afford the products. On the other hand, IBM

outsourced the production of the operating system to an outside company, Microsoft, and provided quality products with low-price. Many consumers and enterprises purchased IBM computers, and the market at that time gradually became more adoptive and familiar to the IBM brand, eventually shunning away from Apple's products. As a result, IBM's market share in PC products took off and became the industry standard in the 1990s.

In order to incorporate the best practices, firms can either internalize through learning or externalize through outsourcing. Although both methods are possible, the latter may be more appropriate, particularly when the business in which the firm belongs to possesses the industry standard and holds the patent of that standard (e.g., android and iOS in the mobile phone market).

Some may criticize the effects of losing competitiveness in the long run due to the me-too strategy which leads to destructive competition (Porter, 1996). However, when everyone is innovating, the most efficient way of staying ahead is by creating new best practices together by outsourcing other best practices (Quinn, 2000). Makadok (2001) proposed two sources of rent generation through strategic outsourcing – resource-picking and capability-building. In addition, Holcomb and Hitt (2007) argued that outsourcing appropriate activities affect firm performance by enhancing the productivity of firm's other internal activities (Holcomb and Hitt, 2007). Hence, the second condition for firms' externalization choice is suggested as follows.

Proposition 2. The stronger the degree of industry-standard in a certain input within the business, the higher the tendency to obtain those assets through externalization.

3.3.3.3. Third, Multiple Competencies

In the period of product-centered strategies, the competitive products used to be determined by one single core competence (mostly the technological competence).

Under this situation, the superior technological advantage can outweigh the weaknesses in other value activities, such as manufacturing or marketing. Recently, however, the competitive advantage of products and services increasingly relies on multiple competences from various diverse knowledge sources (Contractor and Lorange, 2002). As the needed number of competences increases, a firm can no longer master all fields of competences (Granstrand et al., 1997). Hence, acquiring complementary competences through market transactions or alliances become more important than ever for sustaining competitiveness. This encourages firms to build a competitive ecosystem, by making strategic alliances with other firms. Accordingly, the overall competitiveness of the products or services is not determined by a single firm, or the focal firm, but a cluster of firms including competitors and supporters. Therefore, knowledge is becoming more extensive to perform activities internally (Brusoni et al., 2001). This is because in order to coordinate outside suppliers and partners efficiently, firms need to know more than they make (Mol, 2005).

The emergence of multiple competences is driven by the proliferation of convergence of multi-field technology and multi-functional products. The most striking characteristic of the technological competencies of large firms is the wide range of technological fields in which they are active (Granstrand et al., 1997). The multi-technology competences encourage a growing number of multi-functional products and cross-development of previously distinctive technological areas (Narula, 2004; Porter and Heppelmann, 2014). Taking iPhone for example, the traditional feature phones had provided only the telephone (or voice) function but now it has been expanded into a multi-functional device with a number of new features and applications.

Not only the sources of inputs of products or services multiplied, but the end applications of technologies have also multiplied (Contractor and Lorange, 2002) as well. The same technology can be applied to various industries, previously considered unrelated, and relevantly. Kotabe et al. (1996) suggested that technology is blurring the industry boundaries. This thus increases the uncertainty and reduces the appropriability of technology. In order to fully capture the profits from R&D investment, firms

externalize some functions or make alliances in order to enter new market. So, the following proposition can be formulated.

Proposition 3. The larger the areas of competence outside the firm's expertise in products or services and the greater multiplicity of end applications of technologies, the higher the tendency to choose the externalization mode.

3.3.4. Discussions on the Three Conditions

The three conditions have been extensively but separately discussed in the field of strategic management to explain the emerging sources of firms' competitive advantages (see Table 3.7). For example, Ito and Rose (2004) argued that the economies of speed become a new source for firms to achieve competitive advantage. Regarding commercial best practices, Liang (2015) suggested the importance of commercial convenience in addition to price and quality which have been the traditional two sources of competitive strategy for firms according to Porter's (1980, 1985) generic strategies. Similarly, Gans and Stern (2003) emphasized commercial strategy which focuses on commercialization process by introducing the advanced technology developed in the laboratory to the consumer markets. In this sense, Koufteros et al. (2005) integrated the role of consumer's role in technology development and production process. Lastly, in terms of multiple competences, preceding studies highlighted the importance of multiple sources for achieving and sustaining competitive advantages, but there are scarce studies which explicitly mentioned the concept of "multiple (core) competences."

Table 3.7. Conditions for Firms' Externalization Choice

Factors	Concepts/Theories in Strategic Management Literature	Existing Studies on Externalization
Fast-growing business	Hyper-competition (D'Aveni, 1998), Economies of speed (Ito and Rose 2004), Manufacturing agility (Gunasekaran, 1998, 1999; Koste and Malhotra, 2000), Time management (Stalk, 1988), Value chain flexibility (Zhang et al., 2002), Value chain agility (Swafford et al., 2006), Overall process agility (Moon, 2016b)	Difficulty in developing a collection of novel skills rapidly (Teece et al., 1994), Acceleration in the rate of technical change (Contractor and Lorange, 2002), Nimble and learner firms (Mol, 2005), High technology uncertainty (Geyskens et al., 2006), Fast growing demand (Quinn, 2000), Rapid-changing environment of competition (Giachetti and March, 2010)
Commercial best practices	Commercialization strategy (Gans and Stern, 2003), Customer integration (Koufteros et al., 2005), Customer convenience (Liang, 2015), Global standard (Moon, 2016b)	E.g., IBM PC vs. Macintosh (Business Insider, 2012/12/9) Sony's ATRAC3 vs. others' MP3 technology for media player (Moon, 2017a)
Multiple competences	Integrative competence (Wang et al., 2004), Combinative capability (Kogut and Zander, 1992), Smart, connected products (Porter and Heppelmann, 2014)	Know more than make (Brusoni et al., 2001), Growing diversity of knowledge sources (Contractor and Lorange, 2002), Multiplicity of end applications of technologies and customization (Contractor and Lorange, 2002)

The emerging sources of competitive advantages require firms to pursue new ways for achieving these advantages in the global competition, in particular. This study showed that externalization or NEM methods are more effective in achieving these competitive advantages. Specifically, when firms satisfy one or all of the three conditions, they are more likely to externalize some part of their activities to outside companies instead of performing them internally. By contrast, previous studies have mentioned only one or two factors of the three conditions, and none of them incorporated them in a single, systematic framework.

Although there are some practical examples and cases which illustrate firms' outsourcing activities driven by incorporating the commercial best practices instead of sticking to the highest technology, there is no study which links the existence of commercial best practices and firms' decision for externalization. Regarding the condition of fast-growing business, previous studies only concern the speed of changes, however, by adopting the concept of the third conditions, this study stresses that if the industry/business characterized by multiple competences experiences simultaneous changes, the industry/business will grow even faster. Therefore, this study contributed by combining the key determinants of externalization of preceding studies and improved conceptualization of each conditions. For a better understanding, more specific examples and cases are analyzed in Chapter 4, whereas the application of the three conditions to prove the usefulness and legitimacy of this new framework is shown in Chapter 5 and Chapter 6 through case study and empirical test.

CHAPTER 4. CASES AND EXAMPLES FOR EXTENSIONS ON TRADE AND FDI APPROACHES

For a better understanding of the first two directions proposed in Chapter 2, this chapter conducts a series of case studies and examples. Samsung Electronics' investment in Vietnam and the growing concentration of Korean foreign direct investments (FDI) in Vietnam are taken as examples to illustrate that clusters, not the inherited advantages, affect MNCs' location choice for their production and other activities. Moreover, this chapter illustrates the example of Guangdong Province in China by showing how the clusters facilitate to upgrade the industry structure of this area and avoid hollowing-out in spite of substantial increase in the labor costs, since the 2008 Global Financial Crisis, in particular. Another example from the cluster perspective is to show the reasons behind the low performance of inward FDI in Korea clusters (e.g., specialized economic zones).

The second main part of this chapter aims to explain the globalization (or expansion) of Korea's large firms and small and medium-sized enterprises (SMEs) in ASEAN through a combination of tools including trade, FDI, and non-equity modes (NEMs). Specifically, this chapter investigates the degree of Korea's top MNCs' degree of globalization in terms of the three elements of transnationality index (TNI) to figure out the general features of Korean MNCs compared to those of global MNCs from other countries. This chapter then specifies the analysis of Korean FDI in the ASEAN region, which is considered as one of the most preferred regions for Korean firms' outward FDI. The case study and statistical figures show that no single transaction among the three (i.e., trade, FDI, and NEM) dominates Korean outward FDI in this region. Korean firms are intertwining the three types flexibly for creating more values. Finally, this chapter concludes by providing useful implications.

4.1. Cluster Effects for Locational Choice

4.1.1. Samsung Electronics in Vietnam²⁰

Samsung is the largest business group or chaebol in Korea.²¹ Since the establishment of its mobile phone production factory in Bac Ninh, Vietnam (Samsung Electronics Vietnam, SEV) in 2009, Samsung has continuously expanded its investment in Vietnam. Another \$2 billion mobile phone factory - the Samsung Electronics Vietnam Thai Nguyen (SEVT) - was established in 2013. The two plants employed 112,000 local workers out of the company's 219,822 workers outside Korea in 2014 (Samsung Electronics, 2015; Vietnamplus, 2016/5/9). Vietnam now accounts for about 50% of Samsung's mobile phone production in the world, compared to only 8% from its facilities inside Korea (Vietnamplus, 2016/5/9).

The Vietnamese government encourages MNCs to utilize locally produced parts and components. In 2013, Samsung submitted a list of 170 spare parts to the Vietnam's Ministry of Industry and Trade to be sourced locally. However, only 15 out of the 100 local companies which were recommended by the government met the quality requirements of Samsung. The lack of technological capability and constraints in capital for training has led Samsung to utilize Korean SMEs and foreign firms in Vietnam to supply parts and components for its production. Favorable host country policies have also supported about 100 Korean suppliers of Samsung (including Korean SMEs) to invest in Vietnam.

By 2014, 53 Korean firms out of 67 parts suppliers for the SEV plant were Korean, and only four Vietnamese firms joined Samsung's supply chain as first-tier parts suppliers: seven are from Japan, and one of each from UK, Malaysia, and Singapore. Other parts and components were mostly imported from China, Korea, and Taiwan

²⁰ This part is abstracted and extended from parts of Chapters 3 and 5 of ASEAN Secretariat and UNCTAD (2016), which are partly contributed by HwY-Chang Moon and Wenyan Yin.

²¹ For company profile in detail, refer to Chapter 5.

Province of China. The localization rate in Vietnam (16%) is much lower than Samsung's manufacturing plant in China, which was 40% in 2012 (Tuoitrenews, 2013). However, Vietnamese firms have been gradually supplying more parts, components and services to Samsung's operations in Vietnam. As of April 2016, there were 63 Vietnamese firms in the Samsung's supply chain, which include 11 first-tier and 52 second-tier suppliers.

Samsung also made an effort in improving the competitiveness of local suppliers. For example, it has invested in the education programs and transferred technical skills to local Vietnamese suppliers to strengthen their production and technical capabilities (Samsung Electronics, 2015). Samsung has also established various social contribution programs (e.g., vocational training, Samsung Talent Program, internship in Samsung Lab) to enhance the quality of research and development (R&D) workforce.

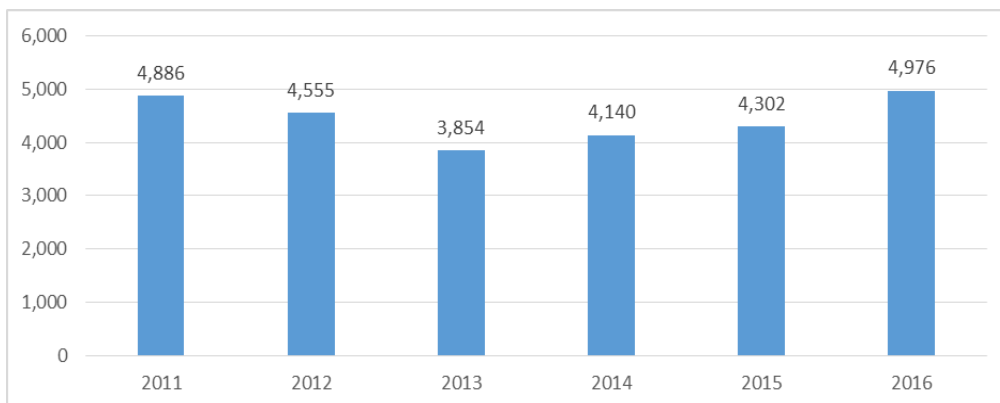
In addition to building manufacturing plants, Samsung Electronics invested huge capital in building local R&D centers. For example, Samsung Vietnam Mobile Research and Development Center (SVMC) was established in 2012, providing software for Samsung's smart phones and LTE network suppliers in ASEAN, Australia and New Zealand. Outside R&D centers of Samsung's mobile phones worldwide, this facility is the largest R&D center in ASEAN. Another R&D center, located in Samsung Consumer Electronics Ho Chi Minh City Complex, is currently under construction, and will be focused on R&D and production of sophisticated television sets. Most of the products manufactured are for exports.

Samsung has not only located a large scale of manufacturing facilities in Vietnam to exploit low cost labor and other locational advantages, but also to promote higher value-added activities, such as R&D, training and marketing. SEV plans to open phone repair centers in Vietnam for global customers, thereby expanding to downstream activities in the value chain. Although Vietnam still mainly acts as the manufacturing base and low-end activities, Samsung's various operations in the host country will help contribute to upgrade the country's position in Samsung's value chain.

4.1.2. The Growing Concentration of Korean FDI in Vietnam²²

Korean FDIs in ASEAN witnessed strong growth in 2016, with the highest growth rate peaking at 15.7% since 2013, arriving at nearly \$5,000 million (see Figure 4.1). Moreover, ASEAN's share of Korean outward FDI flows to Asia also increased substantially by almost 10% from 38.9% in 2015 to 47.7% in 2016. This implies the growing preference by Korean firms' destination choice in this region for their outward investment. However, Korean FDIs in this region tend to be concentrated in a few countries, Vietnam, in particular. Nonetheless, the industrial distribution of Korean FDI in Vietnam shows a trend of growing diversification, from manufacturing to other sectors such as real estate, construction, and distribution. The following will first describe the recent trend of Korean FDIs in ASEAN in 2016, and then analyze the reasons behind the growing FDI flows in Vietnam from a cluster perspective.

Figure 4.1. Korean FDI Flow in ASEAN (2011-2016) (\$ millions)



Source: Korea Eximbank FDI database

²² This section is abstracted, modified, and extended from a part of the ongoing project by UNCTAD in 2017, partly contributed by Hwy-Chang Moon and Wenyan Yin.

4.1.2.1. General Trends and Development of Korean FDI in ASEAN in 2016

Country Distribution

FDIs to Thailand, Indonesia, Myanmar, and Singapore decreased in 2016, while the inflows to other six countries increased significantly. However, Korean FDI inflows in ASEAN still concentrate in a few countries. Three destinations of Vietnam (46%), Singapore (23%), and Indonesia (13%) received more than 80% of Korean FDI in 2016.

Industrial Distribution

The sectors of real estate, transportation, construction, and finance & insurance experienced a particular high growth rate (near or more than 100%) in 2016. Despite its moderate growth compared to other sectors, manufacturing still received the largest FDI from Korea in 2016, accounting for 45.2% of the entire FDI flows to this region. In contrast, Korean FDI to mining decreased significantly from 25% in 2015 to 5.4% only in 2016. The top three sectors including manufacturing (45.2%), finance & insurance (13.7%), and wholesale & retail (10.3%), accounted for about 70% of the total FDI inflows in 2016.

Size of Investors

The investments by Korean large firms accounted for 69% of the total Korean FDI in ASEAN, and Korean SMEs investments accounted for 26% in 2016 (see Figure 4.2). Although the absolute amount of FDI by Korean large firms was 2.6 times that of Korean SMEs, the growth rate of Korean SMEs' FDI in ASEAN was much higher than that of Korean large firms. Compared to 2015, Korean SMEs' FDI grew by 32% in 2016, whereas the FDI by Korean large firms grew by only 8%. Moreover, in terms of country

distribution, Korean SMEs' FDIs were much more concentrated than those of Korean large firms. The top three destinations (Vietnam, Singapore, and Indonesia) accounted for 77% of Korean large firms' FDI inflows, whereas the single destination of Vietnam dominated majority of Korean SMEs' FDI with the share of 73% in 2016.

Figure 4.2. FDI by Korean Large Firms and SMEs (\$ millions)



Source: Korea Eximbank FDI database

4.1.2.2. The Cluster Effects on Increasing Concentration of Korean FDIs in Vietnam

Despite the failure of Trans-Pacific Partnership (TPP) due to the withdrawal of the US in January 2017, Korean firms' investments in Vietnam have shown a continuous growth (JoongAng Ilbo, 2017/2/27; Monthly Bobbin Journal, 2017/5/10). The share of Korean FDIs in Vietnam increased from 37% in 2015 to 46% in 2016. The acceleration of Korean investments in Vietnam is because Vietnam not only became an emerging manufacturing base but also a growing market. The following will analyze the reasons in more detail from a cluster perspective.

Cluster is normally defined as the agglomeration of firms and other related institutions in a certain area to create higher synergy effects. Krugman (1979, 1980, and 1991) introduced three main benefits of locating in a cluster, which are economies scale, greater consumption diversity, and lower transportation costs. Porter (1990), on the other hand, introduced a more comprehensive framework, the diamond model, in order to explain the cluster effects and competitiveness. However, these conceptual frameworks have critical limitations that they mainly focus on domestic scope (Moon and Jung, 2010), whereas in the context of global value chains (GVC), international linking clusters play an important role for attracting MNCs' investments. These theoretical grounds²³ of international scope can be well incorporated to explain Korean FDI in Vietnam.

By May 2016, Vietnam had more than 300 industrial and economic zones, which contributed to attracting billions of FDI inflows. Korean FDIs were particularly concentrated in the industrial and economic zones in the northern area near Hanoi, and the southern area near Ho Chi Minh City (see Table 4.1). According to the statistics on the accumulated FDI inflows by June 2016, the Bac Ninh province accounted for the biggest portion of FDI from Korea. The large amount of FDI in Bac Ninh was attributed to the investments by Samsung Electronics and its affiliates. The second largest area of receiving Korean FDI was Hanoi, followed by Dong Nai, Thai Nguyen, Ho Chi Minh City, Haiphong, and Vung Tau. Bac Ninh, Thai Nguyen, and Haiphong are provinces adjacent to Hanoi, while Dong Nai and Vung Tau are provinces near Ho Chi Minh City.

²³ Please see Chapter III for more detailed information on cluster theory.

Table 4.1. Regional Distribution of Korean FDI in Vietnam

Region	Northern area	Central area	Southern area
Number of provinces	29	13	21
Number of projects	2,594	149	2,619
Investment (\$100 million) (%)	267.89 (55.2)	25.39 (5.2)	190.68 (39.3)

Source: KOTRA (2016/7/25)

The preference of northern and southern areas by Korean firms is because the clusters in the two areas have extensive international linkages with neighboring countries which facilitate Korean firms' coordination with their global value chain activities across borders. Specifically, the North has locational advantage for firms importing input goods (i.e., parts and components) from China, while the South has the advantage of proximity to large commercial ports, main cities for consumption (the economic center of Ho Chi Minh City), and the ASEAN market. Thus, in the context of GVCs, the attractive location of global firms' investment should be extended from domestic single cluster to international linking clusters²⁴.

Secondly, Korean firms in the same business group tend to locate their overseas subsidiaries in the same clusters (e.g., industrial park, economic zone) or those near with each other. For example, majority of the investments by Samsung Electronics and its affiliates in Vietnam are located in Bac Ninh and Thai Nguyen. The two new investments (R&D center of Samsung Electronics and battery production factory of Samsung SDI) approved by Vietnam government in 2016 are located in Hanoi and Bac Ninh respectively. On the other hand, LG Electronics and its affiliates' investments are mostly located in Haiphong area. The two major investments of LG Display and LG Innotek approved in 2016 are all located in Haiphong (See Table 4.5).

²⁴ Moon and Jung (2010) distinguished clusters into four stages: regional cluster, regional-linking cluster, international-linking cluster, and global-linking cluster (Refer to Chapter 3).

Moreover, despite the high price of rental and other facilities which could be a burden for SMEs, suppliers can exploit even higher benefits such as easy access to the customer firms, increasing economies of scale, and lower costs of transportation and communication. Therefore, these large Korean conglomerates are creating their own industry zones by expanding the existing industrial clusters.

Thirdly, Korean MNCs not only expand their investments in terms of the size of FDI, but also the quality of FDI by locating more high-value added activities in Vietnam. The new wave of Korean FDIs in Vietnam after 2008 Global Financial Crisis was initiated by establishing large scale of assembly plants (labor intensive activity) of electronic goods by Samsung Electronics in the electronics industry. However, more recently, their investments are shifting to more technology and capital intensive activities, such as R&D center (e.g., Samsung Electronics) and high value-added parts and components.

For example, LG Display currently has module assembly lines (display) in Korea (Paju, Gumi), China (Guangzhou, Nanjing, and Yantai), and Poland (Wroclaw). In 2016, LG Display announced that Vietnam will become the fourth country for mass-producing the firm's modules. Other Korean suppliers (e.g., Seoul Semiconductor, Lumens) also promoted a large scale of investment projects for producing high-end parts and components (e.g., LED) last year (see Table 4.2).

Lastly, the upgrade not only occurs within the same industry (i.e., electronics), but also across industries by expanding from manufacturing to other service industries such as construction and distribution (i.e., wholesale, retail). The growing manufacturing sector creates more business opportunities for other sectors, including real estates, construction, and distribution. For example, because of the fast-growing logistics markets in Vietnam, in 2016, Samsung SDS made an agreement with Vietnam's largest aviation logistics company, Aviation Logistics Service (ALS) to provide global and inland transportation, warehousing, and customs brokerage services.

Table 4.2. Key Korean Investments in Vietnam (2016-2017)

	Investors	Location	Investment Value
1	Samsung Electronics	Hoang Mai District, Hanoi	\$300 million R&D center
2	Samsung SDI	Que Vo industrial park, Bac Ninh	Additional \$117.6 million to its existing mobile phone battery production factory
3	LG Display	Trang Due Industrial Park, Haiphong	\$1.5 billion display panel module assembly facility
4	LG Innotek	Trang Due Industrial Park, Haiphong	camera modules for major phone makers
5	Seoul Semiconductor	Dong Van I Industrial Park, Ha Nam	\$300 million LED assembly facility
6	Taekwang Industrial	Hiep Phuoc Industrial Complex, Ho Chi Minh City	Composite fertilizer plant (JV)
7	Taekwang Co.	2B Hung Phu industrial park, Can Tho City	\$171 million shoe-manufacturing factory
8	Kolon Industries Inc.	Bau Bang Industrial Park, Binh Duong Province	\$14.1 million plant manufacturing airbags and industrial fabric for automobile tires
9	Lumens	My Phuoc Industrial Park, Binh Duong	30 million LED production plant
10	Samsung SDS High Tech	Hanoi	A joint venture with Aviation Logistics Service to provide global and inland logistics
11	Hyosung Corp.	Cai Mep Industrial Zone, Ba Ria-Vung Tau Province	Constructing a manufacturing and storage complex

Moreover, the economic boom driven by the FDIs in the traditional manufacturing (e.g., processing and assembly activities) helped Vietnam become an emerging consumer market. A good example is the distribution sector such as wholesale and retails. Due to the rapid growth of sales in Vietnam's e-commerce market, Lotte Group in 2016 launched its online shopping sites based on its retail networks of Lotte affiliates (e.g., Lotte Department, Lotte Mart, Lotte Home Shopping) to open earlier in Vietnam. The online mall was built in anticipation to provide huge business opportunities of Korean SMEs' goods and services supply. Since the early 2000, it has become a general trend that Korean SMEs invest together with Korea large firms in Vietnam. The growing business opportunities can partly explain the growing trend that Korean SMEs increase FDI in Vietnam.

In addition to the distribution sector, Korean firms have also been competitive in the cinema and fast food industries. The two Korean firms, CGV and Lotte Cinema, accounted for 60% of the market by the end of 2015. Various Korean food brands, such as Lotteria, CJ Foodville, F&B, and Caffé Bene have also been very popular in Vietnam. CJ or CheilJedang, a Seoul-based food firm, has heavily invested in Vietnam. In March 2016, it purchased 4% of Vietnam Meat Industries by spending over \$13 million. It also plans to acquire over 47% of Cau Tre Export Goods Processing, one of the leading food companies in Ho Chi Minh City. The expansion of Korean FDI from manufacturing to services also promoted Korean MNCs' various entry modes, from greenfield to M&As.

The above analysis of Korean FDI in Vietnam shows that the cluster effects do not only result in the growing the quantity of the FDI, but also in the structural changes in terms of industrial distribution, size of investors, as well as the entry modes. Such quantitative and qualitative growth of Korean FDI in Vietnam will make Korean MNCs' position more sustainable in their host countries such as Vietnam, and also help the countries' economic and industrial developments.

4.1.3. Guangdong Province in China: The Cluster Effects and Sustainable Growth²⁵

The Pearl River Delta (PRD)²⁶, a cluster in Guangdong province in China is a region which accumulates a huge amount of wealth thanks to the benefits from globalization. With more than 66 million people living in this region, it is nominated as the world's largest megacity by the World Bank recently (Economist, 2017/4/8). Although it is now one of most successful economies in the world, it has been a very shabby and humble place until the late 1970s. Since its economic liberalization in the 1980s, it has attracted more than a trillion dollars of FDI, which accounted for about 20% of the entire FDI in China. The continuous globalization policy and fast growth contributed to making this region emerge as a global manufacturing factory and export hub.

However, the development path of this region did not always go smoothly. Particularly after 2008 Global Financial Crisis, thousands of small and medium-sized enterprises were bankrupted due to the internal and external challenges. Internally, the fast-growing income level and decrease in the labor supply from neighboring regions made numerous firms, which were engaged in labor-intensive sectors, face challenges in sustaining their earlier price advantages in the global market. As Figure 4.3 shows, over the last decade between 2005 and 2015, the manufacturing labor costs increased by more than 370 times, which is currently higher than India or some South East Asian countries (e.g., Indonesia). Moreover, the net inflow of migrants into Guangdong has decreased by nearly 50% from 1.1 million to 600,000 in 2016 (Economist, 2017/4/8). This, on the other hand, shows the limits of sustaining locational advantages based on only inherited, traditional advantages. Externally, the 2008 Global Financial Crisis resulted in shrinking global demands, and thus export-oriented economic development model has faced serious challenges.

²⁵ The information on PDR's economic development is abstracted and extended from IPS (2011) and a series of special reports on PDR published in the issue of April 8, 2017, by the Economist.

²⁶ The PRD hosts nine major cities in the Guangdong Province, notably Shenzhen and Guangzhou (the capital city of the province), Hong Kong, and Macau.

Figure 4.3. Manufacturing Labor Costs of Key Countries (per hour, \$)

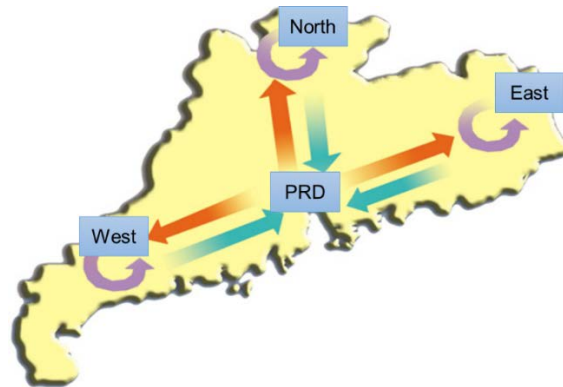


Source: Economist (2017/4/8), “The PRD is exporting jobs but producing more goods for the home market.”

Note: Data for 2015 is estimated

In order to pursue sustainable regional development, the Guangdong Province government has initiated a series of reforms to transform and upgrade the current industry from lower-value added to higher value-added structure since the 2008 Global Financial Crisis. Specifically, the provincial government introduced “double-transfer” policy to promote industry upgrade and transfer across all of Guangdong province. The “double transfer” policy refers to the transfer of labor intensive industries from the PDR region to the less developed regions of the province and the subsequent transfer of rural labor from the primary industries to the secondary and tertiary industries (see Figure 4.4). The provincial government planned to invest nearly 50 billion yuan over a period of five years (2008-2012) to develop high-end industries in the PDR and to build industrial transfer parks in surrounding less developed regions (East, West, and North of the province) (IPS, 2011).

Figure 4.4. The Industry Transfer of Guangdong Province



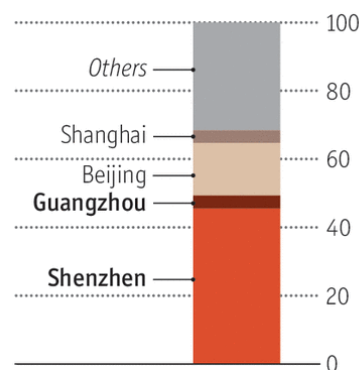
Source: IPS (2011)

The government's efforts of "double-transfer" policy can be well explained by Moon and Jung's (2010) concept of regional-linking cluster. No cluster alone can be sustainable in the fast-growing and volatile business environment. By transferring the low-value added sectors to the less developed regions, the PRD can successfully move up to the higher value added without the effects of hollowing-out, or substantial damages due to "hard-landing." On the other hand, the less developed areas (north, east, and western area of Guangdong Province) can upgrade by attracting the investment from both local enterprises and foreign MNCs. The inter-linkage among regions can further create higher synergy effects, which generate higher values.

The industrial upgrade of PDR region in fact resulted in great success. The average growth rate of this region was 12% over the last decade, and that was even higher in the earlier decades. This region accounts for 1% of China's territory and 5% of the total population, but it contributes to more than 10% of China's value added (GDP) and 25% of exports (Economist, 2017/4/8). The GDP of this region arrived at more than \$1.2 trillion, which even surpassed that of Indonesia with four times of the population (Economist, 2017/4/8). This region not only has witnessed significant growth in size of the regional economy, it has also emerged as the hothouse of innovation.

The city of Shenzhen, the first place adopting open-door policy in this region, has developed into one of the most innovative cities. Local firms that used to import core parts and components to produce competitive products nowadays work on their own inventions. Although there are not many top-tier universities in this region, many graduates from other regions of China flock to Guangdong – Shenzhen in particular, providing an abundant pool of talented people to both local and foreign MNCs (Economist, 2017/4/8). On the other hand, in terms of international patents applied by cities in 2016, Shenzhen ranked as the top, surpassing other major cities in China such as Beijing, Shanghai, and Guangzhou (see Figure 4.5). In fact, many local (e.g., Huawei, BGI) and foreign MNCs (e.g., Apple, Foxconn) invest in high value added activities (e.g., R&D) by harnessing such high brains at lower costs.

Figure 4.5. China’s International Patent Applications by City in 2016 (%)



Source: Economist (2017/4/8), “Shenzhen is a hothouse of innovation”

However, facing harsher competition from rest of China and also neighboring countries (e.g., ASEAN), the recent special report by Economist (2017/4/8) suggested four directions – diversification, integration, automation, and innovation – in order to adapt to new realities and achieve higher competitiveness. The following will first

explain the four directions in detail, and then complement by adding some further suggestions based on the sustainable factors introduced in Chapter 3.

Diversification incorporates two meanings: (1) to shift the manufacturing plants from the delta to places with lower labor costs, (2) to redirect the market from Western countries (e.g., the US, Europe) to the Chinese domestic market. *Integration* refers to enhancing the integration with domestic market by investing more in the infrastructure to facilitate the linkages with other regions. Unlike Yangzi river delta cluster, the infrastructure of delta regions was originally designed for exports. Hence in order to shift the focus to the domestic market, it is necessary to construct other infrastructure relevant to this purpose. In order to overcome the fast growing labor costs, *automation* and *innovation* are further required.

Although those suggestions by *the Economist* are plausible, the view is domestically oriented. Moreover, *the Economist* suggests the shift from reliance on the external export markets to the domestic market. Although the external market is vulnerable and less controllable compared to the domestic market, it is not always necessary for one country to choose between the domestic and international markets. Both markets are important and necessary to sustain one's economic development. Therefore, it is more advisable to pursue both domestic and international markets. As discussed in Chapter 2, since no country can be fully capable to carry out all the activities of GVC, hosting some parts of value chain activities has become the global trends in the current world. This on the other hand implies the country to pursue more economic development policies which promote and facilitate the linkage among MNCs' value chain activities dispersed around the world.

There is already close economic partnership with Hong Kong, particularly in financial sector. Hong Kong's banking system and capital market are quite advanced and liberalized, which makes it as one of the most vibrant global financial centers. On the other hand, the financial sector in the mainland is heavily controlled by the government. Hence, many mainland companies consider Hong Kong as their parking center which facilitates their foreign investment. Another important effort by Guangdong province is

its heavy investment in infrastructure. The provincial government released the latest five-year plan for Guangdong in 2016 and promoted “one-hour transport circle” to connect the main cities in the delta region, including Hong Kong and Macau. For example, Hong Kong-Zhuhai-Macau bridge which is still under construction and being completed soon, will help the four-hour car journey reduce to 45-minute only. This is particularly helpful for Macau to attract the global tourists.

However, the current extensive regional-linking clusters between Guangdong, Hong Kong, and Macau can be extended to global-linking clusters through partnership with Northeast (e.g., Korea) and Southeast Asian (e.g., Vietnam, Singapore) clusters (see Figure 4.6) (IPS, 2011). Recently, after the 2008 Global Financial Crisis in particular, Korean electronics firms have extensively invested in Vietnam and other Southeast countries. However, many of the parts and components are procured from China. Thus, Guangdong’s role of linking between Northeast and Southeast Asian regions will be particularly important for the effective linkages among the value chain activities of MNCs.

A manager of Hong Kong’s Kerry Logistics with a large presence in the delta region said that in spite of the growth of labor income, the effective business system in this region, in fact, help his company save money. For example, it only takes about one day to ship goods from northern Vietnam to the delta region (Economist, 2017/4/8). Similarly, the supply chain manager of Huawei stressed that the reducing costs should not be the single driver which forces them to shift the manufacturing out of the region. The costs might be increased by 20-30%, but the benefits from easy access to the supplier bases are even larger (Economist, 2017/4/8). Moreover, an effective manufacturing process should be accompanied with R&D activities. Only the innovative cluster such as PDR can host such collaborative manufacturing. Considering these reasons, the company decided to remain their manufacturing based in this region

Figure 4.6. Global-Linking Clusters between PDR, Northeast, and Southeast Asian Clusters



Source: IPS (2011)

4.1.4. The Performance of Korean Clusters in Attracting FDI²⁷

Developing specialized economic zones is often considered as policy tool by local or federal governments to achieve their strategic goals of economic development and enhancing national competitiveness. Korean government is not without exception. In order to attract FDI, it has established various specialized zones such as foreign investment zones (1998), free trade zones (2000), and economic free zones (2003), and company city (2004). However, the performance was far low from expectation; the

²⁷ This part is abstracted and extended from some part of Moon and Yin (2017b).

effectiveness in attracting FDI was significantly lower compared to the costs of building these specialized zones.

The total amount of inward FDI to the three types of specialized economic zones (i.e., economic free zones, free trade zones, and foreign investment zones) accounted for only a little more than one-fifth of Korea's total inward FDI during the period of 2003-2014. In particular, during the same period the amount of inward FDI into the eight free economic zones was only 14.4% of the costs of building these economic zones. Hence, the revenues were not large enough to cover the operating costs. Moreover, it shows significant differences among free economic zones. Majority of FDI flew into Incheon, a city near the capital of Seoul, while some other economic zones which were far from Seoul attracted nearly none.

The recent report by Korean Economic Institute (2016) conducted an intensive investigation about the reasons behind the low performance of attracting FDI in these free economic zones. The reports found that these free economic zones compete rather than their original intension of cooperation and are overlapping with similar characteristics. This thus results in huge amount of wastes in money and efforts. The second main reason for the low performance is the lack of differentiation or incentives compared to other national economic zones. This report particularly emphasized that although Korea's specialized economic zones have comparative advantages in geographic locations, easy accessibility to the market, developed industrial infrastructure, other obstacles such as the extensive regulations and rigid labor market have been the critical problems for attracting FDI.

Moon and Yin (2017b) suggested that the formation of international-linking clusters is the right direction for Korean government to effectively attract FDI. It is not advisable to limit the scope of competitiveness of cluster by itself within a certain boundary, but it should be extended from enhancing the competitive of a single cluster to the capability of connecting neighboring or distant clusters either within the country or across the national borders as long as they can create synergies. For example, although the GDP and land size of Hong Kong and Singapore are quite small, their openness so the global

scope of both trade and investment rank at the top in the world. This is because global MNCs consider Hong Kong and Singapore as their platform for further investment in the neighboring regions, not the end of the investment in Hong Kong or Singapore. This provides meaningful implications for Korean government to establish effective policies for enhancing their FDI attractiveness.

4.2. Korean MNCs' Globalization and FDI in ASEAN

4.2.1. The Degree of Globalization of Korea's Top 20 MNCs²⁸

In 2013, top 20 Korean MNCs were ranked in terms of their foreign assets and most firms were subsidiaries of Korea's eight leading business groups (or *chaebols*), which are Samsung, POSCO, LG, Hyundai Heavy Industries, Hyundai-Kia Motors, SK, Lotte, and Hyosung Group (see Appendix Table A1). Five out of the twenty MNCs were also included in UNCTAD's "Top 100 non-financial TNCs from developing and transition economies" in 2012.²⁹

Samsung Electronics had the highest TNI at 56.1, followed closely by SK Hynix (54.1) and Samsung SDI (48.8). All of the top three companies belong to the electronics industry. The next three firms in terms of their TNIs have scored in the 40s, and belong to either the chemical or electronics industries (LG Chem, 47.9; LG Display, 46.1; and Lotte Chemical, 44.7). The 7th to 11th firms have TNIs in the 20s and 30s. These firms mostly belong to the automobile and wholesale & retail trade industries. KOGAS, KEPCO, and SK Telecommunications ranked close to the bottom; notably, two of the three being state-owned companies. The TNIs of these firms are all lower than 8, which is far lower than the other 11 firms.

²⁸ This part is abstracted and extended from some parts of Moon and Yin (2015).

²⁹ The five multinationals are Samsung Electronics, Hyundai Motor Company, POSCO, LG Electronics, and Hynix Semiconductor.

Table 4.3 shows a snapshot of changes in the collective assets, sales, and employment of the top 20 Koreans MNCs from 2011 to 2013. Foreign assets grew by 20.7% in 2012. They continued to grow in 2013, in spite of their decreased rate of 17.4%. Total assets, in turn, grew by 15.6% in 2012, although the growth slowed to 7.5% in 2013. The respective differences in growth rates between foreign assets and total assets for each year imply that companies have accelerated their overseas investments over domestic investments for the past three years.

Table 4.3. Top 20 Korean Multinationals, 2011-2013 (\$ million, number of employees)

Variable	2011	2012	2013	% change (2011- 2012)	% change (2012- 2013)	% change (2011- 2013)
Assets						
Foreign	47,249	57,042	66,952	20.7%	17.4%	41.7%
Total	518,765	599,643	644,671	15.6%	7.5%	24.3%
Foreign share of the total (%)	9.1%	9.5%	10.4%			
Sales						
Foreign	240,707	283,929	317,036	18.0%	11.7%	31.7%
Total	426,352	493,885	525,811	15.8%	6.5%	23.3%
Foreign share of the total (%)	56.5%	57.5%	60.3%			
Employment						
Foreign	287,722	327,877	375,517	14.0%	14.5%	30.5%
Total	644,647	684,015	747,709	6.1%	9.3%	16.0%
Foreign share of the total (%)	44.6%	47.9%	50.2%			

Sources: Moon and Yin (2015)

In the case of sales, the trend is similar to that of foreign and total assets. The growth rates of foreign sales and total sales in 2013 decreased compared to 2012, but the gap between the two increased over the same period. As was the case for assets, the growth rates of foreign sales in both 2012 and 2013 are higher than those in terms of total sales.

In contrast to assets and sales, the growth rates of both foreign and total employment are higher in 2013 than in 2012. This is because two key sources (Samsung Electronics and Lotte Shopping) of foreign employment among the 14 firms expanded their overseas employment dramatically in 2013. The number of foreign employees of Samsung Electronics, for example, increased by 14,142 in 2012, and increased substantially by more than 50,000 in 2013 because of its active commitment to overseas factories. The expansion of Lotte Shopping's foreign employment is more aggressive, particularly in China, Indonesia, and Vietnam. The overall foreign employees increased by only 917 in 2012, but went up by 11,038 in 2013, which is more than 10 times that of the preceding year.

Comparing the foreign shares of the three indices, it is evident that the ratio of foreign to total assets is much lower than that of the other two (about 1/6 level of the other two). The same data for the "100 largest non-financial TNCs from developing and transition economies" show that the foreign shares for all three variables are around 60% in 2013. Korea's level of internationalization in terms of sales and employment is similar to the global standard, but internationalization of assets lags far behind. Consequently, there is much potential for Korean firms to expand foreign investment in the future.

4.2.2. Korea's FDI in ASEAN³⁰

4.2.2.1. Stages of development in Korea's investments in ASEAN

Most of previous studies (e.g., Kim and Rhee, 2009; Kwak, 2007; Nicolas, Thomsen, and Bang 2013; Yang et al., 2009) divided the stages of Korean MNCs' FDIs based on the economic development stage or government's changing outward FDI (OFDI) policy. However, there are two main limitations when applying these approaches to the case of Korean MNCs' FDIs in ASEAN. First, there is a time gap between the policy introduction or implementation and its effects on the FDI outflows. In other words, instead of the immediate influence on firms' OFDI activities, the increase or decrease in OFDI flows would occur a few years after the introduction of new policy. Second, these approaches are for the overall foreign countries in general. Hence, we need a more realistic stage model to analyze the changing trend of Korean MNCs' FDI in the ASEAN region. In this regard, Korean OFDI in ASEAN can be divided into four stages (see Table 4.4).

The first stage of OFDI in ASEAN was mainly driven by the resource nationalism caused by the second oil shock. The Korean government relaxed OFDI restrictions and removed prior approval system in 1981. Therefore, the main driver of OFDI in this period by the Korean MNCs in ASEAN is resource-seeking.

Korean FDI in ASEAN took off in two periods (i.e. second and fourth stages). The first period was the late 1980s when the Korean government liberalized its investment policy, in order to overcome the appreciation of the Korean currency, high labor costs at home, and trade conflicts. However, the OFDI in ASEAN driven by cost reduction was not as significant as resource-seeking and export promotion FDI motivations. This might be because more cheap-labor seeking OFDI went to China after the normalization of

³⁰ This part is abstracted and extended some parts of chapters 3 and 5 of ASEAN Secretariat and UNCTAD (2016), which are partly contributed by Hwuy-Chang Moon and Wenyan Yin.

relations with China since 1992. Hence in the second stage in ASEAN, the export-driven FDI emerged along with resource-seeking FDI in the previous stage.

The OFDI liberalism slowed due to the 1997 Asian Financial Crisis, and the OFDI flows also scaled down until the early 2000s when Korea's domestic economy completely recovered. During the recovery period, the Korean government further relaxed the OFDI regulations and provided various support policies and measures. In this stage, the FDI motivation of cheap labor-seeking became more significant than other motivations – market- and resource-seeking FDIs.

The second take-off phase relates to the fourth stage, which took place after 2006. During this phase, many Korean companies having already invested in China in the previous stage moved their production facilities to ASEAN, along with a significant increase in new investments. In contrast to previous stages, Korean FDI flows in stage 4 were led by large firms, particularly Korean *chaebols* after the 2008 Global Financial Crisis. The number of large Korean companies that made overseas investments rose and the amount that they invest also increased. More importantly, in this stage, Korean MNCs invested in ASEAN by incorporating the region into their global value chains, aiming to create synergies with other locations of value activities (e.g., China, Korea, and advanced countries).

Table 4.4. Stages and Characteristics of Korean MNCs' FDI in ASEAN

Stage	Characteristics	Drivers
Stage 1 (1982-1987)	Initial stage (Government-led industrialization)	Resource-seeking
Stage 2 (1988-1997)	Growing stage (Pre-crisis liberalization)	Resource-seeking, market-seeking (i.e., export promotion)
Stage 3 (1998-2005)	Restructuring stage (Post-crisis liberalization)	Resource-seeking, market-seeking (i.e., export promotion, local market penetration), cost reduction
Stage 4 (2006-)	Proactive stage (Acceleration of globalization)	Global value chain

Source: This table is abstracted and modified from ASEAN Secretariat and UNCTAD (2016)

4.2.2.2. Korea's Top 20 MNCs in ASEAN

There are at least 3,773³¹ Korean companies, including large MNCs and SMEs, in ASEAN. The top 20 most internationalized large MNCs of Korea have a presence in ASEAN, with almost half of them establishing subsidiaries and facilities in multiple locations across the region. Large Korean MNCs dominate the list with companies such as Samsung and LG in electronics, POSCO in metals and infrastructure sectors and the Lotte group in retail and chemicals. All of them have sales offices or representative offices in addition to having main subsidiaries in the region. The industry in which some of these Korean MNCs do business also influences the type of business (i.e., production, sales or service corporation) in establishing their presence in ASEAN. For instance, in the automobile industry, companies such as Hyundai Motor have regional headquarters

³¹ The figure is based on the record of Overseas Investment Information System of Korea (www.ois.go.kr), which provides the information of Korean firms investing abroad. According to this system, there is no record for Korean firms investing in Brunei Darussalam. Hence 3,773 incorporate Korean firms investing in nine ASEAN countries. This figure also includes only production, sales and service corporations, whereas local branches and liaison offices are excluded.

in Vietnam and Malaysia, including sales offices in other member states even though Hyundai does not procure cars in ASEAN.

Aside from the top 20 Korean MNCs, other Korean companies have also invested in ASEAN and they operate in a wide range of manufacturing and service industries. Some Korean MNCs in ASEAN have extensive networks of subsidiaries in the region. For instance, a total of 14 major Korean MNCs have a combined number of 116 subsidiaries in the region during 1977-2015. POSCO has the largest number of subsidiaries (45) with one-third of them in resource-rich Indonesia and more than 70% of them being established after the 2008 Global Financial Crisis. Samsung C&T and Lotte Shopping have also established more than 50% of their subsidiaries in the region after 2008. More than 70% of these 116 subsidiaries of the 14 Korean MNCs were established in recent years, which suggest growing interests of large Korean companies' investment in ASEAN.

Entry Strategy of Korean Top 20 MNCs in ASEAN

Korean companies have strong firm-specific advantages that they exploit when investing abroad. Companies such as Samsung, LG, Hyundai Motor, and POSCO are among the leading companies in their sectors with a substantial global market share. The exploitation of such advantages can take many forms. While this section concentrates on FDI with majority or wholly-owned subsidiaries, in many cases, such investments are complemented by other modalities, including collaborative partnership agreements in R&D, distribution, or contractual relationships within the value chain.

Majority-owned greenfield investment has been the predominant form of internationalization for Korean companies, and this is also the case in the ASEAN region (Moon and Yin, 2015). The 14 major Korean MNCs have a majority of their foreign subsidiaries established with a majority ownership arrangement (see Table 4.5). The modality depends not only on the preferences and ownership advantages of the investing firm, but also on the availability of alternative modes of entry, as well as any restrictions

on greenfield investment in a market. The investing firm must be able to bundle its firm-specific resources and capabilities with those available in the local market (Hennart, 2009), which may require multiple modalities (acquisitions, joint ventures, contracts, partnerships) to be employed. Acquisitions in particular are complementary means to build a presence in new markets which overcome the investor's lack of knowledge about the market, while often introducing other problems in terms of lack of integration with the firm's other operations.

Table 4.5. Share Ownership of Foreign Subsidiaries by the 14 Major Korean MNCs in ASEAN

Ownership percentage	No. of subsidiaries
Less than 50%	6
More than 50% - less than 100	29
100%	46
Unknown	35
Total	116

Source: ASEAN Secretariat and UNCTAD (2016)

The subsidiaries of these 14 Korean MNCs were established in different ASEAN member countries for specific functions or activities. For instance, most of the 14 Korean MNCs' subsidiaries in Vietnam are involved in business activities related to manufacturing electronic devices and parts (e.g., Samsung Electronics, LG), distribution (e.g., Lotte Shopping), and construction (e.g., Hyosung, Samsung C&T, Hyundai Heavy Industries). In Indonesia, they are involved in energy and resource development (e.g. POSCO), and in Singapore as a regional business hub including business functions related to trading, investments and sales. Table 4.6 presents the distribution of subsidiaries of these 14 major Korean MNCs in ASEAN.

Table 4.6. Number of Subsidiaries in ASEAN of the 14 Major Korean MNCs

Country	No. of subsidiaries	Country	No. of subsidiaries
Vietnam	29	Thailand	11
Indonesia	28	Myanmar	7
Singapore	18	Philippines	6
Malaysia	16	Cambodia	1

Source: ASEAN Secretariat and UNCTAD (2016)

4.2.2.3. Korean SMEs in ASEAN

Korean SME investment projects in ASEAN rose substantially in recent years along with the surge of investments by large Korean MNCs in the region. ASEAN is a key destination for FDIs by Korean SMEs. Various economic reasons and locational factors contributed to this trend. Korean SME investments in ASEAN is concentrated in Vietnam, followed by Indonesia and Singapore. In 2015, Vietnam accounted for more than two-thirds of Korean SME's FDIs in the region. The rise in Korean SMEs' FDI in Vietnam was mainly driven in manufacturing activities by large scale investments of Korean technology giants such as Samsung and LG. These large Korean MNCs encouraged their part and component suppliers from the home country to operate close to them in the host country.³²

Employment

In order to investigate Korean SMEs' employment generation in ASEAN, this section

³² Examples of Samsung Electronics' part and component suppliers investing in Vietnam are Woojeon (smartphone cases), MCNEX (Camera modules), Flexcom (Flexible Printed Circuit Board, FPCB), INTOPS (smartphone cases) (ETNews, 2014).

selected top 10 Korean SMEs, in terms of the size of local employment, for each ASEAN member states.³³ These 81 overseas subsidiaries in ASEAN generated 124,565 employees in total, including 123,704 local people and 861 Korean staff, which are less than 1% of local employment (see Table 4.7).

Table 4.7. Industrial Distribution of Employment by Korean MNCs

Industry	No. of subsidiaries	Employment		
		Koreans	Local employees	Total
Manufacturing	59 (73%)	809	122,744	123,553
Wholesale and retail	9 (11%)	15	161	176
Construction	6 (7%)	27	728	755
Service	4 (5%)	5	48	53
Transportation	2 (2%)	4	18	22
Finance & insurance	1 (1%)	1	5	6
Total	81 (100%)	861	123,704	124,565

Source: ASEAN Secretariat and UNCTAD (2016)

Out of these 81 subsidiaries, 59 (73%) engage in the manufacturing industry, particularly the textile and apparel sector. They employed 123,553 people in total (809 Korean staff members and 122,744 local people), accounting for 99% of total employment by the 81 sample subsidiaries. Nine subsidiaries were engaged in wholesale and retail service sector, which were mostly located in Singapore. The nine firms

³³ The data are abstracted from Overseas Investment Information System of Korea Trade-Investment Promotion Agency, which provides various information, including local employment by the overseas subsidiaries of all the Korean firms investing abroad. We exclude subsidiaries for which parent companies are unknown. There is only one subsidiary in Lao PDR, and no record for Brunei Darussalam.

employed 176 people (15 Koreans and 161 local employees). Another six subsidiaries engaged in construction sector, employing 755 people, including 27 Koreans and 728 local workers.

In terms of the geographical distribution, Korean SMEs in Indonesia created the largest number of employees with 49,966 people, including 45 Koreans and 49,921 local people. Vietnam witnessed the second largest employment of 41,773 persons and the Philippines followed with the third largest number of employees with 15,364 people (see Table 4.11). Therefore, Korean SMEs generated significant employment in ASEAN host countries.

Table 4.8. Geographical Distribution of Employment by Korean MNCs

Country	Employment		
	Koreans	Local employees	Total
Cambodia	31	7,754	7,785
Indonesia	45	49,921	49,966
Malaysia	33	580	613
Myanmar	20	5,186	5,206
Philippines	64	15,300	15,364
Singapore	17	61	78
Thailand	43	3,737	3,780
Vietnam	608	41,165	41,773
Total	861	123,704	124,565

Source: ASEAN Secretariat and UNCTAD (2016)

Unconventional Drivers and Motivations of FDI by Korean SMEs

Korean SMEs have been traditionally motivated to invest in this region, through

resource-, efficiency-, and market-seeking FDI. In addition to the conventional FDI motivations, some other types of unconventional motivations can be found in Korean SMEs investment in ASEAN. As the three motivations (i.e., technology learning, labor management relations, and market learning) which are more popular for firms investing in advanced countries, have not been pursued significantly by the Korean SMEs currently in the ASEAN region. As such, this section mainly deals with the other five types of unconventional FDI, classified under two factors of the Porter's diamond model - *related and supporting industries* and *firm strategy, structure, and rivalry*.³⁴

Follow-the-customer. Firms that invest abroad become driven by this motivation when they follow their customers abroad to keep custom or business relationship. Many cases of Korean SME investment in ASEAN are to follow the footsteps of their customers' investment in the region. Many Korean SMEs investing in the electronics sector in ASEAN are part and component suppliers of large Korean firms. For example, the establishment of mobile phone manufacturing plants of Samsung Electronics in Vietnam attracted nearly 100 suppliers of Samsung (including its affiliates and domestic cooperative firms, including Korean SMEs; see box table 1) to Vietnam since 2009. Tens of Korean firms have also decided to invest in Vietnam for parts production to support \$1.5 million project of LG Electronics in Haiphong City. There was a sharp increase in FDI in ASEAN by both Korean large firms and SMEs particularly after 2011, in the sector of electronics manufacturing.

Infrastructure. This motivation is to exploit the infrastructure of host countries to reduce costs in communication and transportation. Many Korean SMEs choose to operate in industrial parks or industrial complexes that provide better physical infrastructure and connection. In the case of Vietnam, before the announcement of a protocol (Decree 24/2007/ND-CP) on the new corporate income tax in 2007, Korean large firms chose industrial parks which were provided with well-developed logistics and other industrial infrastructure, whereas majority of the Korean SMEs selected other

³⁴ For more information about the general analysis of this, see Moon and Roehl (2001) and Moon (2007).

non-industrial zones because of lower rents. However, after the 2007 protocol, not only Korean large firms but also SMEs tend to establish their manufacturing plants in the industrial zones in spite of higher rental fees, because of the benefits of corporate income tax in the industrial zones (Korean Ministry of Knowledge Economy, 2008).

For instance, Korean SMEs' subsidiaries (e.g., Dongsin, Mobase, Daewon Vina) chose to locate in Yen Phong Industrial Park of Bac Ninh Province in Vietnam, where the annual rental is the most expensive in Vietnam industrial parks. In addition, many Korean SME suppliers of Samsung Electronics (e.g., JK Vina, JuKwang Precision, Seohwi Vina) are located in Diem Thuy Industrial Zone, near its second smartphone factory in Yen Binh Industrial Park in Vietnam.

Regulation bypassing. This motivation aims to avoid domestic restrictions and take advantage of trade quota privileges or low tariff rates of host countries. Under the ASEAN Trade in Goods Agreement, duty rates for trading most goods have been zero or reduced to 5%, among six ASEAN member states (Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, and Thailand); the effective rate for other four member states will come into force by 2018. Moreover, the recent growth of Korea's textile and apparel firms investing in Vietnam is not only because of exploiting local cheap labor, but also of bypassing the regulations and access to other advanced countries for exports. By 2015, there were around 600 Korean firms in this sector; Hyun Jin Corporation, a Korean SME, along with other Korean large firms (e.g., Panco, NOBLAND, Youngone), is included among the top export firms in the textile and apparel sector in Vietnam (KOTRA, 2015).

Catch-up. This motivation is pursued by firms when they invest abroad to imitate or offset the advantages of their competitors going abroad. The new paradigm of firm competitiveness shifts from competition among single firms to the entire ecosystem led by the leading firm (Moon, 2016b). For example, Samsung and LG are the major rivals in both Korean and international electronics markets; their overall competitiveness highly relies on their suppliers' competitiveness. Therefore, Samsung's (or LG's) suppliers cooperate with Samsung (or LG), but compete with their counterparts of LG

(or Samsung). Therefore, after the entry into Vietnam by many Samsung's Korea-based suppliers, LG suppliers also invested in Vietnam (e.g., Trang Due Industrial Park, in Haiphong City), in order to keep up with the competitiveness of Samsung's suppliers.

Strategic location. Strategic location refers to the key market, for taking the locational advantage, where firms can achieve various strategic objectives. For example, Korean SMEs' cooperation with Singapore-based companies helps the former focus on technology development while providing the latter with roles to penetrate markets in the region given that Korean SMEs lack experiences with local management and marketing matters. For example, a Korean startup Neo Pop which manufactures LED pet collars by inscribing texts such as the name of the pet and mobile phone number for emergency, invested in Singapore not only for its best business environment for startups, but also for its strategic location as a business hub connecting the large Southeast Asian market.

Some Selective Cases of Korean SMEs in ASEAN

Table 4.9 provides key features of the 12 cases presented in this section³⁵. Most of these companies are in apparel business and have been established for 20 to more than 50 years. Some of them are competitive companies in the global market specializing in the business and industry. Although most of them supply products to global brands, through Original Design Manufacturer (ODM) or Original Equipment Manufacturer (OEM) methods, many of them have also established their own in-house R&D facilities for design and product development. The more detailed information is provided in Appendix regarding the 12 SMEs' FDI in ASEAN.

³⁵ According to the revised version of Small and Medium-Sized Enterprises Basic Act in Korea, the criteria of small and medium-sized firms are as follows: (1) The three-year average sales value should be less than a certain level, which varies across different industries (e.g., apparel and textiles, lower than 150 billion Won); (2) The company asset should not exceed 500 billion Won; and (3) The company should not belong to any other business groups.

Table 4.9. Basic Information on the 12 Korean SMEs

	Business sector	Year	Countries
1. Hyun Jin	Apparel	1987	Vietnam
2. Sees Global	Sports gears	1970	Vietnam, Cambodia
3. MSA	Apparel	1992	Vietnam
4. Suy	Apparel	1991	Vietnam, Indonesia, Philippines
5. Gomundang Printing	Printing and packaging	1962	Vietnam
6. Dada	Headwear	1974	Vietnam, Indonesia,
7. Molax Trading	Apparel	1996	Vietnam, Indonesia,
8. Kyung Seung	Apparel	1994	Vietnam, Indonesia,
9. Doing-In Entech	Aluminum frame backpacks, sports equipment, and carts	1992	Vietnam, Philippines
10. PSMC	Electronics parts and die manufacturing	1978	Philippines
11. FTN	Apparel	1974	Vietnam, Indonesia, Philippines
12. Kumnumg	Molds electric appliances	1993	Thailand

Source: ASEAN Secretariat and UNCTAD (2016)

4.2.2.4. Korean MNC-SME Production Networks and Business Linkages

The old paradigm of MNCs' overseas investments is often focused on single motivation, such as seeking cheap labor or the market potential of the host country. Yet, the new paradigm for FDI, seeking locational advantages to maximize synergies by linking other activities located in other countries, gives rise to the importance of GVC participation.³⁶

³⁶ The GVC participation rate can be measured using two elements: backward participation and forward participation. See Chapter 2 for details.

This is because the fragmentation of value activities requires that firms deploy their value chain activities in the locations where they can perform most efficiently, and foster cooperation with other firms all over the world, thereby allowing them to complement their relative lack in resources (Moon, 2016a). Such kind of efficient firm networks across national borders can benefit firm operations and profits.

Until the mid-2000s, no more than 10 large Korean companies invested in Vietnam. After the 2008 Global Financial Crisis, however, Korean large MNCs that produce electric and electronics increased their investments in Vietnam. Many firms in textile, apparel, and footwear industries also shifted their existing investments from China to Vietnam. Large Korean retail and supermarket chains such as Lotte and E-mart are actively expanding their presence in Vietnam, and they are also influencing many of their Korean suppliers to invest in the host country (Business Korea, 2014). The presence and recent surge in investments by large Korean firms have also encouraged FDIs by Korean SMEs, and many of them are suppliers of parts and components. This symbiotic relationship between Korean MNCs and SMEs strengthens the production networks and linkages between them in the ASEAN region. Korean firms are also building linkages involving indigenous ASEAN suppliers.

The number of new large firms investing in Vietnam rose from 16 in 2009 to 39 in 2015 and the number of new Korean SMEs rose from 91 to 331 during the same period. A majority of Korean SMEs' investments went to manufacturing sector. Korea is the largest foreign investor in Vietnam because of the recent surge in investment by Korean large companies and SMEs. The host country has emerged as a global manufacturing hub for Korean electronics firms.

The establishment of large Korean electronics companies together with their affiliates and suppliers in Vietnam has expedited the industrial transformation of the host country. Until 2009, the manufactured exports of Vietnam were footwear, apparel, and furniture, but in 2013 the top manufactured exports were electrical and electronic equipment (OECD and World Bank, 2014). As a result, Vietnam has become a major mobile phone production hub. Korean MNCs in particular contributed to Vietnam's

structural shift towards more sophisticated and higher value-added exports (OECD and World Bank, 2014). Vietnam provided more incentives for FDI in higher value-added sectors. The Vietnamese government has given the preferential incentives to many large electronic firms, such as Intel in 2006, Samsung in 2010, and Nokia, Bosch, and LG in more recent years.

4.2.3. Conclusions

Korean firms are making strong inroads in ASEAN. Various factors drive them to invest in ASEAN. More importantly, Korean companies are increasingly investing abroad for a combination of reasons rather than just on a single motive basis. ASEAN's integration and complementary locational advantages provide an attractive platform for Korean and other investors, large and small, to build their regional production networks or value chains linking to a greater global value chain process in which they participate and lead.

Some Korean MNCs continue to look for even lower cost locations. For example, Samsung Electronics is negotiating with Myanmar to establish new manufacturing facilities to reduce costs and achieve production efficiency. Facing new challenges, Korean SMEs should continue to follow their existing customers (i.e., Korean large firms or multinationals) when they move to lower cost countries, but they also need to consider expanding their customers, from Korean MNCs to other MNCs in the region. This dynamism, bringing enhanced competition and cooperation, will shift the GVC of firms to the global ecosystem of the region.

Likewise, the prospect for further growth in FDI by Korean SMEs is also promising. As large Korean MNCs increase their scale of investment in ASEAN, they continue to attract and encourage Korean SMEs to operate closely as their suppliers or contract manufacturers in the host region. Increasing costs in Korea and the need to expand sales will continue to drive Korean SMEs to establish a strong presence in the rapidly growing ASEAN region. This will lead Korean SMEs to play a pivotal role in linking ASEAN to the GVC in global electronics and garment, including establishing a high level

benchmark for ASEAN SMEs to emulate. Some Korean firms source materials and subcontract part of their operations to ASEAN companies and local SMEs. In this context, they help forge increasing business linkages with ASEAN SMEs.

CHAPTER 5. A CASE STUDY: APPLE AND SAMSUNG ELECTRONICS

5.1. Methodology

This chapter develops a case study to illustrate and prove the two newly introduced frameworks – namely the integrated framework of global value chain (GVC) strategy and three conditions for externalization. A case approach has two main objectives. One is to build on a theory based on the findings and insights from either single or multiple cases. The other is to elaborate on an extant theory or a framework by making it clearer (Eisenhardt, 1989; Kotabe et al., 2007; Lukka, 2005). The goal of case study in this chapter follows the second one.

The case approach is particularly useful to address the questions of “how” and “why,” and it also has the strength of tracking the changes over time (Yin, 2003). In this sense, by conducting the case approach, this chapter can investigate *how* distinctive multinational corporations (MNCs) pursue similar GVC strategies – combining both internalization and externalization governance for generating higher values, and also *why* (or the motivations) these firms externalize some value chain activities in spite of their strong ownership advantages in those activities. I selected two companies, Apple and Samsung Electronics, to highlight the differences as well as the commonalities in the smartphone business regarding the GVC strategy and the determinants for externalization decisions. There are three main reasons behind the case selection.

First, the industry has a global significance. Since its first launch in the market in 2007 by Apple, the volume and revenue of this business in a global scale have grown significantly. After ten years, the industry developed from a growing stage into a mature stage, because many emerging country MNCs, China in particular, entered this industry and accelerated the competition among firms. Moreover, smartphone business is

different from conventional manufacturing sectors, where the product itself comprises physical components. The smartphone, as Porter and Heppelmann (2014) described, has three core elements: physical components, smart components, and connectivity components.³⁷ Such transformation will reshape the value chain, which deserves additional research for driving new findings and insights for GVC strategy.

Second, because of the increasing pressures from competition, firms disperse their value chain activities globally either to reduce production costs or enhance their product differentiation. There are also extensive outsourcing practices pursued by firms. Apple and Samsung Electronics are the two leading firms in the smartphone industry, where Apple accounted for the largest share of industrial profits, and Samsung Electronics was the largest producer in terms of shipments of smartphones. Therefore, the two most successful firms are particularly useful to address the research questions.

Lastly, despite the different business scopes, the smartphone business is the flagship product or business for both companies, and the sales of smartphone (or related businesses) accounted for a significant portion of the annual sales for both companies. Apple used to be a computer company, but became a first mover in the smartphone business. Currently, the iPhone sales revenues represented 63% of Apple's entire revenue in 2016 (see Table 5.1). On the other hand, Samsung Electronics, as a traditional manufacturing firms, engages across various manufacturing industries, from home appliances to mobile handsets, from finished goods to parts and components. However, the revenue earned by IT & Mobile Communications (including smartphone and other related business) accounted for 45% of its entire revenue in 2016 (see Table 5.1). With regards to the share of profits to their entire businesses, the smartphone business makes up even larger portion. This provides the legitimacy of comparing the two companies' GVC strategies in the smartphone business.

³⁷ Smart components are comprised of the sensors, microprocessors, data storage, controls, software, an embedded operating system, and enhanced use interface. Connectivity components are comprised of the ports, antennae, and protocols enabling wired or wireless connections with the product (Porter and Heppelmann, 2014).

Table 5.1. Annual Sales of Apple and Samsung Electronics (2016)

Apple's Sales by product		Divisional Sales & Ratio	
Product	Sales (\$ millions)	Division	Sales (KRW trillion)
iPhone	136,700 (63.4%)	IM	100.30 (44.9%)
iPad	20,628 (9.6%)	CE	45.10 (20.2%)
Mac	22,831 (10.6%)	DS	Semiconductors 51.16 (22.9%)
Services	24,348 (11.3%)		DP 26.93 (12.0%)
Other products	11,132 (5.2%)		Total 78.15 (35.0%)

Source: Apple sales: Annual Report 2016, Samsung Electronics sales: Samsung (2017/4/27)

Note: IM: IT & Mobile Communications, CE: Consumer Electronics, DS: Device Solutions, DP: Display Panel.

In this chapter, case studies are conducted by using diverse and broad empirical base including both primary (company documents such as annual report) and secondary sources (newspapers, periodicals, online articles, academic papers, and consulting reports). The following of this chapter is comprised of three main parts: (1) a brief introduction of the two companies; (2) the GVC strategy of the two companies by applying the integrated GVC approach, focusing on examining the organizational governance of value creation among the value chains; and (3) the externalization choices of the two companies by applying the three conditions.

5.2. Apple and Samsung Electronics: Company Profile

5.2.1. Apple Inc.

Apple, a California-based company, was established in 1977. Until 2006, Apple had been known as Apple Computer Inc., a company that made computers and portable music players. The two products (iPod: 39.7%, Mac: 38.2%) accounted for nearly 80% of its

revenue in 2006. However, in 2007 it removed the word “computer” and added “Apple Inc.,” which reflects the shifting focus towards consumer electronics and digital distribution (Johnson et al., 2012). After ten years, iPhone has become its dominant source of revenue creation, which accounted for about two-thirds (63.4%) of its revenue in 2016, and overshadowed Apple’s other products. Mac products, the second largest source of revenue, only accounted for 10.6% (Wall Street Journal, 2017/6/29, 2017/6/20). The launch of the iPhone in 2007, one of the best-selling products in history, has transformed Apple in various dimensions (see Table 5.2), and help it turn into the world’s most valuable publicly traded company.³⁸

Table 5.2. The Growth of Apple in the Past Decade (2006-2016)

	2006	2016
Employees *	18,000	116,000
Building space (million sq. ft)	6.8	29.3
Sales (billion)	19.32	215.64
Profit (billion)	1.99	45.69
Cash (billion)	6.39	237.59
Asia Pacific / China sales (billion)	1.35 (Asia Pacific)	48.49 (China)
iPod / iPhone units (million)	39.4 (iPod)	211.9 (iPhone)
R&D (billion)	0.71	10.04

Source: Wall Street Journal (2017/6/20)

Note: * Full-time equivalent employees

³⁸ In 2016, its market value was even less than a quarter of Microsoft Corporation’s, but by June 28, 2017 its market value was more than 1.5 times that of Microsoft’s (Wall Street Journal, 2017/6/29).

Apple's business can be categorized into three types, including product, software, and services. To be specific, it designs, manufactures, and markets mobile communications and media devices, personal computers and portable digital music players. It also sells related software, services, accessories, and third-party digital content and applications. Its customers include consumers, small and medium-sized businesses and education, enterprise, and government. Consumers (i.e., B2C business) are still its major source of income. Due to the high price of iPhone, its primary target focus is middle and upper-class income people. However, because of the slowing growth of iPhone³⁹ it tries to diversify its business portfolio and also looks for new customer group. The B2B or B2G businesses (company or government) are becoming its new targets, since they have higher purchasing capability, and are less sensitive to product prices. Moreover, Apple has been more reliant on the growth of the developing countries. In 2006, the sales in the Asia-Pacific (excluding Japan) accounted for only 7% of its revenue, but in 2016, greater China alone comprised 23% of its revenue.

5.2.2. Samsung Electronics

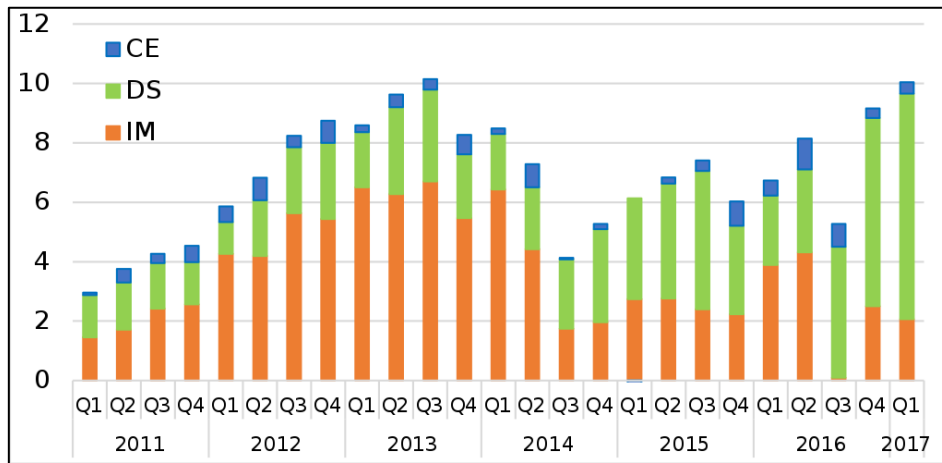
Samsung Electronics, a Suwon (in South Korea)-based company, was established in 1969. It is the flagship of Samsung Group, and makes up nearly 50% of the Group's sales. At the early stage, the main products of Samsung Electronics were electronics appliances such as television, air conditioners, and washing machines. Since the mid-1970s, it expanded into higher technology and value-added businesses, namely semiconductor. After a decade it has developed as a major company in the world for producing the memory, and currently it has grown as a leading manufacturer of electronic components such as batteries, semiconductors, memory, and display panels for global clients, such as Apple. For example, it currently dominates the global OLED

³⁹ The Strategy Analyst expected a 3% growth only in the world total shipments of smartphones in 2017, and the growth rate will fall to the level of 2% in 2018 and 2019 (IT Chosun, 2017/7/2).

market, by accounting for 98% of its market share. More recently, the company diversified into consumer electronics, and it is the world's top maker of smartphones. The company currently has three main businesses, including IT & Mobile Communications, Consumer Electronics, and Device Solutions. The department of IT & Mobile Communications mainly deals with mobile communication business and network business; the department of Consumer Electronics covers visual display, digital appliance, printing solutions, and health & medical equipment business; and the department of Device Solutions focuses on memory and system LSI business.

Like Apple, the mobile division is also the top earner for the company as shown in Table 5.1, and many question the sustainability of their (both Apple and Samsung) business in the face of growing competition from premium model producers and cheaper Chinese rivals, by relying on its large portion from a single business or product (e.g., Reuters, 2016/7/7; Wall Street Journal, 2017/6/20). However, there is a critical difference between Apple and Samsung Electronics. For Apple, the iPhone accounts for the largest share in both its sales and profits, whereas Samsung Electronics, its largest source of sales comes from the IM division (or smartphone), but the profits from DS division (or parts and components) comprises larger share than IM division. This is particularly evident since 2015, and about four-fifths of profits (77%) rely on the DS division in the first quarter of 2017 (see Figure 5.1).

Figure 5.1. Profits of Samsung Electronics by Division (trillion KRW)



Source: Wikiwand website

5.3. The GVC Strategy of Apple and Samsung Electronics

Apple and Samsung are well known for their different strategies for manufacturing the world's top branded smartphones: iPhone and Galaxy. However, if the two companies are compared from the GVC perspective, some important similarities can be found. The following investigates the governance (internalization vs. externalization) of nine value chain activities of Apple and Samsung Electronics regarding their smartphone business, and then conducts a comparative analysis and provides some useful implications.

5.3.1. Apple's Global Value Chain

5.3.1.1. Inbound Logistics

Apple has been well-known for its superior advantage in supply chain management (SCM). Gartner, Inc., which released the annual Supply Chain Top 25, has removed Apple from the list and categorized Apple into New Masters Category, because of its

perennial leadership in the SCM since 2015. The key factor of Apple's supply chain competitiveness relies on its effectiveness (Johnson et al., 2012). In order to formulate an effective supply chain system, Apple contracts with numerous different suppliers around the world. Apple outsources most of its parts and components to about 200 suppliers and more 700 subsidiaries around the globe, particularly those in Germany, the US, Japan, and Korea. Many come from multiple sources, which also supply to other customer firms in addition to Apple. However, some customized components come from a single or limited sources, and these suppliers usually have only one customer, Apple.

Although Apple does not have direct ownership over these suppliers, it highly controls in the manner that Apple provides capital investment or design of the components, whereas suppliers are in charge of the production only. For example, the component of system-on-chip (apps processor) is designed by Apple and produced by Taiwanese based company named Taiwan Semiconductor Manufacturing Company (TSMC). Apple also invests billions of dollars in component manufacturing plants through which it could bargain for a good price and exclusive rights for production of a certain period time on one hand, and the supplier could enhance their production capabilities on the other (Bloomberg, 2012/11/9).

5.3.1.2. Operations

By 2016, Apple has only contracted with two Taiwanese based companies Foxconn and Pegatron for assembling Apple's iPhones in China. Apple traditionally had only one assembler, Foxconn, employing millions of workers in its manufacturing plants in China. Although recently Foxconn has gradually increased its use of automation, it mainly relied on the long assembly lines with little automation, which is very similar to the Ford's approach 90 years ago. Foxconn employed unskilled workers who engaged in the

tasks featuring short cycle times and high repetition.⁴⁰ Such system contributes to the low communication among workers, high productivity, and quality control.

However, since the early 2010s, Foxconn has increasingly been accused of low working conditions (e.g., working overtime⁴¹) and employing many students and children workers. This resulted in the suicide of employees in Foxconn factories, which had also negative impacts on Apple's image. In response to this, Apple committed heavily in improving the workings conditions of Foxconn. Therefore, unlike the traditional OEM type of outsourcing, the partnership between Apple and Foxconn is closer and inter-connected. Apple committed a certain level of capital investment in manufacturing process equipment and technology transfer to make it sure that Foxconn could maintain and upgrade the product quality.

In order to diversify the risks and increase the bargaining power of Apple against Foxconn, Apple secured another assembling company named Pegatron. However, Foxconn still produces majority of Apple's products by employing more than one millions workers in China. On the other hand, despite the efforts of Foxconn which tried to decrease its reliance on Apple, about half of its sales are derived from Apple. Due to the slowing growth of Chinese market, Apple outsourced to another Taiwanese based company (i.e., Wistron) in addition to the existing smartphone manufacturing facilities in India, to manufacture low-priced smartphones in India to mainly serve the fast-growing Indian market. The reason behind employing a new assembler is that Apple could reduce its reliance on Foxconn and Pegatron, which helped Apple's objective of reducing production costs and supply-chain risks.

⁴⁰ These workers came from different provinces in China with different local languages. Few workers could speak English and many could also not speak or understand other region's languages or dialects. Therefore, workers seldom communicated with each other. Moreover, the short cycles also reduced the necessity or time for workers to community and exchange the experience with others.

⁴¹ More than 70% worked 10 hours or more a day. The average overtime a month was 83.2 hours, whereas the monthly overtime allowed by official labor laws is 36 hours (Chan, 2010).

5.3.1.3. Outbound Logistics

Outbound logistics refers to the movement of the product to the market, and Apple's outbound logistics includes warehousing and distribution (Research Methodology, 2017). Apple's products were shipped from China to the US and are kept at its own warehouse (Elk Grove Central warehouse) in California. Apple transformed the Elk Grove Central warehouse into the logistics center, which plays the role of warehousing, distribution, and customer support call center. Some other sources also mentioned Elk Grove takes in charge of delivering iPhone repair and logistics (Business Journal, 2015/12/7). In order to streamline the process and achieve massive cost savings, Apple has only one centralized warehouse in the US. By combining with other functions, iPhones are redistributed to the US and global distribution centers, or the consumers directly. Recently, the e-commerce sales have become a key channel of sales because of its cost effectiveness compared to the methods of offline sales. Apple in fact has become the third largest retailer in the US after Amazon and Wal-Mart, thanks to the e-commerce business (Research Methodology, 2017).

When iPhones are shipped to the warehouse and other distributions centers, Apple normally chooses the air freight service provided by Fedex or UPS for fast delivery and low cost. The organization of the distribution network is in such a manner that the warehouses and retail stores get enough supply in order to meet high levels of demand. Tim Cook once said "Inventory is fundamentally evil," because inventory of technological products like iPhone depreciates extremely fast, losing 1-2% of its value a week for example (Pham, 2015). Therefore, the effective inventory management is very important for costs reduction.

5.3.1.4. Marketing & Sales

Apple sells its products through both internal and external channels. Internally, iPhones are sold through its own retail stores (i.e., Apple Store) and online through the Apple

website. Apple well knows the importance of interaction with customers. Firstly, the knowledgeable salespersons can better deliver and demonstrate the value of its innovative and differentiated products. Second, Apple also believes that the direct contact with the customers can help it understand their needs and respond to their feedback immediately. By 2016, it possessed 670 Apple stores around the world. These stores are placed in high-traffic locations in quality shopping malls and urban shopping districts in order to better attract the sophisticated consumers' attentions.

To ensure a high-quality buying experience of its products, the company continues to build and improve its sales capabilities by expanding the number of its own retail stores worldwide in which service and education are emphasized. This resulted in heavy investments in marketing and sales, which amounted to \$14 billion, accounting for 7% of its total revenue in 2016.⁴² Apple's online sales are also making tremendous success. According to Internet Retailer, the e-commerce research firm, Apple already has a great online sales performance in 2013; it not only became one of the top retailers in the US, but also showed faster growth than Amazon (Dormehl, 2014).

On the other hand, Apple highly relies on the external sources, including third-party cellular network carriers, wholesales, and retailers. Although Apple Stores are much more productive on a per-unit basis, the number of stores is very small, compared to other retailers which possess thousands of stores. This thus keeps Apple to rely much on other third parties such as carriers and retailers. The sales through external sources accounted for 75% of its total sales in 2016. The two US carriers (AT&T and Verizon), the two largest sources for selling iPhones, accounted for more than 50% of iPhone sales during the period of 2011 and 2012. The sales of iPhone in Apple Stores accounted only one-fifth, lower than the two carriers but at least two times that of other retailers.

Carriers play important roles in the sales promotion of iPhones. Steve Ballmer, the former CEO of Microsoft even said Apple's iPhone succeeded because of carrier subsidies (Recode, 2016/11/7). The average price of iPhones is over \$600, and carriers

⁴² Compared to other retailers in the US, Apple's revenue per square foot is higher, and thus Apple's retail stores are more productive than those retailers (Paczkowski, 2012).

are covering \$400 and more of the cost of phone, while the consumers pay the rest of the costs under the two-year contract condition of the Internet service (Business Insider, 2014/4/22). However, many argue that this is actually a cheating because carriers are actually transferring the entire costs to the consumers through monthly payments, and thus it could hurt the sales of Apple in the end by delaying the upgrade to new models. Although there are still inconsistency regarding the positive role of carriers on the sales promotion of iPhones, since the iPhone is very pricey, the two-year installment could reduce consumers' burden in the short term, and thus expand the potential target of customers.

5.3.1.5. Service

Apple is famous for its exceptional quality of customer services during all three stages: pre-purchase, during-purchase, and post-purchase (Research and Methodology, 2017). Apple provides after-sales services through its Apple stores around the world or the external parties such as Apple's authorized service providers and the local network carriers. It usually takes 3-5 business days to repair the products (see Table 5.3).

Table 5.3. The Repair Sources and Approximate Time for iPhones

Repair source	Approximate time
Send to Apple	3-5 business days
Bring to an Apple Store appointment	Up to 5 business days
Bring to an Apple Authorized Service Provider	Up to 5 business days
Bring to your carrier	Ask your representative

Source: <https://support.apple.com/iphone/repair/service>

In addition to the above options, in fact, there are alternate services specializing in fixing the iPhones which take shorter time and cheaper than the official Apple and its authorized service providers. The iCracked is a good example. In addition to repairing the iPhone and iPad, it also repairs other smartphone brands, such Galaxy. Once a consumer registers through the iCracked website, the company will check whether there are any technicians (i.e., iTech) near the customers' location. Then iTech will send the message within minutes and make an appointment for visit and repair. Regarding the price, for example, it normally costs \$130 to exchange a new screen for iPhone 5 (different for various iPhone models), but the repair could charge much higher by Apple (e.g., \$269 for iPhone 5) (Business Insider, 2014/5/10). Therefore, the above case shows that Apple's after service cannot be regarded as the most competitive at least regarding the speed and price.

5.3.1.6. Procurement

This activity within Apple's chain of support operations relates to the ways resources are acquired for the business. Due to the size and scope of Apple's business operations, the company runs complex procurement activities on the global scale. The range of resources used by Apple include, but are not limited to, metal, glass, and a wide range of parts and components. Apple obtains its raw materials from the US, Europe, China and other Asian countries for assembling in China. As shown in Table 5.4, although the percentage of payments to manufacturing purchase obligations has decreased around by 10%, it still makes up two-thirds of the total costs of contractual payments. On the other hand, expenditures on operating leases witnessed fast growth by 1.5 times over the last three years (2014-2016), due to the strong investment in the retail stores and facility leases.

Table 5.4. Payments under Contractual Obligations (\$ million, %)

Items	2014	2015	2016
Operating leases	4,987 (15)	6,271 (15)	7,627 (18)
Manufacturing purchase obligations	24,529 (75)	29,464 (69)	28,591 (67)
Other purchase obligations	3,351 (10)	7,261 (17%)	6,620 (15)
Total	32,867	42,996	42,838

Source: Apple annual report 2016

Note: Operating leases: retail store and other facility leases; Manufacturing purchase obligations: components for outsourcing suppliers (periods up to 150 days); Other purchase obligations: commitments to acquire capital assets (e.g., product tooling and manufacturing process equipment) and advertising, licensing, R&D, internet and telecommunications services, energy, etc.

5.3.1.8. Technology Development

One of the widely acknowledged core competences of Apple is superiority in technology development. Although, since the succession of the leadership of Tim Cook, Apple is criticized for putting less focus on innovation, but more on introducing similar products, the research and development (R&D) expenditure in fact has grown much faster ever before, and has been selected as the most innovative company by PwC's "The Global Innovative 1000" since 2010 (PwC, 2016). In 2016, Apple spent \$11 billion, which accounted for 5% of the entire revenue, whereas it was less than 1% ten years ago. This is because Apple has to seek new engine of growth to compliment the iPhone to sustain its competitive position in the market (Business Insider, 2017/2/1).

Until 2012, Apple had only domestic R&D center, but since then Apple established the first overseas R&D center in Israel, and more recently it opened and plans to open additional R&D centers in Japan, China, Indonesia, France, Japan, Sweden, and the UK. The two R&D centers established in Beijing and Shenzhen are aimed to strengthen relationships with local partners and universities, whereas the R&D center in Israel aims

to develop apps and also encourages cooperation with Israelis. In spite of outsourcing majority of the parts and components, Apple developed its own key software including operation system and app store. Since Apple's launch of its app store in 2008, the applications (hereinafter apps) that joined the app store have increased substantially from 50,000 in 2009 to 1.8 million in 2016 (Wall Street Journal, 2017/6/29). The app store helps numerous entrepreneurs to reach consumers directly and also generate many new businesses.

5.3.1.7. Human Resource Management

Thanks to the surge in the sales of iPhone, the global workforce of Apple has increased from 18,000 to 116,000 over the last decade (2006-2016) (Wall Street Journal, 2017/6/20). Like many other technology companies, Apple recruits high-quality employees (workers and managers). However, there are also some distinctive features (HR Strategy Tools, 2013/9/14). Firstly, instead of promising the balance between work and life, it emphasizes hard work and high commitment to the company. Secondly, instead of promising and supporting employees the career progression, the company promotes its employees to design their own career paths. Therefore, employees should look for the information of other units of the company by themselves. Thirdly, instead of providing training and development programs used by many other firms as part of the retention strategy, Apple promotes employees to develop their skills themselves.

Instead, Apple's retention strategy relies mainly on the economic rewards. In order to maintain the talents within the firm, Apple adopted the employee stock plan. Previously limited to high-ranking executives to retain top talent, but Apple has been extending this benefit to all employees to reduce the barriers in the corporate ladder since 2015. In addition, in order to diversify the executive members and also the workforce, Apple continues to look for the most competitive talents from competing or related companies for key positions and making partnership with non-profit organizations including the US military department to employ competitive workforce.

5.3.1.9. Firm Infrastructure

Apple's infrastructure activity covers a wide range of support systems and functions such as finance, planning, quality control, and general senior management. Tim Cook is the CEO, and under his leadership there are nine Senior Vice Presidents (SVP) (i.e., first-line or upper-tier managers) who address various functional areas of the company. Under these SVPs there are many vice presidents (VP) (i.e., lower-tier managers) in charge of different outputs or products, and thus they are also named as product-based managers (Meyer, 2017/1/29).

Apple's organizational structure is one of the important factors that contribute to the company's successful development of innovative products. Apple's company governance follows the traditional hierarchy where the CEO has the power to control all the divisions of the company. The simplicity is a feature of the company's structure, which actually contributes to fast and flexible adaptation to the market changes (Johnson et al., 2012). However, there are significant changes during and after Steve Jobs' era. During the period of leadership by Steve Jobs, he was in charge of everything and every decision making went through him. There was less cooperation among departments. Under Tim Cook's leadership, however, although Tim Cook is still at the center, his control is less stiff and there are some changes. One of the critical changes is that SVP and VP are given more autonomy and independence for making decisions and there are more cooperation among divisions, particularly between hardware and software teams (Business Insider, 2013/5/1; Fortune, 2011/8/29).

5.3.1.10. Summary

The geographical distribution and the key features of the organizational governance of the nine value chain activities are summarized in Table 5.5. Regarding the locational distribution, all activities except for firm infrastructure are globally dispersed, but show the trend of regional concentration. For example, the upstream activities including

inbound logistics and operations are mainly located in the Asian area, whereas the downstream (i.e., marketing and services) and some supporting activities are more concentrated in developed economies and recently also expanding to emerging and developing economies. Secondly, the locational distribution of some activities is affected by some others. For example, the location of R&D tends to be near the upstream activities in order to support the manufacturing and create higher synergy between manufacturing and product development.

Regarding the feature of organizational governance, Apple basically shows high degree of internalization in the activities of marketing and R&D, where it has competitive advantages. However, these areas also show high degree of externalization. Marketing, for example, although it has competitive and productive Apple stores, in order to reach larger number of consumers and reduce the economic burden of pricey iPhone, it has to rely much on the network carriers for their promotion and marketing strategy. The same is for R&D, in spite of its superior capability of developing innovative products, smartphone competitiveness relies on hardware, software, contents, and services as well. Apple's App store in fact depends much on the third parties' development in the new apps and provision of contents.

On the other hand, many activities that mainly rely on externalization also show a high degree of internalization. A representative example is that Apple is well known for outsourcing parts and components, but less known for its high commitment in supporting these suppliers in terms of both financial and technological perspective in order to achieve sustainable supply from these suppliers.

Table 5.5. Apple's GVC: Governance

Value Chain Activities	Governance	Geography
Inbound Logistics	(Int) A few components (e.g., system-on-chip [apps processor]) (semi-internalization) (Ext) <u>Components</u> : most from multiple sources; some from single (custom components) or limited sources	Global (Germany, US, Japan, Korea)
Operations	(Int) Investment in manufacturing process equipment (Ext) Assembly in China by Foxconn and Pegatron; assembled in India by Wistron	Global (China, India)
Outbound Logistics	(Int) Products kept at Elk Grove Central warehouse at California (Ext) UPS/Fedex to the global distribution centers	Global
Marketing and Sales	(Int) Retail stores (670) [in-store experiences], online stores and direct sales force (administrative costs: \$14 bil. <u>7%, 2016</u>) (Ext) Third-party cellular network carriers, wholesalers, retailers and value-added resellers (75% through external party, 2016)	Global
Service	(Int) After service by Apple and Apple Store (Ext) After service by carrier and authorized service provider	Global
Firm Infrastructure	(Int) Finance, planning, quality control and general senior management	US
Human resource management	(Int) Employee Stock Plan; Training program (Ext) Executive diversity; Workforce diversity (partnership with non-profit organizations and the US military department); after-service: Apple-certified technicians	Global
Technology Development	(Int) R&D (\$11 bil., <u>5%, 2016</u>), acquisition of third-party businesses and technology (Ext) licensing/ collaboration with local universities and suppliers	Global
Procurement	(Int) Purchase from external suppliers (US, Europe, China and other Asian countries)	Global

5.3.2. Samsung Electronics' Global Value Chain

This section mainly investigates the governance (internalization vs. externalization) of nine value chain activities of Samsung's smartphone business.

5.3.2.1. Inbound Logistics

Unlike most other smartphone makers that buy components from many different suppliers, Samsung produces most of the components and also has strong capability in producing many of the key components. For example, OLED, one of the core and also most costly components, is supplied by its subsidiaries of Samsung Display, which is the only panel maker with the capability of mass-production of OLED panels for smartphones. In order for manufacturing plants in Korea to produce some key parts and components, many of Samsung's foreign subsidiaries are located in China and Malaysia which are driven by cost reduction. That is why the two smartphone assembly plants are located in the Northern Vietnam in order to easily get access to the supply chain in China.

Samsung's DS division of making parts and components not only serves Samsung but also other global manufacturers such Apple, and this actually becomes critical for increasing the economies of scale and reducing the production costs. Moreover, it also makes up Samsung's key financial source. The not-so-serious impact from Samsung's recent recall of Galaxy S7 in fact is largely attributed to the strong global demand for its parts and components. For this, Samsung has recently expanded its production capacities of the key parts. For example, Samsung announced in 2016 about its \$1 billion investment in its Texas semiconductor factory. It is also considering the expansion of semiconductor factory of Xi'an in China. Domestically, in 2017, it also invested huge money in Pyeongtaek (3 trillion KRW) and Hwasung (0.6 trillion KRW) for building or expanding the semiconductor factories, respectively (Maeil Business Economy, 2017/7/4).

However, there is one key component Samsung does not produce for its smartphones sold to the US and it is the application processor⁴³, which is purchased from Qualcomm (Wall Street Journal, 2013/5/8). Samsung also obtain some parts and components from other outside companies, but most of them are Korean firms. For example, among the first-tier suppliers for Galaxy S8⁴⁴, except for Samsung Electricity and Samsung SDI which are the Samsung Group affiliates, all others are Korean firms (Korea Investment & Securities, 2017).

Recently, Samsung also has increased outsourcing from foreign suppliers for a few key, high-value added components used in its most recently released flagship smartphone, the Galaxy S8. For example, Samsung added Japan's Sony as a new battery supplier in addition to the extant supplier (i.e., Samsung SDI) for providing lithium-ion battery packs in order to avoid the disastrous recall of Galaxy Note 7 in 2016 (Wall Street Journal, 2017/2/17). Samsung also adopted the Green Phosphorescent, the material used in OLED (panel display) from another Japanese firm (Maeil Business Newspaper, 2017/4/4). Moreover, Samsung also increasingly outsourced low value-added parts and components to Vietnamese suppliers in order to reduce the production costs.

5.3.2.2. Operations

Samsung has been the largest smartphone manufacturer in terms of unit shipments since 2012 (Version Daily, 2016). This required Samsung's strong production capability to meet huge demands from around the world. In addition to one smartphone factory in Korea, there are eight manufacturing plants through foreign direct investment (FDI) in five foreign countries, including China, Vietnam, India, Indonesia, and Brazil. Among

⁴³ Samsung smartphones sold in Korea and other countries use a Samsung-made chip (Exynos 5 Octa) which costs less than that made by Qualcomm.

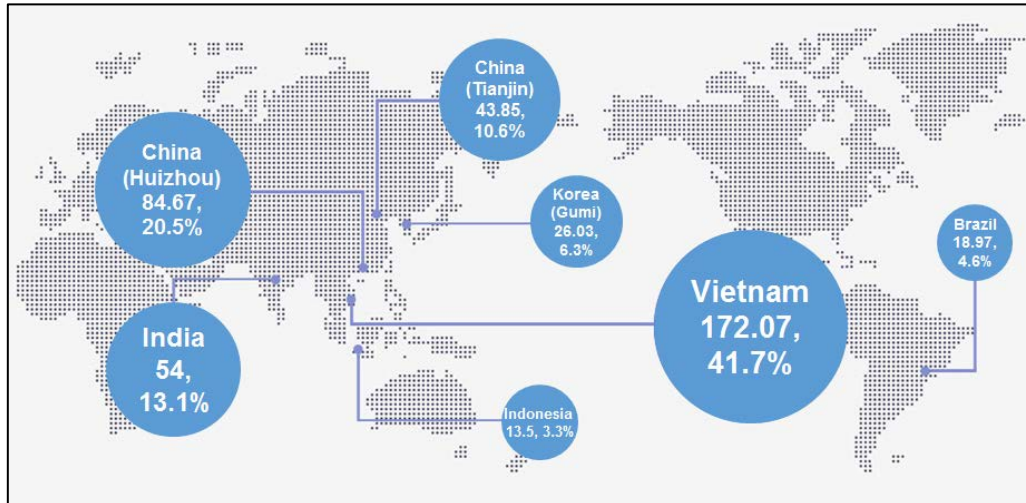
⁴⁴ Samsung Electricity, Samsung SDI, BHE, Amotech, Partron, Optrontec, Sekonix, Kolen, Ndfos, Jahwa Electronics, Iljin Display, ISU Petasys, Innox, Shinhwa Contech (Korea Investment & Securities, 2017).

factories, manufacturing plants in Vietnam were built to serve the global market, whereas other plants mainly serve local or regional markets. Korea's Gumi factory mainly aimed to produce premium models to serve local sophisticated consumers. The mobile phones by Indian factories target Indian and neighboring countries such as Pakistan and Bangladesh. Indonesian factory aimed to serve local market, which is growing as another important emerging market after China and India. Brazilian manufacturing plants aimed to serve the Latin American market. Moreover, Phones produced in Tianjin factory in China are sold to the global market, whereas the other Chinese plant mainly aims to local consumers.

Figure 5.2 represents global distribution of Samsung's mobile sets (including both smartphones and feature phones) planned to be produced in 2016. Domestic production accounted for only around 6%. On the other hand, the largest area of production is Vietnam, which aimed to produce 172 million units of mobile phones, accounting for more than 40% of global production. The second largest economy is China which has two factories, one in Huizhou and the other in Tianjin. The two factories in China combined together accounted for 31.1% of total production. The next largest producer is India (13.1%), followed by Brazil (4.6%) and Indonesia (3.3%). However, due to the slowing growth of Chinese market and growing demand of smartphones in India, Samsung announced in 2017 that it would expand the factory in Noida⁴⁵ with an investment of Rs. 4,915 crores. The expanded factory is expected to produce 120 million units of smartphones, which is two times of the current production capacity in India.

⁴⁵ Noida plant currently produces smartphones, refrigerators, and TVs.

Figure 5.2. Global Production Distribution of Samsung's Mobile Sets (2016)
(million)



Source: Premium Chosun (2016/1/13)

5.3.2.3. Outbound Logistics

Samsung's outbound logistics is taken in charge of its major subsidiary named Samsung Electronics Logitech. The company with 77 agent offices in 30 countries is responsible for Samsung's overall international logistics, such as overseas sales logistics services, trade support services, and forwarding services.

5.3.2.4. Marketing & Sales

Samsung's marketing strategy aims to cater diverse demands by consumers from different market segments. This strategy is highly influenced by its production strategy. Unlike Apple which only introduces a limited number of phone models, Samsung pursues product diversification strategy by providing a wide range of models. The key advantage from this diverse marketing strategy is the decrease in risks from market

volatility and cater a wider market. Samsung has an existing distribution network from its existing businesses. This is of tremendous value because unlike Apple, Samsung does not need new channels or resources to bring its phones and tablets to new markets. As Table 5.6 shows, Samsung's smartphones are sold in a wider geographical regions including 50 countries, whereas Apple's iPhones are only sold to developed and advanced developing countries with higher purchasing capability, and about half of the Apple Stores are located in the US.

Table 5.6. Retail Stores and Sales Corporations (2014)

Apple (Apple Stores)	US (254)	Netherlands (2)
	Canada (29)	Australia (21)
	UK (37)	China (10)
	France (16)	Japan (7)
	Italy (14)	Hong Kong (3)
	Germany (13)	Turkey (2)
	Spain (10)	
	Switzerland (3)	16 countries
	Sweden (3)	424 stores
Samsung Electronics (Sales Corporations)	North America (3)	Middle East/ Africa (10)
	Latin America (7)	
	Europe (16)	50 countries
	CIS (3)	51 corporations
	Asia/Pacific (12)	

Source: SERI (2014)

Note: Figures in () represent the number of stores or sales.

However, the production diversification strategy also requires efficient and heavy promotion strategy. Normally the marketing and promotion strategy includes pull and push marketing strategy (Version Daily, 2016). The pull strategy heavily relies on the creation of strong company brand and establishment of loyal customers, and Apple mainly relies on this strategy. The push strategy refers to the promotion through

advertising and sales strategies using both traditional (e.g., print, broadcast) and new medias (e.g., social media). Samsung mainly relies the traditional advertising. In 2016, Samsung spent \$3.3 billion for TV, online, and even paper advertising (McNutt, 2016/12/27). The wide presence of the products in many regions through push strategy evidently inspires the interest of consumers and even generates a number of loyal consumers. This in turn provides a good foundation for Samsung's future pull marketing strategies.

Samsung also makes partnership with network carriers, retailers, and wholesalers for distributing and selling its Galaxy products. Samsung can sell its products anywhere it wants as long as retailers are willing to take stock. Regarding the carriers, for example, Apple only cooperates with a single (or only a few) carrier in some markets but Samsung partners with all major carriers within a country. Moreover, unlike Apple which never offers discounts for its products, Samsung offers discounts to partners in order to motivate distribution and promotion against the rivals.

5.3.2.5. Service

Samsung deals with customers' requirements on product purchases, repairs, and instructions through the channels of customer service centers, contact centers, and website. Currently Samsung has about 20,000 service centers, 61 contact centers (1 in Korea, 60 in foreign countries) around the world (Samsung, 2016). Service centers are normally run by retail stores and professional service agencies. The number of service centers usually increases along with the growth in the Samsung product. The product contact centers employ about 10,000 qualified consultants to answer customers' inquiries on product and services. Moreover, the website also provides a useful channel through which customers can get a general guidelines and instructions on various inquiries. Samsung is also expanding other online services (e.g., Email, live chat) which effectively help solve customers' various problems. In addition to the above various insourcing

service activities, Samsung authorizes partners, but still mainly relies on its own service centers around the world in order to maintain high customer satisfaction.

5.3.2.6. Procurement

Unlike Apple, Samsung purchases mainly from its internal affiliates and foreign subsidiaries. For example, the procurement for assembling smartphones in Vietnam is largely carried out through the imports from its subsidiaries in Korea and China. Table 5.7 shows Samsung's expenditure on procuring product or services from the suppliers from 2012 to 2016. During this period, Samsung has witnessed a decrease by 20% since 2013 from 152.9 trillion KRW to 127 trillion KRW in 2016, which implies a falling trend of Samsung's internalization in terms of parts and components.

Table 5.7. (Supplier) Procurement Costs (trillion KRW)

Year	Expenditure	Year	Expenditure
2012	138.7	2015	128.8
2013	152.9	2016	127.0
2014	139.5		

Source: Samsung Electronics' annual sustainability report from 2015 to 2017.

Note: The total amount of product and service costs made for company sales.

However, Samsung has a strict control on these suppliers by providing the Supplier Code of Conduct and monitoring through annual audit in order to establish fair and transparent trade with supplier, which in turn procures high-quality products and services. In 2013, Samsung established a Global Procurement Code of Conduct which provides standards and principles for procurement personnel who must follow in all circumstances. The procurement staffs are trained through both online and offline

lectures. The number of trainees attending the procurement code of conduct training on a global scale grew by more than 2 times from 1,446 in 2013 to 3,021 in 2015. Samsung also adopts Open Sourcing System which aims to find business partners (or suppliers) as long as they comply with the world-class technology and competitive costs. Through this system, Samsung reviewed 900 proposals in 2015, and 45 companies were selected as Samsung's suppliers.

5.3.2.7. Technology Development

Samsung has established seven global design centers⁴⁶ and 34 global R&D centers⁴⁷ in order to learn and acquire advanced technology. Samsung Electronics spent \$13 billion in 2016 on R&D. According to the EU Industrial R&D Investment Scoreboard, Samsung ranked as the top one spender in R&D among the technology companies (McNutt, 2016/12/27). In more recent years, Samsung accelerated the investment in R&D for the high value-added and advanced parts and components, such as chips, memory, and display. Samsung in 2016 decided to acquire a US automotive technology manufacture, Harman International Industries Inc., at \$8 billion, which is Samsung's largest M&A ever. However, the main objective of the purchase by Samsung is not to produce cars but to explore new areas for its semiconductors, display panels, and mobile services (Wall Street Journal, 2016/11/14).

In addition to the increasing efforts for in-house development, Samsung also enhances the cooperation with outside parties to enhance its technology capability. For example, it uses Google's Android for its Galaxy phone operating system. In 2014, Samsung and Google established a long-term cooperative partnership, named as "Global Patent Cross-License Agreement" which covers a broad range of technologies and business areas. The two companies could mutually benefit from the agreement by

⁴⁶ Seoul, Tokyo, Beijing, Delhi, London, San Francisco, and Sao Paulo

⁴⁷ Six in Seoul, the other 28 centers across the US, UK, Russia, Israel, India, Japan, Poland, Brazil, and China.

gaining access to each other's industry-leading patents (existing and those to be filed in the next 10 years), and reduce potential or unnecessary patent disputes. Samsung also joined a new cross license patent agreement (also named as PAX⁴⁸) launched by Google. This agreement includes nine major Android manufacturers including Samsung.

On the other hand, Samsung also transferred technology and knowledge to local suppliers (host country such as Vietnam) to enhance their production capability, which in turn contributed in upgrading its product quality. Samsung invested 50 billion KRW from 2013 to 2017, to support first and second-tier suppliers' productivity innovation through various methods such as improving their worksites, innovation infrastructure, and production technology. In 2016, Samsung supported 45 Korean and 19 overseas first-tier suppliers for their innovation initiatives.

5.3.2.8. Human Resource Management

In order to maintain the talents within the company, Samsung has continuously increased the employee remuneration by 7% from 22.5 trillion KRW in 2014 to 24.0 trillion KRW in 2016. Unlike Apple, Samsung also supports all of its employees around the world. The company provides extensive and various training and expertise programs to upgrade and enhance the employees' capabilities. Every year, it operates Expertise Development Process which facilitates employees to assess employees and help them set appropriate learning and training plans. Table 5.8 shows the major performance indicators regarding Samsung's efforts on employees' learning and development.

Moreover, unlike Apple which less concerns the life and work balances, Samsung puts a lot of efforts for improving life quality of its employees, such as increasing the access to cultural activities, creating in-house club, life coaching center, and healing campus. For improving the skills of employees as well as their lives, Samsung also makes partnership to operate those training and development programs, such as

⁴⁸ The Latin word which means peace.

specialized corporate social responsibility (CSR) institutions. In particular, since Samsung employs a large number of foreign local talents and workers, Samsung also cooperates with local firms or institutions in order to develop locally customized training programs and comply with local cultural features. For example, Samsung cooperates with Women in Factories (WiF) (China) project to reinforce the training program for Chinese female workers.

Table 5.8. Major Learning and Development Indicators

Major Learning and Development (L&D) Indicators				
Category	No. of trainees (in million persons, including duplication)	No. of training courses	Training hours per person (average)	No. of trainers (in persons)
Korea	107	5,295	80	287
Overseas	312	17,907	77	478
Total	419	23,202	78	765
Learning and Development (L&D) Investments (Korea)				
		2013	2014	2015
Ratio of L&D expenses to sales (%)		0.05	0.06	0.06
Ratio of L&D expenses to payroll expenses (%)		1.1	1.1	1.1
Average hours of L&D per person		107.2	95.2	80.0

Source: Samsung Sustainability Report 2016

5.3.2.9. Firm Infrastructure

Unlike Apple which adopts professional management system, Samsung Electronics, as a flagship of Samsung Group which is the largest Korean *Chaebol*, adopts the ownership management system. Thus Samsung Electronics is often criticized for its rigid top-down management style. However, Moon (2016b) argued that Samsung only provides the

general objective and guidance, while individual teams are given pretty much authorities to design and operate the projects flexibly. Thus Samsung's organizational features can not only achieve long-term planning which is weak in those firms which pursue professional management system (e.g., Apple), but also adapt to the environmental changes in a fast and flexible manner. Samsung Electronics, on the other hand, comprising three functions, has experienced several times of restructuring corporate governance in order to be more flexible to adapt to the fast-changing global market.

The Future Strategy Office, which plays the role of designing the overall strategy for the conglomerate and coordinating the businesses among its affiliates was abolished in the late 2016 in order to respond to the public criticism due to its recent relation with Korea's political scandal. Without the control tower of the Future Strategy Office and the arrest of Samsung's *de facto* CEO, Lee Jae-yong, many concern and worry about the future of Samsung. Due to these recent challenges, Samsung's affiliates have to design and establish the growth strategy by themselves, and thus the overall synergy effects would diminish, and this is a challenge in the current business competition.

5.3.2.10. Summary

The key features of geographical location and organizational governance of the value chain activities is illustrated in Table 5.9. Although the degree of globalization in terms of geographical distribution is different among various value chain activities, Samsung Electronics is more globalized than Apple for many activities in general. For example, Apple has manufacturing plants located in China and India, whereas Samsung's factories are located in seven countries including Korea. The same are for R&D, marketing, and service as well. Unlike Apple which mainly conducts the R&D in the home country, Samsung, as a latecomer, has made significant efforts for long years by investing in many developed and emerging countries in order to secure advanced technologies and adapt to local consumers' tastes. Regarding the market and services, as Samsung's products

cover a wider range from high-end to low-end, it tends to expand into more number of countries than Apple.

Apple is widely known for outsourcing the production activities in the value chain, Samsung is also well known for its high degree of internalization because of its strengths in not only parts and components but also in high capability for assembling by owning a number of large factories around the world. However, the case study above shows that Samsung is increasing the degree of externalization through outsourcing the capable suppliers. Regarding the R&D activity, although it has established many global R&D and design centers in the world in order to internalize the key technologies, it also cooperates with other firms by sharing the industrial patents of the leading firms, such as partnership with Google. For marketing, the partnership with carriers and retailers is necessary in order to effectively compete with both industrial leader (e.g., Apple) and followers (e.g., Chinese firms).

Table 5.9. Samsung Electronics' GVC: Governance

Value Chain Activities	Governance	Geography
Inbound Logistics	(Int) Most of the components are produced in its factories in Korea, Malaysia, and China (Ext) Some key (e.g., processor) and low value-added parts and components (e.g., Vietnamese suppliers)	Global (Asia)
Operations	(Int) Assembly in 6 countries (including Korea) through FDI ((Korea, China, Vietnam, India, Indonesia, Brazil)	Global (mainly Asia)
Outbound Logistics	(Int) Samsung Electronic Logitech	Global
Marketing and Sales	(Int) Sales Corporation in 50 countries (Ext) Local network carriers, wholesalers, and retailers	Global
Service	(Int) Customer Management System (quality control, advertising & marketing, service), global service centers (20,000) and contact centers (59) (Ext) Sub-contracting to foreign partners	Global
Firm Infrastructure	(Int) Regional head offices (15)	Global
Human resource management	(Int) Samsung's training and expertise program [expenses to sales: 0.06%, 2015) (Ext) Localization strategy: Hiring a large number of local talents	Global
Technology Development	(Int) 6 global design center and 7 global R&D centers (Ext) Technology transfer to local suppliers to enhance their production capability	Global
Procurement	(Int) Purchase mainly from internal affiliates and foreign subsidiaries	Global

5.3.3. Findings and Discussions

As explained above, extensive investigation of the nine value chain activities of both Apple and Samsung Electronics was presented by focusing on the mode of value creation - internalization or externalization. This study finds both significant differences and similarities, and demonstrates that the latter is often neglected by the preceding studies. The key difference mostly mentioned by extant studies (e.g., Liang, 2015; Mudambi, 2008) is that Apple concentrates on production development and marketing, and outsource most of the other value chain activities such as upstream and some support activities, whereas Samsung Electronics internalizes or controls almost all of the value chain activities.

Yet, there are two main limitations for the above arguments. First, these studies mainly stress the different areas of internalization/externalization, but did not explain why the two companies pursue such different GVC strategy. Second, the above arguments are right to some certain extent, because they only catch partial of the entire picture. To be specific, they only highlight the areas of high degree of GVC activities of internalization for both companies, but in reality there are very few activities that are entirely internalized or externalized for both companies. This study thus can fill the gap regarding the above two issues, and the following will explain them in more detail.

5.3.3.1. Differences: The Reasons behind the Differing GVC Strategy

The two companies pursue many different strategies in terms of value activities, and such differences are influenced by their product strategy and their competitive position in the market.

Apple pursues developing innovative and pricey products with only a few variations for different models. Its first-mover advantages and strong superiority in both hardware and software provide it with high bargaining power when outsourcing

suppliers of parts and components to produce at high quality and low costs.⁴⁹ Its superior position among similar product makers also helps it pursue a pull marketing strategy, and attracts numerous talents around the world in spite of very demanding and stressful working conditions. Therefore, all of its strategies in different activities actually are interdependent and generate a good fit, which helps the firm to enjoy high industrial profits in the smartphone business.

On the other hand, Samsung pursues product diversification strategy, by providing many different models from high-end to low-end in order to cover as many customers as possible. Regarding the market position, although Samsung is the leader of smartphone market in terms of unit shipments, it still lags far behind Apple in terms of profit. In particular, Apple still dominates the premium model segment of smartphones, and Samsung still cannot reach the Apple level in terms of some core technology, such as the software.⁵⁰ Due to its weak position and relatively low recognition in the market, Samsung has invested heavily in push-type marketing strategy to appeal to new customers. Moreover, although it has its own suppliers or long tradition of partnership with many supplier companies, its bargaining power is not as high as Apple. Moreover, due to its various models which require different sets of parts and components, in-house production could be more effective for fast changes and saving coordination costs. Furthermore, unlike Apple which mainly relies on in-house R&D and design, Samsung has always been looking outside to acquire needed technology or establish R&D centers abroad to facilitate learning advanced technology and know-how.

⁴⁹ The factory-gate price of Apple's iPhone 7 is \$220.8, including direct materials and manufacturing costs (Mayo, 2016/9/20). Yet, the cost of Samsung Galaxy S7 smartphone is \$255.05 (HIS, 2016/3/15). Thus, Samsung's smartphone is about 15.5% higher than that of Apple's.

⁵⁰ Samsung has once developed its own operating system but was not well acknowledged by customers.

5.3.3.2. Similarities: Combining Internalization and Externalization for Implementing GVC Activities

In addition to the differences in terms of the GVC strategy for both companies, there are also some similarities. The differences are often predetermined by their historical background and available resources. However, the similarities can explain the emerging trends which are less influenced by their in-born natures. This study stresses that both internalization and externalization can be adopted simultaneously for performing the value chain activities which are globally spread. Firms pursue GVC strategy by combining the three alternative options (trade, FDI, and NEMs), driven to deliver higher values along the value chain. Therefore, the extant capability-based management theories and traditional FDI oriented theories, which usually argue for selecting one of them under some conditions, cannot satisfactorily explain why firms should internalize a certain value chain activity, while pursuing externalization simultaneously, and vice versa.

Specifically, this study finds that despite the significant differences between Apple and Samsung, the two companies apply both internalization (FDI) and externalization (trade, NEMs) for performing most activities that are globally spread. Samsung, although more activities are internalized compared to Apple, five out of nine value chain activities are carried out through both internalization and externalization. On the other hand, although Apple externalizes many of the value chain activities, it also shows a high degree of internalization in five value chain activities. As a result, for Apple, two activities of marketing & sales and human resource management show a high degree in both internalization and externalization; and for Samsung marketing & sales relies on a high level of internalization and externalization (see Table 5.10).

Therefore, internalization and externalization modes are not substitutional but complementary to each other. High ownership advantages can also be accompanied with a high degree of externalization. In consistent with the theoretical discussions in Chapters 2 and 3, the case study also well illustrates that strong ownership advantages alone cannot well define firms' governance choices between internalization and

externalization. We need additional factors for disguising them. The following section will apply the new framework for externalization (i.e., three conditions) to both Apple and Samsung Electronics.

Table 5.10. Comparison of Apple and Samsung Electronics' GVC Strategy

	Value Chain Activities	Apple		Samsung Electronics	
Primary Activities	Inbound Logistics	Low	High	High	Low
	Operations		High	High	
	Outbound Logistics	Low	High	High	
	Marketing & Sales	High	High	High	High
	Service	Medium	High	High	Low
Support Activities	Firm Infrastructure	High		High	
	HRM	High	High	High	Medium
	Technology Development	High	Medium	High	Low
	Procurement	High		High	

5.4. Three Conditions for Externalization by Apple and Samsung Electronics

The previous section mainly investigates the *degree* of internalization and externalization in terms of the nine value chain activities. This section then focuses on the *drivers* behind the choice of externalization in particular, using the framework of three conditions introduced in the earlier theoretical chapter (Chapter 3), namely fast-growing business, commercial best-practices, and multi-competences. The results are displayed in Table 5.11, and more details and analysis will be illustrated below.

Table 5.11. Apple and Samsung Electronics: Three Conditions for Externalization

Three Conditions	Apple	Samsung Electronics
Fast-growing business	<u>Manufacturing in China</u> Capability of large scale production in a short time (change of iPhone screen one month before the final launch)	<u>Manufacturing in Vietnam</u> Increase in using local suppliers
Commercial best-practices	Outsourcing parts and components from Samsung Electronics (e.g., memory, display)	Outsourcing some key parts and components (e.g., operating system from Google, chipsets from Qualcomm)
Multiple competences	<ul style="list-style-type: none"> • Hardware, software, contents • Capital investment and co-development with suppliers (e.g., parts, software) 	<ul style="list-style-type: none"> • Hardware, software, contents • Technology and knowledge transfer to local suppliers

5.4.1. Fast-Growing Business

According to the traditional FDI theory, due to the high transaction costs in the host country market (i.e., China) and strong ownership advantage at the beginning stage when iPhone was first launched in the market, it should be more appropriate for Apple to internalize instead of externalize by contracting with Foxconn for the product assembly. However, when the CEO of Apple, Steve Jobs, introduced the revolutionary product (iPhone) to the world, he expected that followers would catch-up fast in a short time, so he decided to outsource the manufacturing to Taiwanese-based Foxconn, which had huge scale of factories in China. Moreover, outsourcing strategy has advantages of flexibility by allowing the firm to change suppliers in case of emergency.

In case of Samsung, although it internalized majority of the parts and components in the supply chain and other activities in the entire value chain, recently it has increasingly worked with outside suppliers rather than conducting them internally. A good example is that Samsung chose foreign suppliers for producing the metal cases

used in its flagship smartphone model. Samsung has been criticized for using plastic casing for its high-end smartphone models. Moreover, facing growing competition from cheaper models from Chinese companies in particular, Samsung decided to adopt metal casing to its flagship products in a large scale since 2015 in order to differentiate its premium models. However, compared to plastic casings, manufacturing metal casings requires higher technology and additional huge amount of capital investment (e.g., purchase of computer numerical control (CNC) equipments), so this would be a big challenge for extant suppliers of making plastic cases to upgrade the facility and production capability in a short period.⁵¹ As a result, Samsung decided to employ the Taiwanese company Catcher Technologies as the primary supplier, and the Chinese company BYD and Taiwanese Company Jo Teng as the secondary suppliers.

In addition, Samsung has recently been accelerating the expansion of outsourcing the production of mid- and low-end smartphones to Chinese companies. For example, Samsung made a joint venture with Zhonghuan Telecommunication, a Chinese company to produce Galaxy Trend Duos, which aims to export to other developing countries, including India. It is expected that the volume to be outsourced would reach 10% of the total annual production. Compared to the high-end smartphones, the parts included in low- and mid- smartphones and manufacturing technology have been standardized, and thus there are no significant differences in product quality among different branded devices. However, cost reduction is not the only reason for Samsung's decision for outsourcing. The outsourcing strategy is also driven by fast and flexible adaptation to the explosive market demand and effective localization in emerging markets such as China and India. Therefore, the above examples of Apple and Samsung Electronics' outsourcing practices show that not just cost reduction, but fast and flexible adaptation to the market is another important factor for firms' externalization choices.

⁵¹ The product life cycle of smartphone is so short that efficient time management has become increasingly critical for firms' success. For example, Apple once suffered great loss from the sales of iPhone 7, due to the delay in the delivery of headphone jack.

5.4.2. Commercial Best-Practices

Despite the competing relationship with Samsung, Apple used relatively many parts and components from Samsung. For example, in the case of iPhone 4, more than 25% of parts and components were outsourced from Samsung. This is because these parts are the industrial standards. Outsourcing them from other partners will influence the quality of the final products, which would have caused problems in competing with Samsung's smartphones in the global market. However, in the case of parts and components which had no industry standards, Apple outsourced through several competitive suppliers and invested huge money to make them into the industrial standard. When new component technologies first came out, they were very expensive to produce, and building a factory to produce them in mass quantities was even more expensive and risky. This shows that outsourcing strategy can not only largely save costs but also grant speed advantage.

In the case of Samsung, it outsources some key parts and components such as the operating system (OS) from Google and mobile phone chipset from Qualcomm. In particular, the chipset supplied from Qualcomm is very expensive, costing 4-5% of the price of each mobile phone mainly because there are no other alternatives. Also, even if Samsung could develop similar technology, it would accrue huge development costs and go through the risk of not being acknowledged by the consumer markets. For example, Samsung has spent three years for developing its own Tizen OS⁵² aiming to shift away from the reliance on Google's Android mobile software. However, the Tizen OS is not as competitive as Android OS in attracting app developers. The number of apps for the Tizen OS is only 1000, whereas the number of apps registered in both Android and iOS has exceeded 1 million (CNBC, 2015/1/14).

The example of outsourcing metal cases from Taiwanese and Hong Kong-based companies mentioned earlier can also be explained by the second condition of

⁵² The Tizen OS was launched in 2015, and first adopted in the new smartphone, named as Samsung Z1, targeting the Indian buyers. However, for the high-end smartphones, it still relies on Google's Android OS.

“commercial best practices.” Catcher is a key supplier of metal cases for Apple products, and thus its production technology and capability have been proved to be the industry standard. Therefore, not the highest technology, but the commercial best practices deliver higher commercial values to consumers.

5.4.3. Multiple Competences

Smartphone converges multiple functions (e.g., phone, camera, music player, Internet, calendar, alarm) that used to be viewed as separated devices. Moreover, the introduction of iPhone also spawns many other new businesses such as apps and services offerings. By adopting the software of App store and Google Play, numerous app developers provide millions of apps which help consumers easily and effectively perform numerous functions which used to be done in the PC environment, such as on-line shopping and office work. In addition, smartphone makers have also tried to connect the device to everything on earth to pursue new growth engine through the device, such as link with home appliances, health care, cars, and cash registers. All of the above functions thus cannot make a single firm to dominate the entire businesses, and the competitiveness of the device naturally requires multiple competences acquired from various outside firms.

Multiple competences can be either at each activity level throughout the entire value chain. Even Apple and Samsung have different preferences of strategic choice in terms of internalization or externalization; they have to externalize to a certain level because of the nature of multi-competences in the smartphone business. The different degrees of internalization/externalization were driven by their different core competences and strategic fit among different divisions. Compared to Apple, Samsung has more competitive advantages in manufacturing hardware, and thus internalizing more than Apple in these areas.

Moreover, the feature of multiple competences requires strategic fit among each elements comprising the product, which in turn creates higher synergies among them.

Hence, unlike the traditional drivers of outsourcing that emphasize the unilateral exploitation of the advantages of outside firms, the cases of Apple and Samsung Electronics show that they aim to establish a win-win relationship among all involved partners in the GVC, and this in turn contributes to sustaining the entire ecosystem in the long run. Apple has long been committing in co-developing the new technology of parts and components with its suppliers, and Samsung also has made great efforts in transferring the technology to Vietnamese suppliers, and thus more local suppliers have joined Samsung supply chain, at competitive price, quality, and speed of delivery. The localization rate has thus been raised significantly from 35% in 2014 to 51% in 2016 (Vietnam Business News, 2017/1/23).

5.5. Conclusions

This chapter applied two frameworks, namely the integrated GVC approach (trade, FDI, and NEM) and three conditions for externalization to the GVC practices of Apple and Samsung Electronics and their motivations for externalization. Based on the extensive information and analysis, this chapter found that the two frameworks can well explain the cases of Apple and Samsung Electronics.

Firstly, regarding the integrated framework, both companies combine the three governances for effectively performing their GVC activities. The intermediate and finished goods are extensively transacted through trade. In particularly, for the trade in finished goods, most of Apple's smartphones are produced in China and exported to the global market. Similarly, Samsung's Vietnam manufacturing plants serve the global market. Almost 50% of its smartphones are produced in Vietnam and exported to rest of the world.

Apple externalizes many GVC activities (upstream and some support activities) through NEM, whereas Samsung internalizes through FDI almost all GVC activities around the world. However, this study found an interesting point that the two companies

show a convergence between FDI and NEM modes. In other words, Apple appears to increase GVC practices through FDI, as illustrated in its recent establishment of R&D centers around the world. On the other hand, Samsung expands the externalization options for GVCs, such as outsourcing of production of low- and medium-end smartphones to Chinese companies.

Secondly, the three conditions satisfactorily explain the reasons behind the externalization choices of the two companies. Three important findings can be summarized as follows. (1) Not just cost reduction, but fast adaptation to the market is the more fundamental driver for their outsourcing activities. (2) Not the highest technology, but the commercial best practices are more concerned by both companies when they make decisions for externalization. (3) Not just unilaterally exploiting the partners' resources or advantages, but co-development should be concerned for longer-term and sustainable development of the entire business ecosystem.

CHAPTER 6. EMPIRICAL TESTS: THREE CONDITIONS FOR EXTERNALIZATION

The previous chapter conducted a case study on Apple and Samsung Electronics focusing on their smartphone business, and showed that three conditions can well explain the reasons behind their externalization choices for various value chain activities, despite the different degree of externalization. This chapter applies a different methodology by conducting a statistical test and expanding the samples to test whether the three conditions can be applied to other industries. Specifically, I study the motivations of the strategic partnership for firms' research and development (R&D) activity. In Chapter 3 (see Table 3.4 in section 3.2.3), I showed how firms increasingly offshore and outsource⁵³ their R&D activities, which used to be conducted within the firm in the home countries according to the traditional foreign direct investment (FDI) theories. Strategic partnership includes both equity and non-equity partnership. The former is often known as joint ventures, while the latter is regarded as strategic alliances. This study only concerns the form of strategic alliance, which is a typical type of externalization. The next section of this chapter addresses the development of three hypotheses. It is followed by a set of empirical tests and discussions on the results.

⁵³ Offshoring and outsourcing are two different dimensions of the configuration of value chain activities: geographical and organizational dimensions, respectively. Offshoring refers to relocation of firms' value chain activities from domestic to foreign countries, whereas outsourcing refers to the ownership transfer from a firm to other firm. However, extant studies often use offshoring interchangeably with outsourcing.

6.1. Hypotheses

Based on the conceptual framework introduced in Chapter 3, this chapter proposes three hypotheses as follows. It should be noted that the three propositions introduced in Chapter 3 are mainly discussed at the industry or product level, but the hypotheses of the empirical tests in this chapter will be conducted at the firm level. As the logic and background of each of the three propositions are explained in Chapter 3, I will directly formulate their testable hypotheses here as follows.

Hypothesis 1. The faster growing firms are more likely to make partnerships with other firms (*Condition 1: fast-growing business*).

Hypothesis 2. Firms aiming to create the next generation industry standard are more likely to make partnerships with other firms (*Condition 2: commercial best-practice*).

Hypothesis 3. Firms producing products which require more areas of core competences are more likely to make partnerships with other firms (*Condition 3: multiple competences*).

6.2. Methodology

6.2.1. Sample and Data

The sample consists of 63 high-growth firms between 2011 and 2015. According to OECD (2010), the high-growth firms⁵⁴ are defined as “all firms with average annualized growth greater than 20% per year, over a three-year period, and with ten or more

⁵⁴ OECD (2010) recommended the definition of “gazelles” as “all firms up to five years old with average annualized growth greater than 20% per annum over a three-year period, and with ten or more employees at the beginning of the observation period.”

employees at the beginning of the observation period. Growth is measured by the number of employees and by turnover.”

I collected the data from the report of *2016 High Growth Companies and Their Growth Trajectories* published by Korean Science and Technology Policy Institute (STEPI), which investigated Korea’s high-growth firms and published annual report since 2009. About 100 high growth firms are chosen every year from the listed companies based on the five-year average growth rates either in terms of sales or employments. In the 2016 report, STEPI selected 115 fast growing firms although firms with different sizes show various patterns of growth rate.

According to the report, normally firms with employees between 100 and 500 experience high average growth rate. Therefore, in order to classify firms with more similar patterns of growth, this study divides firms into large firms and small and medium-size enterprises (SMEs) based on the criterion of the number of employees (i.e., less than 500)⁵⁵. Out of 115 high-growth firms, I dropped 34 of them due to unavailable data, in particular, for the dependent variable (i.e., the existence of R&D partnership or not). Then, this study removed 18 large firms with employees more than 500, leaving 63 SMEs across seven industries for the empirical test. Table 6.1 lists the industrial distribution of the 63 SMEs. The electrical and electronics industries accounted for the largest share, including 22 SMEs. The next three industries with more than 10 SMEs are chemistry & non-metal (14), IT/business service (13), and metal & machinery (10). The other three industries – food, automotive/shipbuilding/transportation, and construction include one or two SMEs.

⁵⁵ According to the recently amended Act of Small and Medium Business in 2015, SMEs are defined based on the annual sales. According to this criterion of annual sales, around 10 out of 63 firms are not SMEs. However, before the amended version, SMEs were defined based on three criteria, including employees, assets, and equity capital. Regarding the number of employees, SMEs are defined as the firms with less than 1,000 employees (Moon and Yin, 2015).

Table 6.1. Samples: Industry Distribution

Industry	No. of SMEs	Industry	No. of SMEs
Electrical and electronics	22	Food	2
Chemistry & non-metal	14	Automotive/shipbuilding/ transportation	1
IT/Business service	13	Construction	1
Metal & machinery	10	Total	63

6.2.2. Dependent Variable

The dependent variable is the governance mode of R&D activity, i.e., whether firms pursue partnership or in-house development. STEPI report on high-growth firms categorized four types of R&D partnership depending on the subject of partners: intra-firm (firms within the same business group), inter-firm (firms outside the business group), government-funded research institutes, and universities. As Table 6.2 shows, out of 38 firms with R&D partnership, inter-firm partnership makes up the largest share with 25%, followed by partnership with government-funded research institutes which also accounted for more than 20%. The distribution is consistent among the entire observations of 115 firms included in STEPI 2016 report: inter-firm (22.4%), government-funded research institutes (21.2%), universities (8.2%), and intra-firm (4.7%). STEPI expected higher potential for the R&D partnership with public institutions in the future.

Table 6.2. Samples: Distribution across Types of Partnership

Types of partnership	No. of firms (unit)	Percentage
Intra-firm	4	6%
Inter-firm	16	25%
Government funded research institutes	13	21%
Universities	5	8%
No partnership	25	40%
Total	63	100%

6.2.3. Independent and Control Variables

The STEPI 2016 report published the survey results which consist of around 40 survey items for each of 115 observed firms. This study selected the most appropriate items for conceptualizing and operationalizing the three hypotheses. To test the effects of the degree of firm growth on firms' externalization choice, related to Hypothesis 1, I used five-year (2011-2015) average growth rate of employees.

To evaluate the effects of commercial best practice, which is for Hypothesis 2, I built a dummy variable, the nature of technology. It takes value 1 if the firm aims to develop foundational technology, and 0 for applied technology. This is because, compared to applied technology, foundational technology has larger influences on developing next generation industry standard, which outcompetes the rivals for performance.

To test the effects of multiple competences, for Hypothesis 3, I used R&D intensity which is measured as a percentage of sales. In order to minimize the fluctuations due to the large changes of a single year, I also used the five-year average between 2011 and 2015 for this proxy variable. There can be two occasions for firms to spend a large amount of capital on R&D. One is when a certain area of technology requires heavy R&D investment; the other is when developing a competitive product requires many different areas of technologies. This study in fact aims to test the second situation. The

variable of R&D intensity measures the mixed cases. This is mainly because it is usually impossible to distinguish the areas of R&D spending as firms do not go open such information. Nevertheless, we can assume that the higher the degree of R&D intensity, it will be more likely for firms to spend in more areas of technologies.

There can be some other factors, in addition to the independent variables, which also affect firms' externalization choice. In this study, I controlled firm age, measured by the number of years the firm had been in business. This is because the longer the firms engage in the business, the more experiences and resources firms can accumulate which may help firms involve in R&D partnership.

6.2.4. Model

In order to test the hypotheses, I estimated the probability of observing a strategic partnership as the governance mode for the firms' R&D activities, using the logit model, which is commonly chosen for studies on governance mode (Hennart, 1997). The model takes the following form:

$$P_i = 1/[1 + \exp(-z_i)]$$

P_i stands for the probability that the observed firm develops technologies through partnership, and z_i is defined as follows:

$$z_i = \beta_0 + \beta_1 \text{growth}_i + \beta_2 \text{technology}_i + \beta_3 \text{R\&Dintensity}_i + \beta_4 \text{age}_i$$

where β represents the coefficients to be estimated; i is the time and here it covers the period from 2011 to 2015. The following section presents the results of the estimated model.

6.3. Results

Table 6.3 summarizes the descriptive statistics (means, standard deviations, minimum and maximum values) and bivariate correlations among the variables. About 60% of observed firms had the experiences of developing technologies through partnership. Although there are fluctuations in terms of employment growth rate across observed firms and also across five years, the average of five-year employment growth rate of the 63 firms still recorded two-digit growth rate, with the value of 12.5%. Moreover, the R&D intensity also shows a relatively high value of 6.3%. The average age of observed firms is about 20 years. Considering that the minimum firm age is 9 years, these fast-growing firms are not very young but have accumulated relatively high business experiences. In addition, correlations among variables in the model are smaller than |0.4|, implying that there are no relevant issues of multicollinearity with the dataset (Crocker et al., 1979; Lee and Noh, 2013).

I examined three variables and the results are present in Table 6.4. I show the results using both coefficients (β), and odds ratios are calculated using the exponential function of coefficients, i.e., $\text{Exp}(\beta)$. If the coefficient value is positive, it indicates an increase in the portability of choosing R&D partnership, and vice versa for the negative coefficients. The odds ratio is explained as the changes in the odds of R&D partnership when the independent variable increases by one unit. If the coefficient is negative, the odds ratio is smaller than 1, and this means the explanatory variable reduces the odds of the R&D partnership. On the other hand, the positive coefficient produces the odds ratio larger than 1, which indicates an increase in the odds of the R&D partnership.

Table 6.3. Descriptive Statistics and Correlation Matrix

		Mean	S.D.	Min	Max	1	2	3	4	5
1	R&D partnership	0.587	0.496	0	1	1				
2	Employment growth rate	12.533	6.630	0.600	28.500	0.296*	1			
3	Technology	0.238	0.429	0	1	0.090	-0.330**	1		
4	R&D intensity	6.297	6.026	0	30.700	0.031	-0.102	0.105	1	
5	Age	20.032	5.770	9	35	0.027	-0.317*	0.244	-0.173	1

Note: N = 63. ** p<0.01; * p<0.05

Table 6.4. Logistic Regression

	Model 1 DV: R&D partnership		Model 2 DV: R&D partnership	
	Coefficient	OR	Coefficient	OR
Employment growth rate			0.222***	1.248
Technology			2.537**	12.644
R&D intensity			0.333**	1.396
Age	0.136*	1.146	0.073	1.075
Intercept	-2.063	0.127	-5.539**	0.004
<i>N</i>	54		54	
-2LL(log likelihood)	67.629		48.294	
Hosmer-Lemeshow test	7.123(0.310)		9.736(0.284)	

Note: p-value in parentheses, *** $p < 0.01$; ** $p < 0.05$, * $p < 0.10$; DV: dependent variable; OR: odds ratio

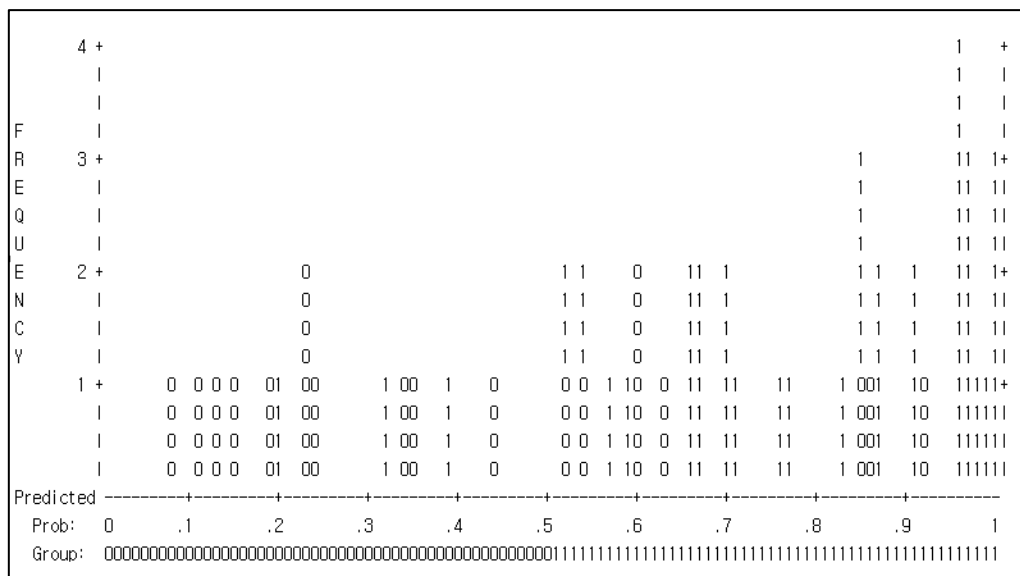
Model 1 includes only the control variable of age of the firm. The coefficient is positive and significant at 10% ($\beta = 0.136$), and the odds ratio is larger than 1 (OR = 1.146). This can be explained that the odds of R&D partnership increase by 14.6% when the firm age increase by one year. Model 2 adds three independent variables. Three predictors are all significantly positive and support the three hypotheses.

Specifically, the coefficient of employment growth rate is positive and significant at 1% ($\beta = 0.222$); the odds ratio is 1.248, which implies that when firms' employment growth rate increases by 1%, the odds of R&D partnership increase by 24.8%. The coefficient of technology, for Hypothesis 2, is positive and significant at 5% ($\beta = 2.537$); the odds ratio is 12.644, which implies that the nature of R&D activity focusing on foundational technology makes the R&D partnership mode more likely. To be specific, the odds of R&D partnership of firms engaging in foundational technology are 12 times higher than that of firms committing in developing applied technology. Lastly, the coefficient of R&D intensity is positive and significant at 5% ($\beta = 0.333$); the odds ratio

is 1.396, which predicted that if the R&D intensity increases by 1%, the odds of R&D partnership will increase by nearly 40%.

In addition, the Hosmer-Lemeshow test examines the fitness of the model, and the results of both models show that there is no difference between the predicted values and observed values. Furthermore, compared with Model 1, the decrease in the value of -2LL (from 67.629 to 48.294) of Model 2 implies the improvement of the explanatory power of the estimated model. Figure 6.1 represents the scatter plot of Model 2, and shows that firms' R&D partnership choice is well predicted by the independent variables.

Figure 6.1. Observed Groups and Predicted Probabilities



Note: Predicted probability for the observed firms with R&D partnership; the cutting value is 0.5; 0 for observed firms with no R&D partnership; 1 for observed firm with R&D partnership; each symbol represents 0.25 cases.

6.4. Discussion and Conclusion

This chapter deals with the effects of three conditions (fast growing business, commercial best practices, and multiple competences) on firms' externalization choices. Traditional FDI theories mostly look at the influences of market failure and firms' ownership advantages on the choices of MNCs governance modes. This extended the understanding of the determinants of firms' externalization choices. Although not all of the observed samples are MNCs, about half of the overserved firms' rely more on foreign markets for their revenue generation. Therefore, the empirical results can still provide some useful insights for firms in general.

Firm age which can proxy the firm experience or other capability shows a meaningful result for explaining firms' choice for R&D partnership, but when the other variables are added, it was not statistically significant. This implies that although firm capability is a critical factor influencing firms' externalization choice, firms will be more likely to choose partnership governance mode when the situation satisfies at least one of the three conditions. This is in fact consistent with the argument by some scholars illustrated in Chapter 3 that the motivation of firms' externalization has been shifted from enhancing firm competitiveness to survival. Regarding the former motivation (i.e., competitiveness building), firms could be more concerned with their current status of competitive advantages, whereas for the latter motivation (i.e., survival) firms should be concerned more about the environmental factors.

What should be noted is that the environmental factors do not mean the external uncontrollable factors but the changing patterns of the sources of competitive advantages. For example, the product life cycle becomes shorter and technological changes become faster, and this requires firms to be more agile in order to be competitive in the market competition. Firms have to incorporate these changing patterns as part of their growth strategy.

In addition to the above empirical and theoretical contributions, there may exist some limitations for the empirical test. The first limitation is about the industry

distribution. The observed firms mainly belong to the high-technology industries, which require extensive R&D investments. Some other less technology-intensive industries may modify the outcome of the investigation. Time horizon may be another limitation. The research can be extended by including more years or conducting time-series analysis. Thirdly, except for the variable of employment growth rate, related to Hypothesis 1, the other two variables are more technology-oriented, and thus can be adjusted when examining the governance mode for other value chain activities. Lastly, since some factors other than the independent variables of this model may affect firms' externalization choice, more control variables can be added for further research, such as firm size and the status of experiences.

CHAPTER 7. CONCLUSIONS

The previous studies on GVC are relatively segmented and lack a comprehensive framework in capturing the entire picture of GVCs. For this purpose, this study incorporates three different approaches – trade, FDI, NEMs in respect to the transactions occurred throughout the GVC, into a single framework. Theoretically, these three groups of studies have examined the phenomenon of GVCs separately. Trade approach highlights the international segmentation of production processes while neglecting the integration within the GVC. This is because trade studies are mainly conducted at the national level, and do not deal with the role of MNCs in coordinating these internationally dispersed activities.

The limitations of trade approach can be complemented by FDI and NEMs studies, but these two approaches emphasize the different organizational governance in managing GVC. FDI theorists mainly focus on the internalization governance, while NEMs emphasize externalization governance. Compared to the traditional globalization approaches which highlight the dispersion of activities within the global scope, GVC concerns the organizational integration along the value chain activities. Therefore, the integrated framework can better explain the GVC than when analyzed separately.

In addition to the theoretical contribution of this integrative perspective, this study also proposed three extensions for each theoretical approach. First, for trade approach, this study extended the unit of analysis from country to regional level by incorporating the cluster theory. Moreover, this study extended Porter (1990) and Moon and Jung's (2010) cluster theories by specifying the sources of sustainable competitiveness of clusters in the context of GVC, by adopting Moon's (2017b) four factors for explaining the sources of competitiveness of Silicon Valley. The four factors are dynamism, interaction, ecosystem, and motivation. Second, for FDI theory, this study proposed the way of improving the most popular measurement of firms' globalization, namely the TNI index, by adding two elements – outsourcing and technology development activity. The

improved index is more comprehensive because it captures not only the types of value chain activities but also those of transaction within the GVCs. Third, for NEMs this study introduced a new framework of explaining the conditions for externalization, composed of three elements which are fast-growing business, commercial best practices, and multi-competences.

Among the three extensions, this research particularly emphasizes the third one by proving the legitimacy of the three conditions using case studies and quantitative tests. Regarding the case study, this research selected Apple and Samsung Electronics. Although these two firms have different preferences in terms of organizational governance in the GVCs, they both externalized certain technology, parts and components, or functions. The determinants of externalization proposed by preceding studies (e.g., transaction costs, firm capability) are useful but cannot satisfactorily explain the two companies well. Specifically, the case study found that both firms externalize not just to exploit the cost advantages, but to be flexibly adapt to the fast-changing environment.

The two companies' externalization choices are not determined by the highest technology, but the high commercial value. Furthermore, they outsource some activities to the third party not only to exploit the benefits or specialization, but to maximize the value creation through co-specialization and co-development. In this respect, the three conditions, which emphasize the changing patterns of business, can complement earlier studies to explain the conditions for externalization. This research also conducted the quantitative/statistical tests to complement the qualitative case study by collecting more firm data from other industries. The result showed that the three conditions well explain the externalization (i.e., partnership) choice by Korea's SMEs in terms of their R&D activities.

The integrated framework of trade, FDI, and NEMs can provide wider options for firms to choose when expanding their global presence as well as offering important implications for firms to enhance their international competitiveness. The trade approach often stirs up competitive or hostile relationship among countries. However, if firms

flexibly combine trade with the other two types of transactions, thereby emphasizing more cooperative relationship, it would not only create higher synergies, but also enhance their competitive advantages. For example, if the host government (e.g., the US) pursues import restriction policy and prefers the inward FDI by MNCs because the inward FDI can create jobs for the host country, then the MNCs can restructure their organizational governance in their GVCs from trade to more a FDI-oriented strategy.

For further studies, as this study mainly conducted cases for high technology industries, the conceptual framework can be applied and tested to other labor-intensive or service industries, which have different industrial structure and characteristics in nature. In addition, the quantification of the three conditions for firms' externalization can also be improved by incorporating more samples from more diverse industries and control variables as well as other measurements for more generalization of the arguments of this study.

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APPENDIX

Table A1. Top 20 Internationalized Korean MNCs and Locations of Their Subsidiaries in ASEAN

Rank	Name of company	Industry	Foreign assets	Presence in ASEAN
1	Samsung Electronics	Conglomerate	18,449	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam
2	POSCO	Conglomerate	8,160	Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
3	Hyundai Motor Company	Conglomerate	6,786	Malaysia, Singapore, Vietnam
4	Korea Gas Corporation	Gas utility	5,419	..
5	LG Chem	Conglomerate	4,239	Singapore
6	LG Electronics	Conglomerate	3,456	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam
7	SK Hynix	Semiconductors & related devices	3,165	Singapore
8	Korea Electric Power Corporation	Electricity	2,670	Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Vietnam
9	Lotte Chemical Corporation	Petrochemicals	2,045	Malaysia
10	Lotte Shopping	Conglomerate	2,017	Indonesia, Philippines, Singapore, Vietnam
11	Samsung Display	Display panel	1,955	Singapore, Vietnam
12	Kia Motors Corporation	Motor vehicles	1,617	..
13	Samsung C&T Corporation	Conglomerate	1,591	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam

14	LG Display	Display panel	1,565	Singapore
15	Hyundai Mobis	Automotive parts	1,162	..
16	SK Telecom	Telecommunications	1,155	Singapore
17	Hyosung Corporation	Conglomerate	896	Indonesia, Singapore, Vietnam
18	Samsung SDI	Display panel and battery	874	Malaysia, Thailand, Vietnam
19	Hyundai Heavy Industries	Conglomerate	873	Indonesia, Malaysia, Philippines, Singapore, Vietnam
20	SK Innovation	Conglomerate	812	Indonesia, Malaysia, Singapore

Sources: ASEAN Secretariat and UNCTAD (2016)

Appendix 1. 12 Korean SMEs: Company Profiles and FDI in ASEAN

1. Hyun Jin Corporation⁵⁶

The company was established in 1987, as an exporter of MX/MC apparels in the Republic of Korea. It started as an OEM manufacture of MX/MC apparels such as gloves and race pants in the home country in 1989. The company was then independently incorporated in 1991. This company mainly manufactures gloves and apparels (pants, jersey, and jacket).

Operations in ASEAN

The company has three factories in Viet Nam and plans to establish a fourth factory in the host country. The first glove production factory was established in 2003 in the Nam Sach Industrial Zone in Viet Nam. In 2005, after two years of operation, Hyun Jin established additional manufacturing facilities for producing race pants in the same place.

In 2006, the company constructed the second factory in Gia-Loc, Viet Nam for producing gloves, pants, and jersey. The factory started OEM manufacture of Mx Jersey. In 2010, Hyun Jin launched the third factory in Kim Lien, Nghe An Province, Viet Nam, for producing high-end work wear. In 2011, it then established the gloves & garments facilities and expanded the production capacity of the third factory in Kim Lien, Viet Nam (see Table A2). The company exports these products to the US, EU, Oceania and other countries, through both OEM and ODM. The major customers are the German firms for racing apparels; French firms for ski, golf, cycle, firefighting, and gardening gloves, and the US firms for military gloves.

⁵⁶ The company information is abstracted from the company website, <http://www.hyun-jin.com/eng/>

Table A2. Hyun Jin Overseas Factories in ASEAN

Factory name	Year	Location	Production items
1. Nam Sach factory	2003	Nam Sach Industrial Zone, Viet Nam	Gloves
	2005	Nam Sach Industrial Zone, Viet Nam	Race pants
2. Gia Loc factory	2006	Gia-Loc, Viet Nam	Gloves, pants, jersey
3. Kim Lien factory	2010	Kim Lien, Nghe An, Viet Nam	high-end Work wear
	2011	Kim Lien, Nghe An, Viet Nam	gloves & garments

Source: <http://www.hyun-jin.com/eng>

2. Sees Global⁵⁷

Sees Global was established in 1970 to produce winter sports gears for ski and snowboard. It has then expanded its product coverage into four-season sports gears for outdoor, bicycle, motor cycle, and fitness field as well as industrial safety gloves. The company currently accounts for 20% of the world's sports glove production.

Operations in ASEAN

Sees Global has many overseas production factories, including in Cambodia and Viet Nam. The factory in Viet Nam was established in 2008 with 1,000 employees. Sees Global expanded its Vietnamese factory in 2011, which employs 2,000 workers. The Cambodian subsidiary was founded in 2015. Sees Global has built a strong partnership with the world's top sports brands (e.g., The North Face, Ziener, Reusch, Lafuma, Head), including some Korean ones (e.g., Fila, Nepa, Kolon Sport). Its factories in Cambodia (SEES Cambodia in Phnom Penh) and Viet Nam (SEES Vina in Hai Duing Province) supply to some of these top brands.

⁵⁷ The company information is abstracted from the company website, <http://eng.sees.co.kr/>.

3. MSA⁵⁸

MSA was established in 1992 to produce pants (e.g., outdoor, snow board, and girls & boys pants) and jackets (e.g., down, wellon, snow board jacket, toddler jacket, kids padding) to domestic and global clients.

Operations in ASEAN

In ASEAN, MSA established overseas factories only in Viet Nam. MSA opened an office in Viet Nam in 1995, with subsidiaries and two factories established after the mid-2000s. The two factories were established in Hanoi in 2000 and 2006, and MSA VN in 2007. The major function of these subsidiaries is to handle direct order from customers and product orders from head office in Republic of Korea. MSA VN is also responsible for new development, sample production, sourcing, and some high-tech functions, such as laser cut and special wash.

The company has continuously expanded its operations in Viet Nam after 2010s, by opening two factories – one in 2010 and the other in 2011. Unlike other factories in Viet Nam, MSA Dong-do was established by acquiring local company (Dong-do), whereas MSA YB was the only factory located outside Hanoi (see Table A3). The factories all produce mainly pants and jackets.

⁵⁸ The company information is abstracted from the company website, <http://www.msa.co.kr/>

Table A3. MSA Overseas Factories in Vietnam

Factory	Year	Location
MSA Hapro 1	2000	Saidong B Industrial Zone, Gialam, Hanoi
MSA Hapro 2	2006	Phonoi A Industrial Zone, Hungyen, Hanoi
MSA VN	2007	Tu Liem, Hanoi
MSA Dong-do	2010	Tu Liem Small and Medium Industrial Complex, Tu Liem, Hanoi
MSA YB	2011	Tuyen Quang city, Tuyen Quang province

Source: <http://www.msa.co.kr/>

4. Suy Co., Ltd.⁵⁹

Suy, founded in 1991, is a textile company producing and exporting garments. In 2014, the company earned sales revenue of \$250 million.

Operations in ASEAN

Its overseas factories are located in four countries – three in ASEAN (i.e. Indonesia, Philippines and Viet Nam) and one in Guatemala. Its Indonesian factories produce men's and ladies' knitwear involving almost 5,000 local workers. Its factories in the Philippines and Viet Nam manufacture all kinds of knits, employing about 5,000 and 4,000 local workers, respectively. Another feature of Suy's operation is that it not only established wholly-owned factories, but also actively involved with outsourcing arrangement (see Table A4). These products are mainly exported to major retailers in the United States (e.g. Ann Taylor, Express, Lands' end, Loft) as part of OEM contracts.

⁵⁹ The company information is abstracted from the company website, <http://www.suy.co.kr/gnu/bbs/index-eng.htm>

Table A4. Suy Overseas Factories in ASEAN

Country	Factory	Year	Location	Employment	Relationship
Indonesia	PT. HANOL INDONESIA	1999	Bekasi Timur	L: 1500/ K: 5	Subcontractor
	PT. LEADERS WORLD	2005	Jawa Barat	L: 1600/ K: 6	Fully owned
	PT. INKOSINDO	2008	JAKARTA UTARA	L: 1500/ K: 5	Subcontractor
Philippines	DONG SEUNG INCORPORATED	1995	Rosario, Cavite	L: 867/ K: 4	Subcontractor
	LS PHIL	1998	Rosario, Cavite	L: 1700/ K: 7	Fully owned
	LEE & CHOI	2011	Rosario, Cavite	L: 2300/ K: 6	Subcontractor
Viet Nam	DONGBANG	2005	Ho Chi Minh City	L: 550/ K: 2	Subcontractor
	L&S VINA	2006	Thuan An District, Binh Doung Province	L: 900/ K: 6	Fully owned
	LEE & VINA	2006	Thuan An District, Binh Doung Province	L: 1800/ K: 10	Fully owned
	SS VINA	2006	Thuan Giao, Thuan An Binh Doung Province	L: 580/ K: 7	Subcontractor

Source: <http://www.suy.co.kr/gnu/bbs/index-eng.htm>

Note : L: Local employees, K: Korean employees

5. Gomundang Printing Inc.⁶⁰

Gomundang, established in 1962, provides printing and packaging services. Before 2000, it served the Korean domestic market by concluding agreements with various business departments of LG Electronics, which was its main customer. It has presence overseas servicing Korean and international customers in various host countries.

⁶⁰ The company information is abstracted from the company website, <http://www.gomun.co.kr/eng/index.php>

Operations in ASEAN

Three of Gomundang's overseas factories are located in China (Haeju in 2001, Tsingtao in 2004, and Tianjin in 2007) and one in Viet Nam (Hanoi in 2009). These factories target foreign buyers and provide them with the items of printout, box, pulp mod, and label development service (Maeil News, 2010). The company contracted with Korean firms (e.g., LG Electronics, CJ Cheil Jedang) and foreign subsidiaries in Korea (e.g., Nokia) for the delivery of printouts and other strategic package business. Gomundang has also continuously engaged in the foreign marketing business over the past decade. For this, the company established operation and logistics offices in Yantai, China and Hong Kong. This company is recognized as one of the few Korean printing companies that have successfully established and operated large-scale factories overseas. The company has also been regarded as a good example for Korean firms' overseas expansion.

6. Dada⁶¹

Dada was established in 1974 to manufacture headwear. It has expanded its business portfolio to knitwear and bags, and has grown to a leading company of producing diversified textile products. Dada currently has four main businesses, including headwear, apparel, bag, and IT businesses. As the world's leading headwear manufacturer, it accounts for 45% of the global sports cap market.

⁶¹ The company information is abstracted from the company website, <https://e-dada.com:446/main/index.asp>

Operations in ASEAN

Dada, as the early mover in establishing overseas production facilities in the headwear industry, has six global operations located in four countries, Indonesia, Viet Nam, Bangladesh, and China. The company provides various ODM products, by partnering with about 80 major global retailers. The Indonesian production facilities (P.T. Dada Indonesia) were established in 1984, for knitwear production, and 50 knit lines were added in 2007. Its major global customers include Adidas, Reebok, Gap, Walmart and Sears.

There are two factories in Viet Nam. UNIPAX Co., Ltd. was established in 2002 in Bien Hoa City, Dong Nai Province, for producing headwear. Unlike most headwear manufacturers using subcontractors and using dyes for logo printing, Dada adopts in-house embroidery. Its major customers include Nike, Adidas, and Callaway. The other factory in Viet Nam (Moland Co., Ltd) was established in 2006, in Trang Bom District, Dong Nai Province, for production of handbag, casual bag, and back pack. This factory also adopts in-house printing and embroidery, CAM cutting, and laboratory and testing.

7. Molax Trading⁶²

The company was established in 1996, starting with apparel business. Currently its main business is manufacturing women's outerwear apparel.

Operations in ASEAN

The company opened manufacturing plants in four cut & sew knit factories in Indonesia, and one in Viet Nam. The first overseas manufacturing plant in Indonesia was

⁶² The company information is abstracted from the company website, <http://www.molaxtrading.com/index.html>

established in 1997. Today, the company has four factories in Indonesia. The factory in Viet Nam was established in the early 2000s (see Table A5). The scale of Vietnamese factory is smaller than the Indonesian ones. For example, the number of sewing lines in Vietnamese factory is 12. This is comparable to Indonesian second and third factories with around 15 sewing lines. However, the larger-scale factories (first and fourth factory) in Indonesia have much more sewing lines – one with 28 lines, and the other with 38 lines.

Because of the differences in the production capacity among factories, the employment scale also varies. The Vietnamese factory employs 800 persons, whereas the Indonesian factories employ from 1,100 to 2,500 persons. These figures include both Korean and local workforce, but majority of them are local labor force, and the number of Koreans ranges from 2 to 7 persons, depending on the size of factory. The products manufactured in these overseas plants are provided to both Korean and foreign retailers and wholesalers, such as NY & C, GAP, Wal-Mart, H&M, Who.A.U., Target, and Sears.

Table A5. Molax Overseas Factories in ASEAN

Country	Factory	Year	Location
Indonesia	PT. Molax International	1997, 2004	Cakung Jakarta
	PT. Amos Indah	2000	Cakung Jakarta
	PT. Molax Global Sukabumi III	2006	Sukabumi Provinsi Jawa Barat
	PT. Busana Indah Global	2013	Cakung Jakarta
Viet Nam	Molax Vina Co., Ltd	2002	Binh Chanh District, Ho Chi Minh

Source: <http://www.molaxtrading.com/index.html>

8. Kyung Seung Co., Ltd⁶³

Kyung Seung Co., Ltd, founded in 1994 is a knit cut and sewn specialized apparel company. It offers a large spectrum of knit cut and sewn products such as novelty top/dress and sportswear, and design (PD&D) services.

Operations in ASEAN

Kyung Seung has a total of six overseas manufacturing plants, three in each of Indonesia and Viet Nam (see Table A6). The factories in Viet Nam have a combined capacity of 69 lines, accounting for about two thirds of its total foreign production by 2016. The Indonesian factories have a capacity of 44 lines, accounting for the remaining one-third of its foreign production by 2016.

Kyung Seung expanded more than 30% of its production in Viet Nam by 2016 and reduced production outputs in Indonesian factories by 2016. The company plans to further expand the production capacity in Viet Nam in 2017 to 77 lines for VINA CKGF factory and to 48 lines for VINA KNF factory. In order to enhance speed advantage, the company localizes working process (in-house TD function for rapid response) and utilizes local raw material suppliers. The United States and Sweden retail fashion companies are its main customers - four American retailers (Gap Inc., 36%; Ann Inc., 20%; Chico's/WHBM, 16%; Talbot's, 11%) and one Sweden-based company, H&M (9%). The sales to these companies accounted for 92% of Kyung Seung's total sales by 2016.

⁶³ The company information is abstracted from the company website, <http://www.kyungseung.com/>

Table A6. Kyung Seung Overseas Factories in ASEAN

Country	Factory	Location
Viet Nam	Vina Kyungseung Trading Co., Ltd	Hanoi and Ho Chi Minh
	Vina CKGF Co., Ltd	
	Vina KNF International Co., Ltd	
Indonesia	PT. Tiga Kyung Seung Garmen	Jakarta, Subang, and Bekasi
	PT. Gunung Abadi	
	PT. Kyung Seung Global	

Source: <http://www.kyungseung.com/>

9. Dong-In Entech Co., Ltd⁶⁴

The company was established in 1992 to produce aluminum tubes and extruded products. It has grown as a globally well-known company in manufacturing high quality technical products of four businesses areas, including pack, aluminum frame, aluminum forging, and injection & injection mold. The leading products are outdoor backpack, hydration backpack, travel luggage, climbing harness, car seat, and stretcher. Dong-In accounted for about 40% market share in the global backpack ODM market in 2013.

Operations in ASEAN

The company now has seven factories in the Philippines and one in Viet Nam. The first factory was established in the Philippines in 1996. Most other factories in the Philippines and Viet Nam were subsequently established in the 2000s (see Table A7). The company provides its products to the global high-end outdoor brands from the US, Canada, Switzerland, and Japan, through ODM and OEM. Korean operations employing more

⁶⁴ The company information is abstracted from the company website, <http://dong-in.com/home/en/>

than 100 workers, are in charge of overseas operations, procurement of materials, management support, and product design and development.

On the other hand, the factories in ASEAN engage in less sophisticated production activities, such as sewing and post-process of aluminum. However, Dong-In transfers manufacturing system and skills to local factories to improve factory productivity. Dong-In employs 800 staff for examining the quality of products, accounting for almost 10% of its total overseas employment to reduce defect rate (Hankyung, 2013).

Table A7. Doing-In Entech Overseas Factories in ASEAN

Country	Factories	Year	Location
Philippines	Dong-In Entech K-1, Inc.	1996	Phase 11 Bataan Economic Zone, Mariveles, Bataan
	Mountaineering Instrument	2001	
	East Cam Tech Corp.	2002	
	ALMATECH Manufacturing Corp.	2003	
	Edge Soft Good Solution, Inc.	2005	
	Dong-In Dawn Patrol Manufacturing Corp.	2009	
	Dong-In Sunbirds Corp.	2013	
Viet Nam	Dong-In Vina	2007	Dat Do District, Baria-Vung Tau Province

Source: <http://dong-in.com/home/en/>

10. PSMC⁶⁵

The company, established in 1978, is an electronics parts and die manufacturing company. It first started producing leadframes, one of the core components of

⁶⁵ The company information is abstracted from the company website, <http://eng.psmc.kr/>

semiconductor, in 1985. It has grown to become Korea's largest and the world 10th largest stamping leadframe supplier. More than 70% of its sales are through exports.

Operations in ASEAN

The first overseas subsidiary was established in 1996 in the Clark Special Economic Zone in the Philippines to strengthen sales network and achieve price competitiveness. This foreign subsidiary started mass production in 1998, and it is also PSMC's only overseas factory. This subsidiary manufactures electronics parts and molds. While its Korean factory produces high-tech products, the factory in the Philippines manufactures relatively low-tech products such as power transistors and universal ICs. The company supplies its products to more than 70 Korean and foreign clients around the world.

11. FTN⁶⁶

FTN was founded in 1974 as a specialty garment manufacturer in LG Group. The company was separated from LG Group in 2002.

Operations in ASEAN

Since 2003, FTN has established overseas manufacturing plants in Indonesia, the Philippines and Viet Nam. The three factories, one each in the three ASEAN member countries, accounted for the majority of the company's global production (see Table A8). By 2015, Viet Nam accounted for 70% of the global production, followed by the

⁶⁶ Information for this case study is abstracted from the websites: <http://www.forthenew.com/index.php>, <http://www.kookje.co.kr/news2011/asp/newsbody.asp?code=2500&key=20070927.2201620103>

Philippines (25%) and Indonesia (5%). FTN sources quality and cheap materials from around the world, and supplies its products to world-wide buyers, while more value-added activities, including market research and technology R&D investment, are performed in Korea.

The factory in Viet Nam was established in 2006, producing and exporting apparels under the global fashion brands, such as DKNY, Burberry, Calvin Klein. With the growing factory capacity, employment has also increased more than three times that employed in 2006 (1,000 persons). In contrast with the 30% increase in production capacity in Viet Nam, the scale of Chinese factory was reduced.

Table A8. FTN Overseas Factories in ASEAN

Country	Factory	Year	Location
Philippines	FTN Garment Corp.	2003	Maguyam, Silang, Cavite
Viet Nam	FTN Vietnam Co., Ltd	2006	Ben Cat, Binh Duong Province
Indonesia	PT. Fajar Tunggal Nasional	2013	Jawa Barat

Source: <http://www.forthenew.com/index.php>

12. Sungshin Global

The company, established in 1987, specializes in manufacturing advanced footwear materials and parts (e.g., sole).

Operations in ASEAN

The company has three factories, one each in Indonesia, Thailand, and Viet Nam. The three factories in ASEAN were established between 1994 and 1997. These ASEAN factories mainly produce various injection soles (e.g., midsoles, unit soles, functional

soles) and sandals for global sports brand, such as Nike, Adidas, Reebok, Puma, K-Swiss, and Newbalance.

In establishing the overseas factories, Sungshin formed a joint venture (usually with 50-70% ownership) with local firms. Local firms are responsible for dealing with various document processes for permission and management of local human resources, whereas Sungshin Korea commits in technology development, marketing, and other related and supporting activities. These factories are equipped with the latest production processes (e.g., Anti-Gloss Advanced Process, Post Curing System, Insert Multi Color/Multi Density) and equipment to maintain high productivity and production of high quality footwear materials.

국문초록

글로벌가치사슬(Global Value Chains, GVC)에 대해 다양한 학문분야에서 서로 다른 측면에서 연구를 해왔으나, 이들은 여전히 GVC의 전체적 그림에 대한 이해가 부족하다. 따라서 본 연구는 GVC에 대한 다양한 접근법인 무역(trade), 해외직접투자(foreign direct investment, FDI), 비자본 참여방식(non-equity mode, NEM)을 통합함으로써 이론적으로 기업의 GVC 전략을 더욱 포괄적으로 분석하였다. 또한 본 논문에서는 각각의 접근법에 대해 향후 연구 방향을 제시하였다. 무역 접근법에서는 분석단위를 국가에서 지역으로 전환할 필요성을 제시하였다. 글로벌 기업이 각각의 가치활동을 가장 효율적으로 수행할 수 있는 곳은 국제 연계 클러스터라는 것을 강조하였다. 즉, 특정 국가 내의 개별 클러스터가 아닌 他 국가 클러스터와의 연계가 글로벌 기업이 GVC 활동의 지리적 위치를 선정하는데 중요한 영향을 미친다는 것을 보여주었다. 한편, FDI 접근법에서는 글로벌 기업의 국제화 수준을 측정하는 UNCTAD의 transnationality index (TNI)의 문제점을 제시하고 가치사슬활동 특성과 지배구조의 두 가지 측면에서 보완적인 방향을 제시하였다. 마지막으로, NEM 접근법에서는 글로벌 기업의 NEM 모드를 선택하는 조건에 관한 기존 연구의 한계점을 제시하고 NEM에 특화된 조건의 필요성을 강조하였다.

본 연구에서는 세 가지 향후 연구 중에서 특히 세 번째를 중점으로, 글로벌 기업이 NEM을 선택하는 세 가지 조건(빠르게 성장하는 비즈니스, 상업적 베스트 프랙티스의 존재, 여러 핵심역량의 필요성)을 제시하였다. 기업이 세 가지 조건 중 일부 또는 전부를 만족할 경우, 가치사슬의 일부 활동을 외부화하는 경향이 크다는 것을 주장하였다. 또한 본 연구에서는 두 가

지 분석 모델(통합적 모델, 세 가지 외부화 조건)을 사례연구와 통계적 검증을 통해 높은 설명력이 있음을 보여주었다.

우선 사례연구에서는 스마트폰 사업에서 애플과 삼성전자의 GVC 전략을 비교함으로써, 두 기업이 국제경영전략에서 서로 다른 점을 주로 강조하는 기존연구와는 달리 본 연구에서는 GVC 측면에서 두 기업의 유사한 점과 다른 점을 종합적으로 분석하였다. 즉, 두 기업은 내부화와 외부화 전략을 혼합적으로 활용함으로써, 빠르게 변화하는 경쟁환경에 더욱 잘 대응하고, 더욱 높은 가치를 창출할 수 있음을 입증하였다. 또한, 기업의 내부화와 외부화 전략을 대체관계로 보는 기존 연구와 달리, 본 연구에서는 이들이 상호 보완 관계를 가지고 있음을 보여주었다. 이러한 연구결과는 애플과 삼성전자를 포함하여 글로벌 기업이 더욱 효율적인 GVC 전략을 수립하는데 도움을 줄 수 있을 것이다. 이와 더불어, 세 가지 외부화 조건의 설명력을 높이기 위해 통계적 검증을 하였는데 한국의 중소기업이 연구개발에서의 외부화 결정을 하는데 있어서 세 가지 조건이 모두 통계적으로 유의함을 입증하였다. 이러한 이론과 실증 분석을 통해 본 연구에서는 글로벌 기업과 관련된 유용한 시사점도 제시하였다.

주요어: 글로벌가치사슬, 무역, 해외직접투자, 비자본 참여방식, 내부화, 외부화, 애플, 삼성전자, 공동연구개발