8-2012

OWNERSHIP STRUCTURE, ABSORPTIVE CAPACITY, AND INNOVATION: PLANTING VS HARVESTING INNOVATION

Seung Hoon Jang
University of Nebraska-Lincoln

OWNERSHIP STRUCTURE, ABSORPTIVE CAPACITY, AND INNOVATION: PLANTING VS HARVESTING INNOVATION

by

Seung Hoon Jang

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Philosophy

Major: Business

Under the Supervision of Professors Sang M. Lee and Mark J. Schniederjans

Lincoln, Nebraska

August, 2012

OWNERSHIP STRUCTURE, ABSORPTIVE CAPACITY, AND INNOVATION: PLANTING VS HARVESTING INNOVATION

Seung Hoon Jang, Ph.D.

University of Nebraska, 2012

Advisor: Sang M. Lee and Marc J. Schniederjans

This dissertation investigates the main research question: Which classification of innovation explains the heterogeneous timing of revenue realization? Given the significance of financial gain, researchers are recommended to pay attention to whether innovation outcomes result in commercial gains in the short term. Following this notion, a new category of innovation, planting and harvesting, is presented. While harvesting innovation seeks new resources in the expectation of commercial performance in the short term, planting innovation pursues potential resources creating value over a long time period. The interest in the determinants and financial contribution of these types of innovation leads to the second research question: How do planting and harvesting innovation interact with other factors and firm performance? The need to understand innovation practices results in the third research question: How are planting and harvesting innovation implemented in a real business?

Both quantitative and qualitative analyses are performed to answer these questions. Quantitative analysis examines the second research question. Based on the literature review, the relationships between ownership structure, absorptive capacity, harvesting and planting innovation, and firm performance were hypothesized. To verify these hypotheses, the financial data of high-tech small and medium-sized companies listed in Korean Stock Exchange (KSE) were analyzed through path analysis and cross-lagged analysis. Qualitative analysis was implemented to

investigate the third research question. For this purpose, the case of Samsung Electronics (SE) is examined.

In this study, several meaningful implications are provided. The new distinction of innovation is provided to fill the gap in innovation studies. The combination of Partial Least Square (PLS) analysis and cross-lagged analysis enabled the researcher to implement a longitudinal exploratory study with a small sample. In addition, the collection of interviews from new articles made it possible to observe the opinions of a number of executives for a long period of time. Practitioners are recommended to share investment risk to implement planting innovation. In addition, co-innovation is shown to maintain ambidexterity by implementing convergence, collaboration, and co-creation.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Globalization and advances in technologies have made the global market extremely competitive. To survive in the dynamic and hypercompetitive market, organizations must continuously search innovative new ways to create value (Lee & Olson, 2010). Thus, innovation has been the main research topic of organization and management researchers (Baldridge & Burnham, 1975; Bantel & Jackson, 1989; Downs and Mohr, 1976; Kimberly & Evanisko, 1981; Lee & Olson, 2010; Nelson & Winter, 2002; Wolfe, 2007). Downs and Mohr (1976) provided that innovation has been the major topic for social science researchers as well. Innovation has shown to be a major topic for practitioners of management (Crossan and Apaydin, 2010). Baldridge and Burnham (1975) focused on the role of innovation in explaining firm performance and competitiveness. Tushman and O'Reilly (1996) initially explored ambidexterity issues in organizations seeking innovation. Based on the literature, innovative activities are shown to be an integral part of value creation, leading to competitive advantage and financial results.

Scholars in this research stream have explored the relationships between innovative activities and managerial results. Damanpour and Evan (1984) investigated the relationship between the adoption of innovation and organizational performance. Damanpour, Szabat, and Evan (1989) exhibited that administrative and technical innovations affect financial performance. Roberts (1999) provided that product innovation is related to firm resources in the pharmaceutical industry. Innovative activities of firms have shown to be imperative for improving their outputs.

Despite the importance of innovation, there have been concerns regarding

details of innovation. Downs and Mohr (1976) argued that the in-depth understanding of innovation concepts, including typology, is required to overcome the variance of empirical results across studies. Although scholars in this research notion have provided various types of innovation based on learning styles (March, 1991; He & Wong, 2004), objects (Damanpour, Walker, & Avellaneda, 2009; Utterback & Abernathy, 1975), and rapidity (Dewar & Dutton, 1986; Ettlie, Bridges, & O'Keefe, 1984), no research has been done on categorizing innovation for the timing of profit realization.

1.2 RESEARCH QUESTIONS

Despite innovation and technological advances, a firm may fail to continue its business without cash flow. Given the significance of the financial gains for firm survival and competitive advantage, the major research question of this dissertation is as follows:

> RQ1 Which classification of innovation explains the heterogeneous timing of revenue realization?

This question centers around one of major research topics in the strategic field, "Why are firms different? (Rumelt, Schendel, & Teece, 1994)," since the success of an individual firm is influenced by its value creation. To answer this question, research on the relationship between types of innovation and actual firm performance is required. This study is about the new types of innovation: planting and harvesting. Harvesting innovation aims to develop new resources, including new products for market launching, in the expectation of commercial success in the short

term. In contrast, planting innovation pursue potential resources, including original technology, which create value from long term perspective. A major concern of scholars in this research stream lies in encouraging planting and harvesting innovation and the results of innovative activities. From this perspective, the researcher focuses on the relationships between determinants, planting and harvesting innovation, and financial performance. In addition, how a real business manages both types of innovation is an additional interest since it can describe the real practices of innovation activities in the field. Thus, two additional minor research questions are provided.

RQ2 How do planting and harvesting innovation interact with other factors and firm performance?

RQ3 How are planting and harvesting innovation implemented in a real business?

1.3 RESEARCH METHODOLOGY

To verify a set of hypotheses driven by the second research question, path analysis and cross-lagged analysis methods are employed. Path model exhibits the cross-sectional relationships among ownership structure, absorptive capacity, planting and harvesting innovation, and firm performance. It informs the researcher of the direction, strength, and significance of paths among factors. Cross-lagged models examine the relationships between planting and harvesting innovation, harvesting innovation and firm performance, and planting innovation and firm performance from a long-term perspective. For this purpose, the financial data of Korean small and medium sized companies in technology-driven industries are investigated.

Case study method is employed to examine the third research question. Samsung Electronics (SE) is selected as a case company for its financial and technological competitiveness in the electronics industry. This analysis is based on the secondary data sources, including company information websites, and news databases. The collected news articles enable the researcher to observe SE's innovative activities for decade. Particularly, executive interviews from the articles provide the opinions of strategic leaders on planting and harvesting innovation.

1.4 EXPECTED CONTRIBUTION OF THIS STUDY

In this study, an overlooked aspect of innovation will be explored. Firms are expected to whether they should focus on increasing the short term revenue or long-term potential as a result of innovation projects. The proper balance of various innovation objectives which enhance financial and technological outcomes would result in a strong foundation for business growth. The firm which is capable of maintaining such innovation balance would more likely to achieve better organizational performance.

This study will provide meaningful contributions to the field of innovation. First, it will contribute to extending the horizon of innovation by providing new perspectives. In contrast to most existing categories, which have focused on physical forms of results or natures of innovative processes (March, 1991; Damanpour, Walker, & Avellaneda, 2009; Utterback & Abernathy, 1975), the planting vs harvesting perspective focuses on the commercialization of innovation outcomes. Given the importance of financial gains in management, this categorization would be a new research area of innovation. In addition, this study envisions the relationship between equity structure and absorptive capacity with organizational innovation.

The empirical method of research provides a milestone for researchers interested in a longitudinal exploratory analysis with a small sample. The Partial Least Square (PLS) analysis works well with small sample, non-normal data, and exploratory research (Hair, Ringle, & Sarstedt, 2011, Chin, 1997). Cross-lagged modeling techniques, in combination with the PLS method, can verify the influence of precedent factors over time with weak data. In addition, the use of executive interviews from news articles enables scholars to observe how a certain strategy has been implemented.

This study also has direct implications to practitioners of corporate innovation. The decision on how much resources that firms should invest in certain type of innovation projects is critical for organizational performance. Given the diverse influence of planting and harvesting innovation on the timing of returns on investment, managers should consider this issue for their strategic innovation plans. By doing this, firms can expect optimal results from their investment on innovation, while continuing business activities. In addition, co-innovation and its elements, convergence, collaboration, and co-creation, are recommended to maintain ambidexterity in pursuing planting and harvesting innovation.

1.5 STRUCTURE OF THE DISSERTATION

This dissertation is organized as follows. Chapter 2 presents the literature review on innovation, ownership structure, and absorptive capacity. The background and major research streams of the literature on innovation are explored. Based on the investigation, the planting vs harvesting perspective of innovation is provided as a new area of innovation research. The studies concerning the history and important development of ownership structure are thoroughly examined. Finally, absorptive

capacity is enlightened as a major determinant in the improvement of technological value creation. In addition, the hypotheses are developed based on the literature review and theoretical inferences.

Chapter 3 described how the hypotheses are tested. For this purpose, both quantitative and qualitative methods are employed. First of all, both cross-sectional and longitudinal analyses are performed to test the hypotheses. In addition, a case method is used to examine how planting and harvesting innovation has been implemented in a real business.

In Chapter 4, the hypotheses provided in Chapter 3 are empirically tested as phase 1. The PLS analysis method is employed to examine the paths in the model. First, the cross-sectional relationships among absorptive capacity, equity structure, planting and harvesting innovation, and firm performance are examined. In addition, the relationships among these factors are investigated for a long-term perspective.

Chapter 5 introduced the results of qualitative analysis. The case company, Samsung Electronics, is examined to exhibit the process of planting and harvesting innovation as phase 2. Secondary data, including executive interviews in the news articles, allows the researcher to access the core of strategic decision making regarding innovation. Both types of innovation have been implemented successfully at Samsung. Particularly, co-innovation has played a key role in ambidexterity of the firm. As a result, Samsung has grown dramatically in the financial perspective.

Chapter 6 discusses the results of quantitative and qualitative analyses presented in Chapters 4 and 5. In addition, the implications and limitations of this study are presented.

CHAPTER 2

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 INTRODUCTION

The purpose of this chapter is to examine the relevant literature regarding the research topic and provide the theoretical basis for developing the research hypotheses. First, the researcher reviews innovation studies. Once done, the studies concerning equity ownership structure and absorptive capacities are examined. Furthermore, the new classification of innovation, planting and harvesting, is presented to supplement the existing categories. Finally, hypotheses among these new types of innovation, ownership concentration, and absorptive capacity are developed.

2.2 INNOVATION

2.2.1 Major research streams

Organization scholars have long been interested in innovation as the source of value creation. Innovation has also been a major research topic in economics, sociology, and technology management (Baldridge & Burnham, 1975; Gopalakrishnan & Damanpour, 1997). Schumpeter (1934) initially focused on innovation as the origin of new economic value. Brozen (1951) stated that innovation as well as invention and imitation consist of technological change activities leading to economic growth. Drucker (1969) believed that entrepreneurial innovation would be a critical part of managerial activities. In their “An evolutionary theory of economic change,” Nelson and Winter (1982) provided that firm innovation is a main factor triggering economic change. It is beyond the doubt that innovation has been one of the major topics for management and organization scholars.

Scholars in this research stream, however, often fail to generate a unitary definition of innovation. Several studies focused on the characteristics of innovative results (Nohria & Gulati, 1996; Johannessen, Olsen, & Lumpkin, 2001). Following the notion of scholars, like Aiken and Hage (1971), Daft (1982), Zaltman, Duncan, and Holbek (1973), Damanpour, Szabat, and Evan (1989), interpreted innovation as the introduction of novel ideas or technologies. Van de Ven (1986) also referred to innovation as "the development and implementation of new ideas by people who over time engage in transactions with others within an institutional order (Van de Ven, 1986, p590)." Despite such pluralism, definitions of innovation have centered around the creation of tangible or intangible being, which has not existed before.

New value creation is expected from innovative activities. Entrepreneurs as innovators are expected to initiate economic development and change (Schumpeter, 1934; Clydesdale, 2007). Kelm, Narayanan, and Pinches (1995) suggested that R&D innovative activities would lead to value creation for shareholders. Chesbrough (2002) explored the case of Xerox Corporation to investigate the role of business models for value added from firm innovation. Hansen and Birkinshaw (2007) suggest that firms create value by tailoring innovation to their conditions through "innovation value chains." Innovative activities can be considered as the core of modern firms seeking growth and sustained profit.

Innovation has shown to explain how and why firms retain competitive advantage, resulting in better financial performance in the long run. Lengnick-Hall (1992) mentioned that innovation and competitive advantage are linked through research development unit, intrapreneurship/internal ventures, and external joint ventures and acquisition. Innovation shows how market orientation of the firm results in financial gain (Han, Kim, and Srivastva, 1998). Subramanian (1996) investigated

the relationships among the types of innovation and organizational performance. McGrath, Tsai, Venkataraman, and MacMillan (1996) exhibited that innovation team proficiency leads to expectations of distinctive efficiency, resulting in rents.

The results of innovation, however, have shown to be unstable. In their longitudinal study, Tsai and Wang (2008) showed that the adoption of external R&D is not significantly accountable for firm performance. The result of meta-analysis by Rosenbusch, Brinckmann, and Bausch (2011) unveiled that the relationship between innovation and organizational performance is heterogeneous across different contexts. It is possible that innovation improves the value of complementary assets like marketing skills but not technical capabilities (Teece, 1986; Stieglitz & Heine, 2007). What these results imply is that characteristics of innovative activities are complex rather than uniform. Therefore, more studies on the substance of innovation are required.

In sum, innovation has been one of the major topics in organization studies. The literature on innovation has focused on the search for newness. Innovative activities are expected to create new value. As a result, firms strive to achieve competitive advantage and organizational performance through innovation.

2.2.2 Types of innovation

Organizational researchers have argued that innovation needs to be categorized for more precise studies. Scholars like Downs and Mohr (1976) recognized that the multiple types of innovation should be assumed to clarify conceptual issues and empirical variability. Following this notion, Kimberly and Evanisko (1981) also argued that the typology of innovation would extend the generalization of innovation research. What these studies imply is that innovative activities are complex processes

that cannot be explained by a single concept. Researchers need to provide proper categorization to deepen the understanding of this topic.

Teece (1986) recognized the importance of positioning during the innovation process. Each type of innovation has its unique characteristics, which may affect the results of innovation. Studies concerning explorative and exploitative innovation have focused on ambidexterity (Andriopoulos & Lewis, 2009; He & Wong, 2004; O'Reilly & Michael 2004; Raisch & Birkinshaw, 2008). Explorers are more likely to take a risk during the challenges toward uncertainty. Given such a complex nature of innovation, firms need a portfolio of specific innovation projects or processes in accordance with various environmental or organizational factors. By doing this, they can expect the optimal result from their entire innovative processes.

Numerous types of innovation have been suggested by scholars in this research stream as shown in Table 2.1. The typology of innovation needs to be based on primary or secondary attributes of innovation (Downs & Mohr, 1976). Following this notion, scholars in this research area have focused on characteristics of innovation to categorize it. Fritz (1951) provided types of innovation, including primary (or genuine), derivative, and subjective innovation, based on their influences on economic development and growth. Daft (1978) suggested that bottom-up and top down innovations are originated from two cores: administrators and technical employees. Kimberly and Evanisko (1981) explored the two distinct types of innovation: technological and administrative. While the former is directly related to technical concerns, the latter deals with data processing rather than technology itself. Wolfe (2007) suggested that there have been three major research streams regarding innovation: product vs process (Gopalakrishnan & Damanpour, 1997), radical vs incremental (Ettlie, Bridges, & O' Keefe, 1984; Normann, 1971) and technical vs

administrative (Evan, 1966), across diverse disciplines: economics, sociology, and technology management. Core and peripheral innovation can be distinguished based on the priority of a product (Gatignon, Tushman, Smith, & Anderson, 2002).

The literature on innovation implies that the standards used to classify various innovation types can also be categorized. First, several types of innovative activities are based on the results of innovation (Friedrich, Mumford, Vessey, Beeler, & Eubanks, 2010; Lim, Garnsey, & Gregory, 2006; Utterback & Abernathy, 1975). Second, some scholars focused on learning styles during the innovation processes (Danneels, 2002; He & Wong, 2004; March, 1991). Third, the degree of innovative activities can be a standard of classification (Ali, 1994; Dewar & Dutton, 1986; Green, Gavin, & Aiman-Smith, 1995; O'connor, 1998). Fourth, the relationship with external environments of innovation has been used to classify it (Almirall & Casadesus-Masanell, 2010; Chesbrough, 2003; Chesbrough & Crowther, 2006; Lee & Olson, 2010). In the next section, the more detailed explanations on these classifications are provided.

TABLE 2.1

Major categorizations of innovation

Origins of classifications	Types of innovation
Results of innovation	Product innovation - "those that generate a novel product, whether it is a physical product, emergent technology, new service, or new intellectual property, which is usually visible to the consumer (Friedrich et al., 2010, p 8)." Process innovation - "those that are not as visible to those outside the organization and include changes in the procedures by which products are made, business is conducted (Friedrich et al., 2010, p 8)."
Learning styles	Explorative innovation – "technological innovation

	activities aimed at entering new product-market domains (He & Wong, 2004, p483).” Exploitative innovation - “technological innovation activities aimed at improving existing product-market position (He & Wong, 2004, p484).”
The degree of innovation	Radical innovation - “fundamental changes that represent revolutionary changes in technology (Dewar and Dutton, 1986, p1422)” Incremental innovation - “minor improvements or simple adjustments in current technology (Munson and Pelz, 1979) (Dewar and Dutton, 1986, p1423).”
Interaction with environment	Co-innovation - “a new innovation paradigm where new idea and approaches from various internal and external sources are integrated in a platform to generate new organizational and shared value (Lee, Olson, & Trimi, 2012, p817)” Open innovation - innovation activities utilizing external capacities as well as internal ones (Chesbrough, 2003). Closed innovation – innovation activities solely based on intra-organizational capacities (Chesbrough, 2003).

2.2.2.1 Results of innovation (product, process)

One major standard used for categorization is the result of innovation. Since Muller and Tilton (1969) initially distinguished the innovation of product and process, several scholars echoed that innovation can be categorized as the process and product (Friedrich, Mumford, Vessey, Beeler, & Eubanks, 2010; Lim, Garnsey, & Gregory, 2006; Utterback & Abernathy, 1975). Product innovation refers to “those that generate a novel product, whether it is a physical product, emergent technology, new service, or new intellectual property, which is usmually visible to the consumer (Friedrich et al., 2010, p 8).” Process innovation can be described as “those that are not as visible to those outside the organization and include changes in the procedures by which

products are made, business is conducted (Friedrich et al., 2010, p 8).”

Production innovation has been investigated in accordance with a wide range of managerial phenomena, including entrepreneurial firms in the emerging countries (Li & Atuahena-Gima, 2001), continuous innovation in mature firms (Dougherty & Hardy, 1996), collaborative networks (Nieto & Santamaria, 2007), R&D spillovers (Audretsch & Feldman, 1996), HR systems and organizational culture (Lau & Ngo, 2004), and leadership (Gruber, 1992). Scholars have also researched process innovation and related topics like organizational integration (Ettlie & Reza, 1992), learning by doing (Hatch & Mowery, 1998), competitive strategies (Schroeder, 1990), and knowledge management (Jang, Hong, Bock, & Kim, 2002).

Overall, product and process innovation is one of major categories of innovative activities. Since this distinction is based on the results of firm innovation, it is relatively easy to identify. However, it seems unlikely that product vs process categorization can reflect the innovative results rather than new products or processes. For instance, the development of an original technology fits none of these categories, even though it can be a great breakthrough. Therefore, scholars in this research stream need to provide a solution for this fuzzy issue.

2.2.2.2 Learning styles (exploration, exploitation)

Other researchers pay attention to the learning style during innovative processes. While exploration can be described as “search, variation, risk taking, experimentation, play, flexibility, discovery, innovation (March, 1991, p71),” exploitation can be characterized as “refinement, choice, production, efficiency, selection, implementation, execution (March, 1991, p71).” Following this notion, He and Wong (2004) provide a refined distinction between explorative and exploitative

innovation. The former refers to “technological innovation activities aimed at entering new product-market domains (He & Wong, 2004, p483).” In addition, the latter can be described as “technological innovation activities aimed at improving existing product-market position (He & Wong, 2004, p484).”

This type of distinction has been widely used. The literature on exploration and exploitation has been applied to categorize product innovation (Danneels, 2002). These types of innovations have also shown to be related to various managerial issues, including alliance network structure (Phelps, 2010), strategic leadership (Jansen, Vera, & Crossan, 2009), ambidexterity (Andriopoulos & Lewis, 2009; Benner & Tushman, 2003), performance (Jansen, Van den Bosch, & Volberda, 2006), and organizational design (Tushman, Smith, Wood, Westerman, & O’Reilly, 2010). Uotila (2009) and fellow researchers found the inverted U-shape relationship between the portion of explorative-exploitative innovations and financial performance.

In sum, explorative and exploitive innovations have been a major categorization of innovative activities. However, this classification is not without its limitations. It seems likely that both exploration and exploitation are employed during the many innovation processes. For instance, researchers may need to exploit intra-organizational R&D capacities and explore external resources simultaneously while searching for the new original technology. The future studies on innovation need to reflect this aspect.

2.2.2.3 Degree of innovation (radical, incremental)

Innovation can be classified by the amount of change. Radical innovations refer to “fundamental changes that represent revolutionary changes in technology (Dewar & Dutton, 1986, p1422)”, while incremental innovations are “minor

improvements or simple adjustments in current technology (Munson and Pelz, 1979) (Dewar & Dutton, 1986, p1423).” The role of formal new product development process in the radical innovative activities is shown to be not clear as in incremental development (O’connor, 1998). Firms are more likely to experience failures during the radical innovation (Green, Gavin, & Aiman-Smith, 1995).

Scholars have employed this type of distinction to investigate organizational innovation process and its results. Ali (1994) reviewed the literature investigating pioneering and incremental innovation. In addition, Ettlie, Bridges, and O’Keefe (1984) explored the relationship between organizational structures and the types of innovation. While radical innovation is shown to require unique systems, incremental transform fits conventional structures. McDermott and O’Connor (2002) discussed the strategic issues concerning radical innovation. Although this kind of innovation is accountable for the long-term prosperity of firms, it involves a high level of risk for failure. Dewar and Dutton (1986) provided that larger firms are more likely to adopt radical innovation.

In brief, these types of innovation have contributed to the development of innovation research. Like several other classifications, the literature on radical vs incremental categorization has also discussed the trade-off between benefits and risks.

2.2.2.4 Interaction with environment (open, closed, and co-innovation)

The distinction between closed and open innovation has long been explored by scholars in this research stream. Chesbrough (2003) initiated the concept of open innovation in which firms utilize external R&D capabilities as well as internal ones. Firms expect better results from open innovation since it depends on the broader resource base. Several industry giants, including IBM, have shown to benefit from

their open innovation practices (Chesbrough & Crowther, 2006). Almirall and Casadesus-Masanell (2010) explored the conditions under which open innovation is superior to closed innovation. Although open innovation usually contributes to the competitiveness of firms by accessing a broader knowledge base, it can impede the accumulation of intra-organizational knowledge assets when other participants have different objectives. This research opens the possibilities that real business organizations can benefit from the utilization of external intellectual capital.

Convergence has played a key role in explaining the interactions between firms and outside entities during innovation. Lee and Olson (2010) provided that globalization encourages convergence revolution which allows value creation from the synergy of diverse disciplines, including IT, biotechnology, and nano technology. Lee, Olson, and Trimi (2010) provided that various levels of convergence affect diverse types of innovations. These studies imply that modern firms need to reflect the opinions of various areas for successful innovation.

Following this notion, scholars like Lee, Olson, and Trimi (2012) have focused on co-innovation. Firms participating in co-innovation act as a platform of innovation and create value through convergence, collaboration, and co-creation with stakeholder, including suppliers, customers, partner, and outsiders. Therefore, outside stakeholders can be considered as active participants creating value through innovation activities. In this framework, innovation can be described as the participation in the continuously interacting network of value creation.

Conventionally, innovation scholars focused on the utilization of internal capabilities. In the open innovation model, firms are expected to create value based on both internal and external R&D capacities. The study on co-innovation implies that inter-organizational interactions across organizations and fields are the integral parts

of innovation processes nowadays.

2.2.3 Planting versus harvesting innovation

2.2.3.1 Limitation of existing categories

Existing classifications of innovation have not been based on whether their innovative activities aim to realize profit in the near future (Chesbrough, 2003; Dewar and Dutton, 1986; March, 1991; Muller and Tilton, 1969). Given the significance of financial cash flows in management, the distinction from this perspective is required to examine the influence of innovation on the survival and prosperity of firms. Furthermore, the huge amount of investment requires modern firms to categorize and manage their innovation projects from commercial perspective. Otherwise, they may fail to continue creating value while maintaining financial cash flows.

The case of Code-Division Multiple Access (CDMA) wireless technology describes this issue well. For instance, CDMA wireless technology was developed by Qualcomm (www.qualcomm.com), while the commercial CDMA phones were initially created and produced by Korean manufacturers, including Samsung Electronics and LG. It is known that the former aimed to develop original technology while the latter focused on commercialization. Therefore, Qualcomm cannot benefit from licensing fees without the success of commercial products.

Despite these characteristics, these types of activities cannot be clearly explained by existing classifications of innovation, including exploration vs exploitation (March, 1991), product vs process (Muller & Tilton, 1969), open vs closed (Chesbrough, 2003), and radical vs incremental (Dewar & Dutton, 1986). In addition, both technology and products are shown to be the results of applied rather than basic research. Therefore, scholars in this research stream need to search the new

framework providing better explanations on these phenomena.

For this purpose, planting vs harvesting framework is presented as such a categorization. Planting innovation, by definition, seeks a fundamental breakthrough but bear more uncertainty. In contrast, harvesting innovation enables firms to realize revenue in the short-term since it aims to develop commercial products or service.

2.2.3.2 Planting versus harvesting innovation

The heterogeneous firm performance and its causes have long been the core research agenda in the organization and management field. The strategy field includes four domains: environment, organization, strategy, and performance (Summer, Bettis, Duhaime, Grant, Hambrick, Snow, & Zeithaml, 1990). In their “swings of pendulum”, Hoskisson, Hitt, Wan, and Yiu (1999) described that strategists have focused on both internal and external factors as the origins of different organizational results. Oxley, Rivkin, and Ryall (2010) stated that strategy studies tend to investigate managers in relation to organizational performance. Scholars in this research stream have investigated diverse determinants to examine this issue.

Among these factors, intra-organizational capabilities have been examined as the major sources of various managerial behaviors and their results. Lado and Wilson (1994) focused on HR systems as the core competence of firms. Teece, Pisano, and Shuen (1997) explored the intra-organizational dynamics as the determinants of strategic management activity. Tarafdar and Gordon (2007) provided that firm competencies are accountable for process innovation. Tsai and Ghoshal (1998) suggested that value creation can be explained by intra-organizational social capital. Verona (1999) focused on firm resource to investigate how firms develop new products. Given the influences of these internal capabilities, the studies on their nature

are required.

Increasingly, the resource-based view (RBV) has been a major area for scholars in this research stream. Wernerfelt (1984) defined resource as “anything which could be thought of as a strength or weakness of a given firm (Wernerfelt, 1984, p172).” Following the notion of Daft (1983), Barney (1991) provided that firm resources include tangible and intangible assets, including capabilities, processes, and knowledge. Scholars have focused on RBV to explain various managerial phenomena, including small businesses (Westhead, Wright, & Ucbasaran, 2001), entrepreneurship (Zahra, Hayton, & Salvato, 2004), cooperation among firms (Combs, 1999), strategic alliance (Eisenhardt & Schoonhoven, 1996), international management (Fahy, 2002), and innovation (Galunic & Rodan, 1998). These studies imply that firm resource includes various characteristics.

Following this notion, the classifications of resources are expected to enable more precise research on organizational performance (Miller & Shamsie, 1996). Like Cave (1980), Wernerfelt (1984) provided that the resource consists of tangible and intangible assets. Barney (1991) recognized the existence of three types of resource: human capital, physical capital, and organizational capital. While human capital is based on individual employees, physical capital can be described as manufacturing facilities or locations. In addition, organizational capital includes planning or managing systems. Miller and Shamsie (1996) discriminate between property-based and knowledge-based resources based on their imitability. Despite such efforts, some characteristics of organizational resources are not reflected in the existing categories.

While a certain type of resource is directly related to the current competition in the market, others have potential to be utilized in the long-term. For instance, walking robot technology may not compete as a commercial product in the current

market. However, firms invest in these types of intellectual capital because of their potential to create a new market or industry in the future. Despite its uncertainty, the latter resource allows firms to retain original technologies which in turn create competitive advantage. Therefore, innovation as the origin of organizational resources should also be investigated to understand the firm capabilities and competitive advantage.

Following the above discussion, innovation is categorized based on its relatedness to the firm's short-term performance. While certain types of innovative activities may result in firm resources engaged in the current competition, others can create those that have long-term potential. This approach modifies the definition of these types of innovations, by Gumusluoglu and Ilsev (2009), from this perspective as described in Table 2.2 and Figure 2.1. First, harvesting innovation can be described as the development of new resources that are the state of the art in the expectation of market launching in the short term. The new products, including Toyota Prius, would be this type of innovation. In addition, planting innovation refers to the invention of potential firm resources that are state of the art. For instance, the invention of hybrid engine technology "plants" potential for future value while the creation of a hybrid car like the Prius "harvests" the results of innovative activities.

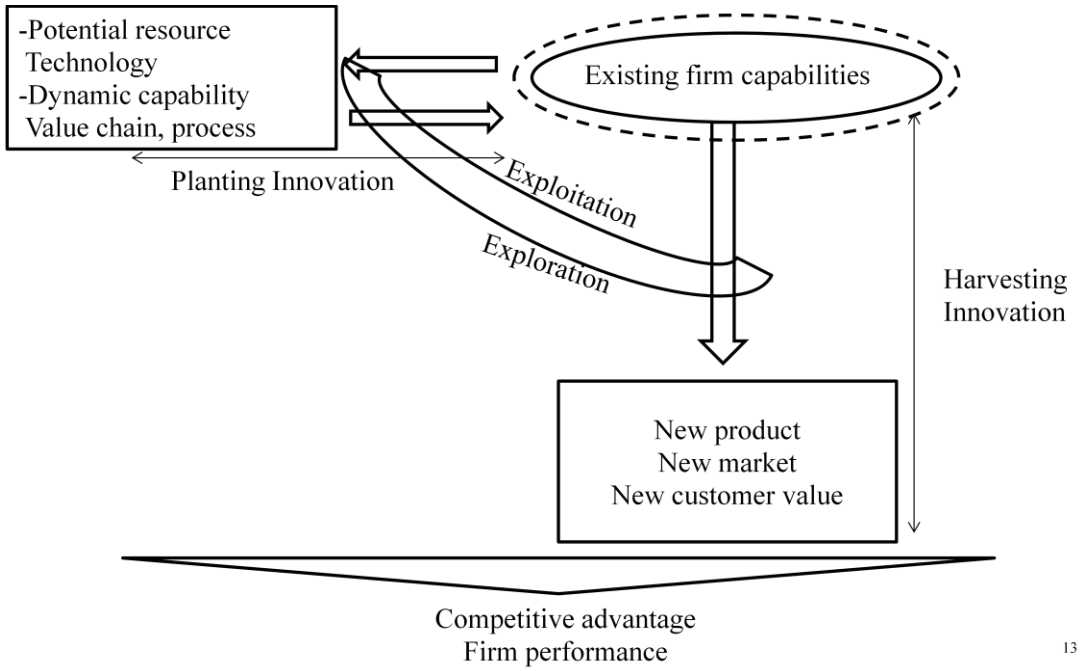
TABLE 2.2

Planting vs harvesting Innovation

Category	Planting Innovation	Harvesting Innovation
Definition	The creation of potential firm resources that is new to the state of the art*	The creation of new resources that are the state of the art in the expectation of market launching in the short term*

Objective	Development of new technology as the sources of new products	Development of new commercial products
Expected return on investment	Unclear / Long-term	Planned / Short-term
Resulting resources	Reserved resources	Primary resources for competition
Examples	Hybrid technology	Toyota Prius
Pro	Relatively enduring value	Can lead to financial results in a relatively short period
Con	May benefit competitors Tend to wait harvesting innovation for revenue	Burden of patents The value tend to be maintained for shorter period

*Modifications of Gumusluoglu & Ilsev's (2009) definition



*Based on the information from March (1991), Teece, Pisano, & Shuen (1997), and Woodruff (1997)

FIGURE 2.1

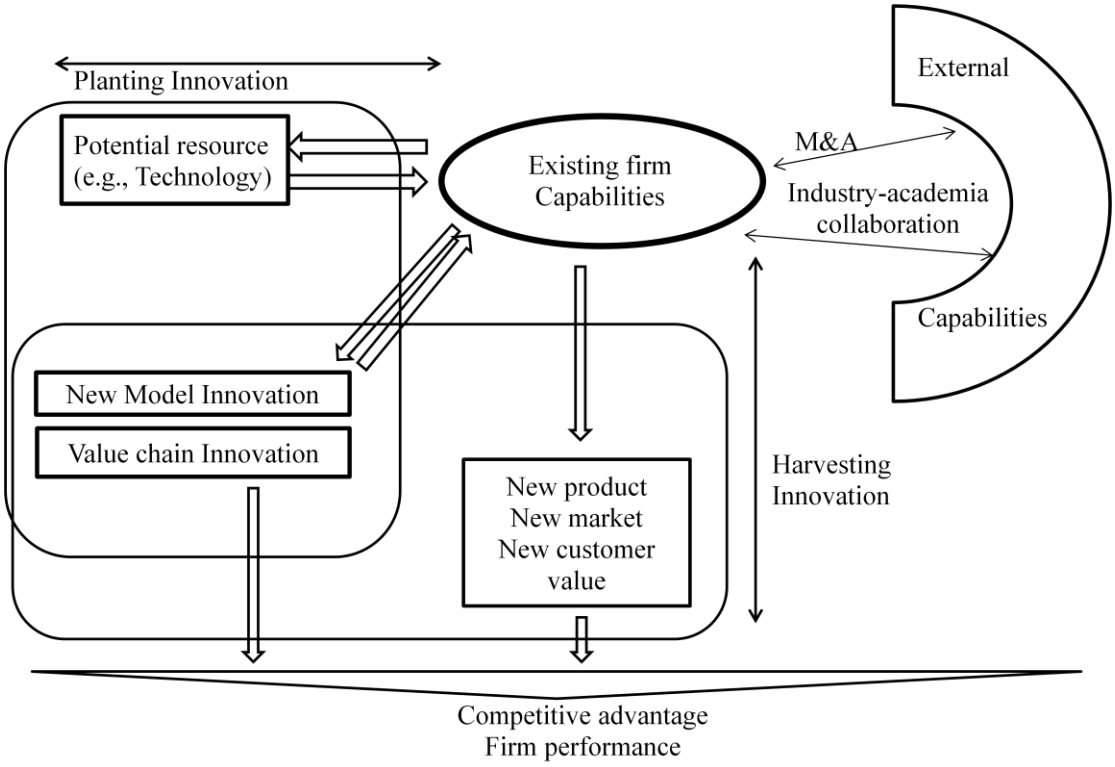
Planting vs harvesting innovation

There are several reasons why the result of planting innovation may not result in new commercial products in the short term. First of all, the social constraints may not allow the use of innovative technology. As a result, there can be no market for newly created products or services. For instance, the diffusion of electric vehicles may suffer from the resistance of various stakeholders, including gas-station owners. Second, firms should wait for the advent of other supporting technologies for the commercialization of new one. In addition, firms are expected to overcome uncertainty for a long time to implement planting innovation. The development of a technology has a high probability of failure. Therefore, planting innovation may not lead to the financial gain in the short term even if firms succeed developing the expected technology.

Given the characteristics of planting and harvesting innovations, ambidexterity can be an important issue in investigating these kinds of innovative activities. Studies on explorative and exploitative innovation have examined this issue (Andriopoulos & Lewis, 2009; He & Wong, 2004; O'Reilly & Michael 2004; Raisch & Birkinshaw, 2008; Simsek, 2009). Since pioneering for new practices or technology may be likely to fail, firms participating in this type of innovation take more risks. Firms need to optimize the return of their investments in both types of innovation while maximizing their value. One possible answer is to utilize external capabilities through M&A or industry-academia collaboration as can be seen in Figure 2.2. It allows firms to share risk of innovation with other participants.

Overall, the new classification of innovation scheme can contribute to innovation research by providing a clear guideline related to the financial outcomes. While planting innovation can result in potential resources for long-term revenue, harvesting innovation can generate continuous cash flows to those engaged in the

current market. Following the case of exploratory and exploitative innovation, research in this field must consider ambidexterity of these types of innovation. By doing so, firms can be better prepared for an optimal portfolio of innovation projects, resulting in better organizational performance.



*Based on the information from Kachaner, Lindgardt, & Michael (2011), Kim (2008), Park (2012), and Woodruff (1997)

FIGURE 2.2

Planting vs harvesting innovation II

2.3 OWNERSHIP STRUCTURE

Firm innovation has been shown to be explained by corporate ownership. Hill and Snell (1988) investigated the influence of external control over the firm's innovation strategy. Francis and Smith (1995) stated that ownership concentration of

the firm affects organizational innovation. Gedajlovic, Cao, and Zhang (2011) argued that government ownership affects firm decisions regarding exploitive and explorative innovation. Wu, Lin, and Chen (2007) provided that internal governance positively affects technological innovation. Literature strongly corroborates that the nature of ownership has played a key role in explaining innovative activities in the firm.

Managerial researchers recognized the significance of ownership structure in accounting for managerial phenomena (Berle & Means, 1933; Jensen & Meckling, 1976). The primary focus of this research stream has been on whether the characteristics of ownership affect managerial decisions and organizational performance. Chaganti and Damanpour (1991) explored whether the portion of institutional ownership affects organizational performance. Thomsen and Pedersen (2000) exhibited that equity ownership concentration is positively related to financial performance. Rubach and Sebora (1998) explicated that governance structure can reduce the investment risks of capital providers, resulting in competitive advantage. In addition, ownership characteristics have been shown to influence external control (Hill & Snell, 1988), CEO compensation (Tosi & Gomez-Mejia, 1989), R&D strategy (Baysinger, Kosnik, & Turk, 1991), and organizational innovation (Balkin, Markman, & Gomez-Mejia, 2000). The literature on this issue has been based on theoretical analyses.

The conflict between principals and agents has been widely used to explain the influence of ownership structure. Managers, as agents, are expected to seek their own interests rather than pursue owners (Alchian & Demsetz, 1972; Baysinger, Kosnik, & Turk, 1991; Eisenhardt, 1989). Scholars, like Baysinger, Kosnik, and Truk (1991) and Amihud and Lev (1981, 1999), have examined the role of ownership structure in explaining organizational strategies that are based on the conflict between

owners and managers. The underlying logic is that certain types of ownership structure enhance owner- or manager-friendly strategies. Insider ownership is shown to bear upon organizational decisions as they relate to risk-taking, since managers, as agents, intend to indulge their own interests (Wright, Ferris, Sarin, & Awasthi, 1996). Denis, Denis, and Sarin (1999) exposed how ownership structure issues, including the existence of insider owners or large shareholders, affect diversification strategies. The survival of joint ventures has also proved to be influenced by the level of equity ownership (Dhanaraj & Beamish, 2004).

However, such an explanation is effective only when the interests of principals (i.e. investors) conflict with those of agents (i.e. managers) (Lane, Cannella, & Lubatkin, 1998; Lee & O'Neill, 2001). That tendency implies that the influence of ownership structure on management may not follow the rationale of agency theory when there is no such conflict. The dispersion of ownership provides an alternative explanation for that issue. Jensen and Meckling (1976) pondered, "Why, given the existence of positive costs of the agency relationship, do we find the usual corporate form of organization with widely diffuse ownership so widely prevalent (Jensen & Meckling, 1976, p. 35)?" One major answer is that diffuse ownership structure allows firms to collect capital from the public. It enables owners to share risk with other investors (Bolton and Von Thadden, 1998).

Therefore, decentralized ownership structure encourages firms to undertake high-risk, high-return projects, including innovation. Following that notion, this study examines whether ownership diffusion is accountable for planting and harvesting innovation.

2.4 ABSORPTIVE CAPACITY

Innovative activities have been shown to be explained by firm dynamics. Rothaermel and Hess (2007) investigated the influences of antecedents like HR, R&D capability, and M&A on the process of building firm capabilities to create innovative results. Firm capabilities recognizing external development may result in more exploratory innovative activities within the firm (Grimpe & Sofka, 2009). The literature has focused on how firms utilize their tangible and intangible resources for the success of innovation.

Since initially proposed by Penrose (1959), firm resources have been considered as the determinant of organizational performance. Wernerfelt (1984) stated that firm resources influence market dynamics and organizational profits. Peteraf (1993) explored conditions under which firm resources result in sustainable competitive advantage and financial performance. Tippins and Sohi (2003) also examined whether organizational learning explains the relationship between IT competency and organizational performance based on the resource-based view (RBV). The undergirding logic is that the nature of organizational resources is accountable for the fate of firms (Barney, 1991). Therefore, managers are encouraged to understand how to obtain such resources for the survival and prosperity of firms.

Dynamic capabilities refer to "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece, Pisano, & Shuen, 1997, p 516)." These are expected to result in various organizational results, including new products (Eisenhardt & Martin, 2000). In addition, dynamic capabilities have been used to explore firms and their behaviors, including the birth process of new firms (Newbert, 2005). Furthermore, dynamic capabilities play a critical role in explaining the heterogeneity among firms in the

same industry (Zott, 2003). The above literature review implies that the management of organizational resources from inside or outside is accountable for the success of various managerial activities.

Given limited internal capacity, the importance of external resources in managerial activities is beyond doubt. From this perspective, several studies have examined organizational capabilities recognizing and utilizing external resources as major factors affecting various managerial decisions and results. Absorptive capacity refers to "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990, p 128)." According to Wang and Ahmed (2007), absorptive capacity is one of major components of dynamic capabilities. Based on the logic of dynamic capabilities, Zahra and George (2002) distinguished potential and realized absorptive capacity. In addition, absorptive capacity has been shown to explain the various aspects of organization and management, including international joint ventures (Lane, Salk, & Lyles, 2001), supply chain (Malhotra, Gosain, & El Sawy, 2005), knowledge transfer (Chen, 2004), green management (Williander, 2007), and technological acquisitions (Haro-Domínguez, Arias-Aranda, Lloréns-Montes, & Moreno, 2007).

Absorptive capacity has also been examined in relation to innovative activities. According to Cohen and Levinthal (1990), it enables firms to evaluate and exploit external knowledge, leading to innovative results. Firm knowledge stores originated from absorptive capacity are shown to influence the quality and effectiveness of inter-organizational relationship (Johnson, Sohi, & Grewal, 2004). Tsai (2001) explored the influences of absorptive capacity and the position of the firm in the network on intra-organizational innovation, resulting in better performance. Liao, Fei, and Chen (2007) showed that absorptive capacity explains the relationship

between knowledge sharing and innovative capability. Stock, Greis, and Fischer (2001) examined its impact on new-product development. Process and product innovations have been shown to be related to two types of absorptive capacity: demand-pull and science-push (Murovec & Prodan, 2009). What these studies reveal is that this construct is a major determinant of organizational innovation and its success. Therefore, absorptive capacity is investigated as a major factor explaining planting and harvesting innovation in this study.

2.5 HYPOTHESES DEVELOPMENT

2.5.1 Ownership structure and innovation

Conventionally, scholars have focused on ownership concentration as the determinant of firm innovation (Baysinger, Kosnik, & Turk, 1991; Francis & Smith, 1995; Hill & Snell, 1989). Researchers have applied the relationships among agents and principals to investigate this research topic. Choi, Lee, and Williams (2011) showed that insider-driven ownership structure explains the lower level of innovation performance. Baccara and Razin (2006) provided that it can encourage innovation activities in the firm. Previous studies have investigated whether the characteristics of dominant stock owners influence organizational decisions concerning innovation.

However, there has been discrepancy in the literature as to whether managers and owners have different interests on the implementation of innovation. Some research suggests that the value of owner control is exaggerated (Lane, Cannella, & Lubatkin, 1998). That is, it does not always explain why firms choose a certain type of strategy. Since managers can expect other gains, like stock options from the success of innovation as well as diversification, it is unconvincing whether managers and investors conflict on organizational innovation. Given the confusing discussion

on the manager-shareholder relationship, an alternative explanation on why firms participate in innovation is required.

The dispersion of ownership provides an answer to this issue. Scholars like Bolton and Von Thadden (1998) focused on the fact that owners are more likely to share investment risk as more investors participate. In addition, the collection of small contributions from many investors is an economical way to acquire capital (Alchian & Demsetz, 1972). Given the huge amount of investment in new products and original technology in the modern corporations, investors are expected to pursue planting and harvesting innovation when they share their risk under the decentralized ownership structure.

Thus, the following hypotheses are prepared.

H1-a Firms with a lower level of equity ownership concentration are more likely to participate in planting innovation than those with a higher level of equity concentration.

H1-b Firms with a lower level of equity ownership concentration are more likely to participate in harvesting innovation than those with a higher level of equity concentration.

2.5.2 Absorptive capacity and innovation

Some research supports the notion that absorptive capacity explains the heterogeneous results of organizational innovation. Fosfuri and Tribo (2008) provided that potential absorptive capacity may lead to better innovation results. Chen, Lin, and Chang (2009) exhibited that absorptive capacity is positively related to innovation performance. The underlying logic is that firms with absorptive capacity are more

likely to succeed in innovation since they can evaluate external technology correctly and adopt it as Cohen and Levinthal (1990) provided.

From this perspective, firms are expected to try innovation despite its risk to participants. It is because firms are more likely to convince that they can benefit from participation in innovation when they can find and use external resources. Firms with a high level of dynamic capabilities are expected to actually be involved in innovation (Teece, 2009). Fabrizio (2009) explored the relationship between the absorptive capacity of a firm and the search for innovative activities. In the same study, firms are shown to seek new inventions as they are more likely to work with university researchers. Some research supports the idea that absorptive capacity, as well as technological opportunity and knowledge spillovers, encourages firms to make attempts at innovation (Nieto & Quevedo, 2005).

Following that notion, absorptive capacity of firms is expected to influence planting and harvesting innovation. It has been shown to be positively related to exploration (Van den Bosch, Van Wijk, & Volberda, 2003; Van Wijk, Van Den Bosch, & Volberda, 2002). Furthermore, Jansen (2005) provided that both explorative and exploitative innovations are explained by organizational absorptive capacity. Deeds (2001) provided that the level of absorptive capacity affects attempts to exploit opportunities under uncertain situations. Since planting and harvesting innovation tends to utilize exploration of resources, it seems likely that absorptive capacity encourages these types of innovation. Given limited internal capacity, firms are more likely to pursue new products or original technology when they can recognize and utilize outside resources well. Therefore, the following hypotheses are suggested.

H2-a Firms with a higher level of absorptive capacity are more likely

to participate in planting innovation than those with a lower level of absorptive capacity.

H2-b Firms with a higher level of absorptive capacity are more likely to participate in harvesting innovation than those with a lower level of absorptive capacity.

2.5.3 Innovation and firm performance

Innovative activities of firms have shown to be related to organizational performance. Afuah (1998) examined the relationship between innovation management and financial profits. Han, Kim, and Srivastva (1998) proposed that innovative activities play a critical role in explaining how market orientation contributes to firm performance. Calantone, Cavusgil, and Zhao (2002) provided that firm innovativeness results in better performance. Darroch (2005) exhibited that firm capacities managing knowledge are more likely to encourage innovation and improve performance in New Zealand. What these studies imply is that organizational innovation is considered accountable for organizational outputs.

Planting innovation is more likely to establish long-term capabilities. Explorative IS usage is considered to be a major determinant of long-term performance (Min & Fei, 2008). Since the objective of planting innovation is developing capacities like creative technology without the expectation of commercialization in the short term, it seems likely that participants in the planting innovation seek potentials of future as in the exploratory innovation. Firms are expected to benefit from improved resources due to “planting.” Eventually, better long-term financial performance can be expected through this type of innovation.

Harvesting innovation is expected to contribute to the better firm performance

in a short term. Given the fact that exploitive IS usage influences on short-term rather than long-term performance (Min & Fei, 2008), the success of harvesting innovation is more likely to return in a shorter term. It is because this type of innovation, by nature, aims to gain profit in the near future. For instance, firms can expect earlier return on investment from a commercial cleaning robot than the original technology. Therefore, harvesting innovation is expected to have a positive influence on short-term performance. The following hypotheses are developed.

H3-a A higher level of planting innovation leads to a higher level of firm performance.

H3-b A higher level of harvesting innovation leads to a higher level of firm performance.

2.5.4 Balance between harvesting and planting innovation

Ambidexterity has been a major research topic for management and organization scholars (Gibson & Birkinshaw, 2004; He & Wong, 2004; Lubatkin, Simsek, Ling, & Veiga, 2006; Raisch & Birkinshaw, 2008; Raisch, Birkinshaw, Probst, & Tushman, 2009; Tushman, & O'Reilly, 1996). Organizational ambidexterity refers to "an organization's ability to be aligned and efficient in its management of today's business demands while simultaneously being adaptive to changes in the environment (Raisch & Birkinshaw, 2008, p375)." This topic is important because both current profit realization and value creation in the future are integral parts of the prosperity and survival of firms. Otherwise, firms may suffer losses in cash flow or the basis for long-term growth.

Although this concept was originated from discussions on exploratory vs

exploitative innovations, it has been utilized to explain other types like rapid and incremental innovations (Raisch & Birkinshaw, 2008). The logic is based on the fact that rapid innovation is for high-risk, high-reward while incremental one is low risk-low reward. For instance, executives will find they cannot dominate major markets when they hesitate to invest for growth momentum like original technologies. Therefore, firms are required to compromise two kinds of innovation to continue to survive and prosper.

When considering the characteristics of planting and harvesting innovation, it seems likely that the continuation of ambidexterity can be an important issue for scholars interested in this topic. Like explorative and radical innovation, planting innovation can result in breakthrough technology and other types of resources. The astronomical amount of investment in the original technology can provide the basis for stable profit in the future. However, firms also need to pay attention to harvesting innovation to retain resources which are critical to the survival of firms because the processes of "planting" are usually uncertain and risky. Given finite resources, investment in harvesting innovation may discourage planting innovation in many organizations. In contrast, firms implementing planting innovation are likely to have difficulty in coping with harvesting innovation. Thus, the following hypotheses are presented.

H4-a Firms with a higher level of planting innovation at time 1 are less likely to participate in harvesting innovation at time 2 than those with a lower level of planting innovation at time 1.

H4-b Firms with a higher level of harvesting innovation at time 1 are less likely to participate in planting innovation at time 2 than those with a lower

level of harvesting innovation at time 1.

2.6 SUMMARY

Existing literature was reviewed to examine the theories of ownership structure, absorptive capacity, and innovation. Based on the review, the planting and harvesting framework was presented as the new classification of innovation. In addition, the relationships among planting and harvesting innovation, ownership concentration, absorptive capacity, and firm performance are hypothesized. Figure 2.3 provides a summary of all hypotheses described above relevant theoretical support.

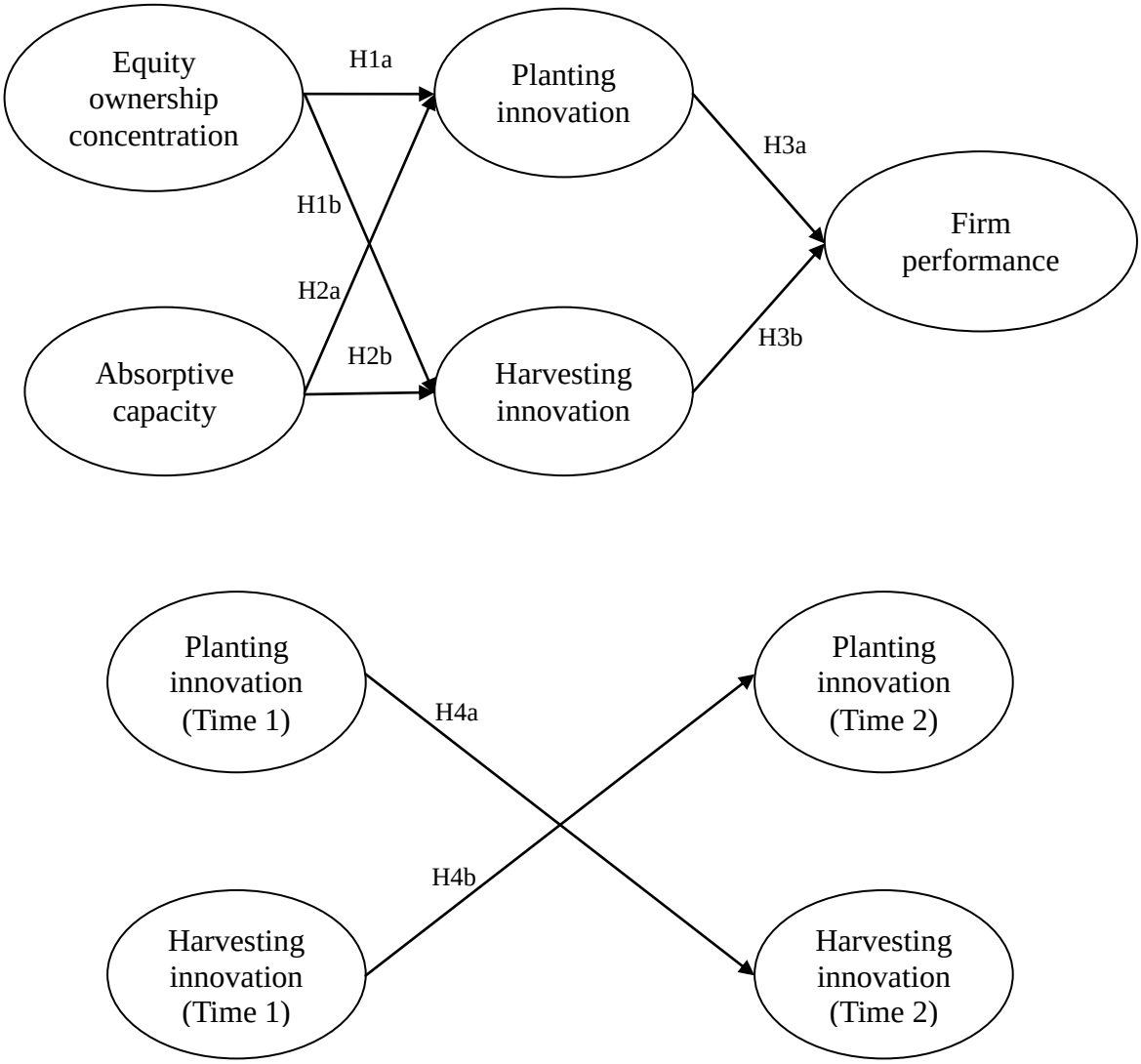


FIGURE 2.3

Research model

CHAPTER 3

RESEARCH DESIGN

3.1 INTRODUCTION

This chapter presents the research method employed in this study. Quantitative analysis focuses on testing the hypotheses presented in Chapter 2. In particular, partial least square - structural equation method (PLS-SEM) allows generation of a path model for a small sample. In addition, qualitative analysis examines the innovation activities of a real business. For this purpose, the case of Samsung Electronics is investigated through the analysis of secondary data, including published articles and statistics.

3.2 PHASE 1 - QUANTITATIVE ANALYSIS

3.2.1 Data

To test hypotheses, the data of high-tech listed companies at the Korea Stock Exchange with 731 members will be analyzed. Financial and relevant information from 2006 to 2010 was collected via local websites, including Data analysis, retrieval and transfer system (DART) (englishdart.fss.or.kr), DAUM (www.daum.net), and NAVER (www.naver.com).

Specifically selected high-tech industries included machinery, chemical, electrics-electronics, and medical companies. In addition, firms with the annual revenue less than 150 billion Korean Won (Approximately 130 million in U.S. Dollars) were chosen to avoid the spurious effect of a few large firms in the sample. These firms with revenue under this value represent small and medium business sized enterprise (SMEs) in Korea (Jeon, 2009).

3.2.2 Measurements

3.2.2.1 Planting and harvesting innovation

Several studies have utilized R&D expenditure as the proxy of organizational innovation (Andersen, 2008; Andersen, 2011; Hill & Snell, 1988; McMahon, 2011; Tishler & Milstein, 2009). Hill and Snell (1988) considered R&D per employee as the proxy of organizational emphasis on innovation. In addition, the portions of explorative and exploitative innovation activities were used (Uotila, Maula, Keil, & Zahra, 2009). Following these ideas, the relative amount of planting verses harvesting innovation in R&D activities in each firm is calculated to measure the degree of each type of innovation.

Different from U.S. accounting standards, R&D activities includes separate research and development phases under the Korean generally accepted accounting principles (GAAP) (KASB, 2001). The Korean Accounting Standards Board (KASB, http://eng.kasb.or.kr) provides the definitions of these two concepts as follows:

> *c. Research is original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding.*
>
> *d. Development is the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services prior to the commencement of commercial production or use.*
>
> (KASB, 2001)

Given the definitions of planting and harvesting innovation, research and

development phases fit the concepts of planting and harvesting innovation. The research phase can represent planting innovation since it aims at generating resources without considering commercialization. In contrast, development phase, like harvesting innovation, focuses on how to generate economic benefits by utilizing the results of the research phase. Therefore, the portion of research expense on total sales is used as the measurement of planting innovation orientation. In addition, the expenditure for the development phase (capitalized development expense, and ordinary development cost) is divided by total revenue to obtain the proxy of the emphasis on harvesting innovation.

3.2.2.2 Equity ownership concentration

Several scholars have measured equity ownership concentration with the portion of the largest shareholder's ownership (Thomsen & Pedersen, 2000), the large stock owners (Baysinger, Kosnic, & Turk, 1991) or outsiders' ownership (Belkaoui & Pavlik, 1992) to investigate their research topics. Reflecting this trend, the portion (%) of large stock owners is measured as the proxy of equity concentration.

3.2.2.3 Absorptive capacity

Absorptive capacity can be described as the overall ability of a firm to recognize external resource and utilize it to achieve commercial objectives (Cohen & Levinthal, 1990; Johnson, Sohi, & Grewal, 2004; Tippins and Sohi, 2003). R&D spending has been frequently used as a proxy of absorptive capacity (Lane & Lubatkin, 1998; Zahra & Hayton, 2008). Cohen and Levinthal (1990) and Tsai (2001) have previously used R&D intensity to measure absorptive capacity. However, R&D intensity is not sufficient to measure absorptive capacity (Lane, Koka, & Pathak, 2006)

since this measure focuses on internal capacities to research and development.

Rather, scholars like Hernán, Marín, and Siotis (2003), Georsky (2005), and Veugelers and Cassiman (2005) have measured absorptive capacity with firm size. It is considered as one of usual proxies for this construct (Veugelers & Cassiman, 1999). In addition, firm size plays a key role in defining absorptive capacity (Ornaghi, 2006). Since sales volume has been widely used to measure firm size (Aboulnasr, Narasimhan, Blair, & Chandy 2008; Chandy, 2000; Galbreath, 2006), the natural logarithm of sales is measured as a proxy of absorptive capacity in this study.

3.2.2.4 Firm performance

Return on assets (ROA) measures firm performance in the strategy and organization fields (Lin, Yang, & Arya, 2009; Morgan, Vorhies, & Mason, 2009; Nadkarni & Herrman, 2010). It reflects how firms succeed to create monetary value from their resources. Following this notion, ROA is calculated as the ratio of net income on assets as the proxy of firm performance.

3.2.2.5 Control variables

To minimize the impact of spurious variance, industry is controlled with three dummy variables. Industry 1 refers to the machinery field, while Industry 2 represents the chemical industry, and Industry 3 the electric-electronics area. Similar to financial information, the industry data are also collected from Daum (www.daum.net), the major portal site in Korea.

3.2.3 Cross sectional and longitudinal analysis

Conventionally, scholars in this research stream have implemented cross-

sectional studies. This research design has been employed to explain various managerial phenomena like strategic alliance (Simonin, 1999), innovation in newly formed businesses (Shan, Walker, & Kogut, 1994), and IT outsourcing (Loh & Venkatraman, 1992). Particularly, it enables researchers to examine complex relationships among factors with limited time and samples.

Longitudinal study has been increasingly used in the organization and management fields, including entrepreneurship (Ahuja, & Lampert, 2001; Zahra & Covin, 1995), small business (Gibson & Cassar, 2005), strategic management (Lorenzoni & Lipparini, 1999; Rechner & Dalton, 1991), HRM (Morris, Lydka, & O'Creevy, 1993), and organizational behavior (Bateman & Strasser, 1984). According to Damanpour et al. (2009), Pettigrew (1990), and Van de Ven and Huber (1990), longitudinal analysis is required to examine whether innovation improves performance over time. Porter (1991) also claims that strategy researchers should pay attention to longitudinal problems as well as current issues.

Despite the contributions of cross-sectional and longitudinal methodologies, concerns arise regarding "the fog of methodology" in this field. Strategy researchers are recommended to find alternatives to seeking only one single law (Pettigrew, Thomas, &Whittington, 2002). Whittington, Pettigrew, and Thomas (2002) also suggested that the strategy field is required to reflect postmodernism. In the same article, the authors urged more attention should be paid to research topics with "more context." In other words, spatial and local variability should be investigated before conclusions on the generalizability of research results are made. When considering the characteristics of local data sets, researchers need to focus on methodologies, which can be implemented with a limited number of subjects as well as large databases (DB) like Compustat.

3.2.3.1 Cross sectional analysis: PLS-SEM

In this section, PLS-SEM is discussed as a solution for cross-sectional analysis. In addition, cross-lagged analysis is employed to explore the dynamic relationship between innovative activities and long-term firm performance.

PLS-SEM is employed to examine various managerial phenomena (Hulland, 1999). It has been widely used in international management and marketing (Henseler, Ringle, & Sinkovics, 2009). Qureshi and Compeau (2009) provided that MIS researchers utilize this technique to examine the relationship between a group and moderating effects. Zhang (2009) explored the influence of corporate reputation on customer loyalty based on SEM. Knowledge management in health organizations was also investigated through this technique (Bontis & Serenko, 2009). In addition, Long Range Planning plans to publish its special issue on PLS-SEM in the strategy field. As demonstrated by these examples, PLS-SEM is a primary research method in management disciplines.

PLS – SEM analysis is distinguished from conventional SEM methods in several ways. PLS modeling is free from several statistical assumptions (Fornell & Bookstein, 1982; Henseler, Ringle, & Sinkovics, 2009; Julien & Ramangalahy, 2003) such as the assumption of population or distribution due to its non-parametric nature (Fornell & Bookstein, 1982). Chin (1998) also elaborated that this method is hardly limited by the assumption of normal distribution because of its dependence on the bootstrapping technique (Götz, Liehr-Bobbers, & Krafft, 2009). In the same article, it was recommended to analyze R^2 rather than overall model fit indices due to its nonparametric nature. In addition, it can overcome the problem of small sample size in covariance based SEM (Hair, Ringle, & Sarstedt, 2011). These advantages enable

researchers to examine data sets with limited samples as well as large databases.

Given the above discussion, the PLS-SEM method is employed in this study to examine cross-sectional relationships among equity concentration, absorptive capacity, planting innovation, harvesting innovation, and firm performance (see Figure 3.1).

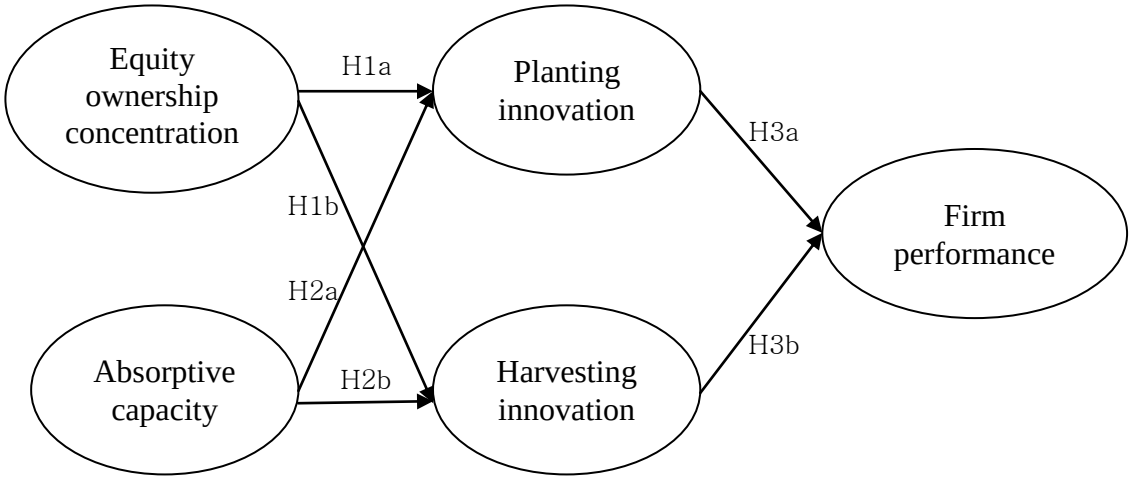


FIGURE 3.1

Path analysis model

3.2.3.2 Longitudinal analysis: Cross-lagged model

Researchers in the management field have examined cross-lagged effects to implement longitudinal studies on diverse topics, including labor relations (Fullagar, Gallagher, Clark, & Carroll, 2004), board composition (Baysinger & Butler, 1985; Davidson & Rowe, 2004), the influence of ownership on R&D investments (David, Hitt, & Gimeno, 2001), and top management team (Hambrick, & D'Aveni, 1992). In addition, Nielson (2010) provided that studies on executive characteristics need to pay attention to various longitudinal methods like cross-lagged analysis. The above literature implies that this method has been an integral part of organization and

management research.

In this study, the cross-lagged analysis method is employed to examine long-term relationships between planting and harvesting innovation (H4-a, H4-b) as can be seen in Figure 3.2. Applying the analysis of Delma and Wilklund (2008), harvesting innovation at time 2 is regressed on planting innovation and harvesting innovation at time 1. In addition, harvesting innovation at time 2 is regressed on planting innovation alone at time 1. Harvesting innovation appears to influence planting innovation over the time when the relationship between harvesting innovation at time 1 and planting innovation at time 2 is significant despite other relationships. This procedure enables researchers to verify the long-term effects which can be usually overlooked in the cross-sectional analysis. For this purpose, the financial data of sample firms at year 2006 and year 2010 are examined.

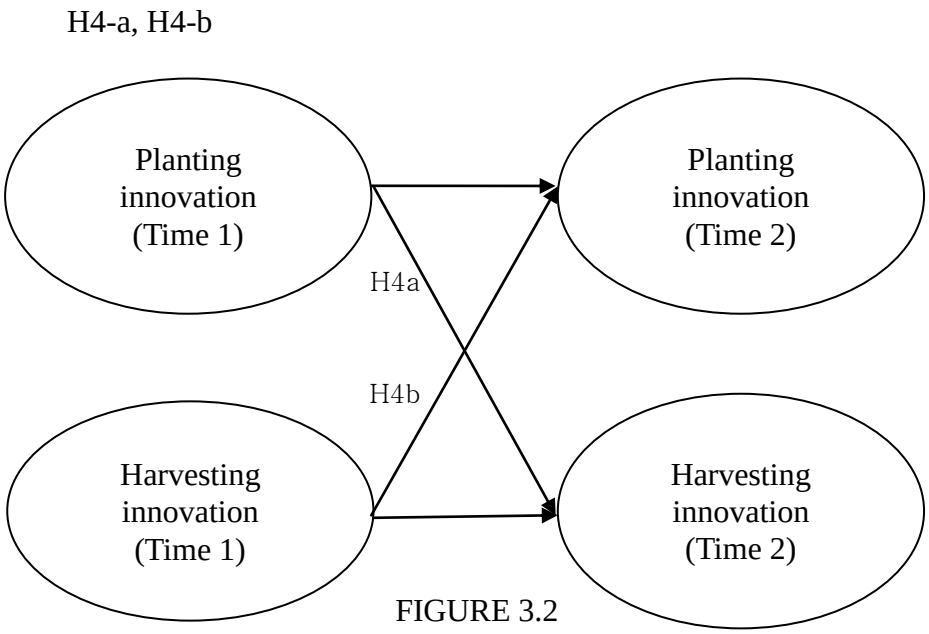


FIGURE 3.2

Cross-lagged analysis I: Planting and harvesting innovation

Another cross-lagged analysis is implemented to examine whether planting innovation affects firm performance over time (H3-a) as Figure 3.3 describes. Although this hypothesis will be investigated with cross-sectional analysis, the influence of planting innovation at time 1 on firm performance at time 2 is analyzed. Firstly, firm performance at time 2 is regressed on planting innovation and firm performance at time 1. Secondly, the relationships between planting innovation at time 2 and planting innovation and firm performance at time 1 are examined. The effect of planting innovation on firm financial performance over time is observed when the relationship between planting innovation at time 1 and firm performance at time 2 is significant despite the influences of other relationships.

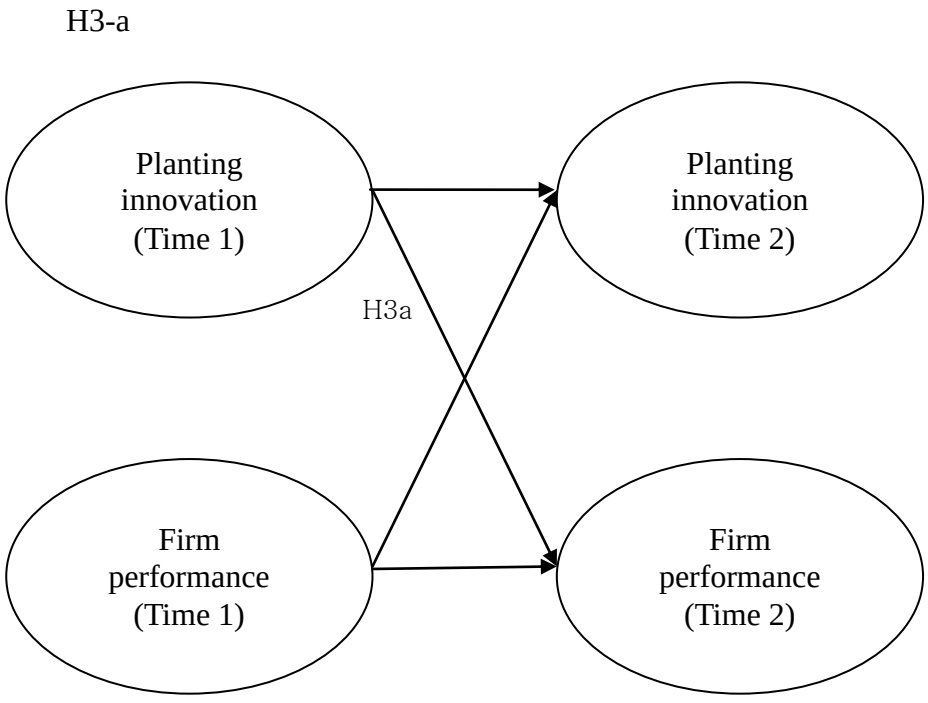


FIGURE 3.3

Cross-lagged analysis II: Planting innovation and firm performance

Finally, the cross-lagged model between harvesting innovation and firm performance is examined (H3-b) as described in Figure 3.4. This analysis is expected to unveil the influence of harvesting innovation on firm performance over time. Following the analysis, harvesting innovation at time 2 is regressed on harvesting innovation and firm performance at time 1. The long-term effect of harvesting innovation on financial performance can be admitted when harvesting innovation at time 1 and firm performance at time 2 demonstrate a significant relationship after excluding the effects of other relationships. The financial data of sample firms at year 2006 and year 2010 are used to implement this analysis.

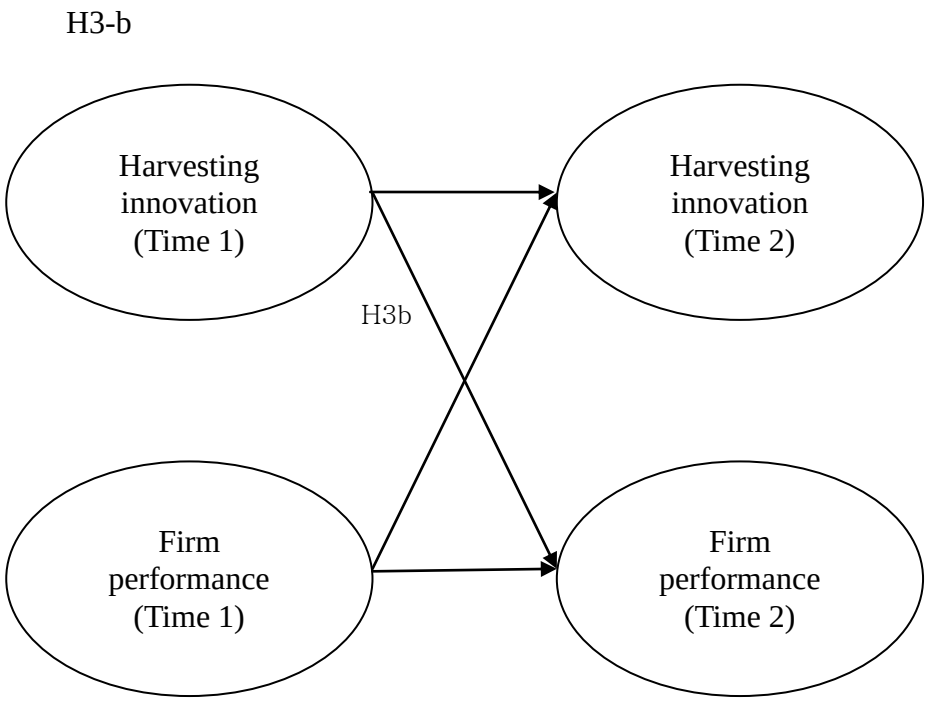


FIGURE 3.4

Cross-lagged analysis III: Harvesting innovation and firm performance

3.3 PHASE 2 – QUALITATIVE ANALYSIS

3.3.1 Case study

Several researchers like Attride-Stirling (2001), Gummesson (2000), Hoskisson et al., (1999), and Van Maanen (1979) have considered qualitative study as one of the major methodologies exploring organizational and managerial issues. The qualitative method refer to "an array of interpretive techniques which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of course more or less naturally occurring phenomena in the social world (Van Maanen, 1979, p520)." Various methodologies have been employed by scholars in this research notion to perform qualitative studies. Marriam (2009) suggested various types of qualitative research methods, including basic qualitative research, phenomenology, grounded theory, ethnography, narrative analysis, and critical qualitative research.

Particularly, the case study method has been used to investigate a broad spectrum of managerial phenomena, including entrepreneurship (Perren, & Ram, 2004), human resource management (Larsson & Finkelstein, 1999), organization (Hassard, 1991), small business (Romano, 1989), strategic management (Gibbert, Ruigrok, & Wicki, 2008). Eisenhardt (1989) provided that the case study method is one of major inductive methods exploring the possibility of new theoretical explanations on current phenomena. The above literature implies that this way of analysis is one of major techniques exploring firms and their activities.

This method has also been employed to investigate the relationships between innovation and relevant factors. Zajac, Golden, and Shortell (1991) investigated internal corporate joint ventures as the proper organizational structure for the innovative activities in the firms. Adler, Goldoftas, and Levine (1999) described how

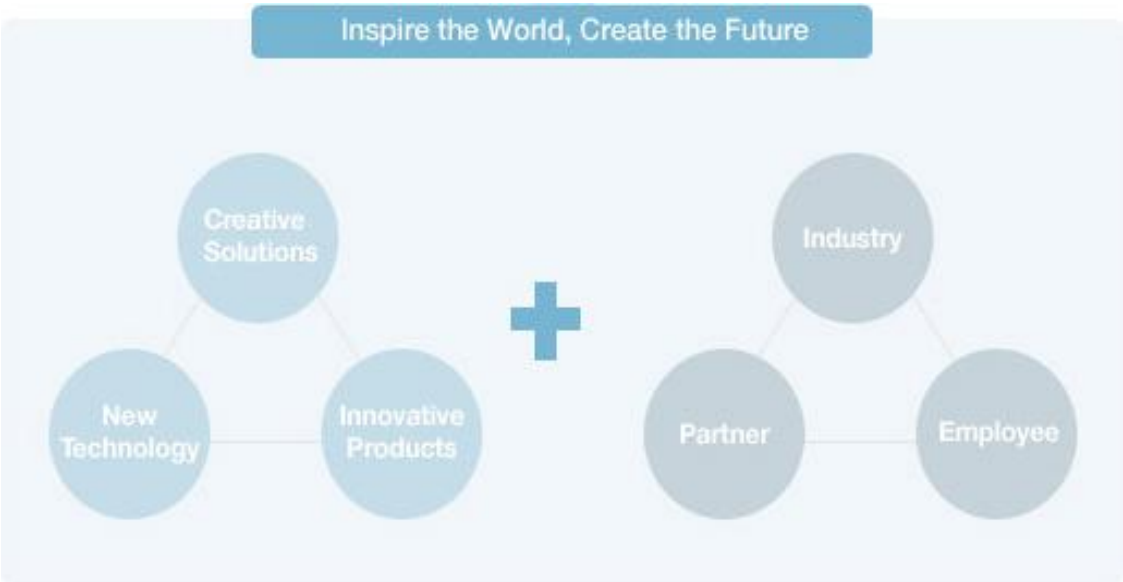
Toyota overcame the tradeoff of flexibility and efficiency during firm innovation. O'Connor (1998) compared the eight cases of innovation projects in order to explore the influence of market learning on radical innovation processes.

Following this research stream, Samsung Electronics, the largest electronic company in the world, is examined to unveil the processes of harvesting and planting innovation and their results. Innovative activities have been and will continue to create value at SE (see Figure 3.5). The Mission 2020 of Samsung announced that it will "inspire the world, create the world" through creative solutions, new technology, and innovative products. This implies that the firm intends to challenge innovation over the time beyond the development of commercial products.

Reflecting this fact, this phase analyzes how Samsung Electronics has implemented both types of innovation through various methods, including industry-academia collaboration projects. Since such projects tend to seek a breakthrough in technologies or products, firms are expected to share the burden of innovation with other participants, including universities or government. Therefore, they can benefit from the results of the projects while retaining financial stability.

For this purpose, this study utilizes several qualitative techniques. The secondary data sources like the websites of companies, universities and the local government will be examined. In addition, news articles will be investigated via local portal sites, including Lexis-Nexis (http://www.lexisnexis.com) and Naver (www.naver.com). Particularly, the researcher has searched Naver, the major Korean portal website, to collect news articles concerning the research topic from 2002 to 2012. The search keywords are "Samsung Electronics," and "Innovation." The search using the keywords allowed the study to verify that all related articles are captured. After removing duplicated articles, the researcher investigated the contents of 183

related news articles. Based on the analysis, the interviews of executives and managers at Samsung are collected and examined.



* Retrieved at Samsung webpage (http://www.samsung.com/us/aboutsamsung/corporateprofile/vision.html)

FIGURE 3.5

Mission 2020 of Samsung Electronics

3.4 SUMMARY

Both quantitative and qualitative research methods are employed in this study. Path analysis is implemented to examine the relationships among precedent factors, planting and harvesting innovation, and firm performance. Cross-lagged analysis is used to investigate the long-term relationships between planting and harvesting innovation, harvesting innovation and firm performance, and planting innovation and firm performance. In addition, innovative activities in Samsung Electronics are investigated. News articles and documents are used to describe how the firm has

implemented planting and harvesting innovation vividly.

CHAPTER 4

QUANTITATIVE STUDY

4.1 INTRODUCTION

This chapter describes the results of quantitative analysis. The first section explains the characteristics of the sample. The next section provides a discussion on cross-sectional analysis. The partial least square (PLS) method is employed to investigate the path model among planting and harvesting innovation, ownership structure, and absorptive capacity. The final section examines the longitudinal relationships among harvesting and planting innovation and firm performance.

4.2 DESCRIPTIVE STATISTICS

In this study, the financial data of small and medium sized high-tech companies in the Korean Stock Exchange (KSE) were collected through local portal and company information websites. Firms in the machinery, chemical, electrics-electronics, and medical industries are classified as high-tech businesses. The criteria of a small and medium sized company is150 billion Korean Won (Approximately 130 million in U.S. Dollars). After deleting missing values, 101 usable firms were obtained as the sample for data analysis. As described in Table 4.1, the sample firms consist of the high-tech sectors, including 17 machinery (16.8%), 39 chemical (38.6%), 22 electric and electronic (21.8%), and 23 medical industries (22.8%).

TABLE 4.1

Sample characteristics

Characteristics	Number	Percentage (%)
Industry		
Machinery	17	16.8
Chemical	39	38.6
Electrics & electronics	22	21.8
Medical	23	22.8
Total	101	100

4.3 INFERENTIAL STATISTICS

PLS analysis was employed to empirically examine hypotheses about planting and harvesting innovation. Such analysis has been shown to be an alternative to conventional SEM methods when the assumptions, including normality of data or sample size are not met (Hair, Ringle, & Sarstedt, 2011). In addition, PLS-SEM is considered as an appropriate technique for exploratory studies, while the conventional SEM techniques aim to test existing theories (Chin, 1997; Jöreskog and Wold, 1982). Therefore, PLS-SEM is expected to verify hypotheses regarding new types of innovation with a limited sample size.

In addition, the use of single item measures is not constrained in PLS analysis (Ringle, Sarstedt, & Straub, 2012). Most empirical studies in strategic management have employed single item or single ratio measures (Boyd, Gove, & Hitt, 2005). Particularly, this study depends on financial data rather than survey data. Therefore, this study relies on single indicator factors for empirical analysis.

Correlation analysis was performed to examine the relationships among factors (see TABLE 4.2). SPSS software was employed to calculate Pearson’s correlation coefficients as well as standard deviations and means for variables. No relationship exceeded 0.7. Equity ownership concentration was correlated with

planting innovation (r=-.203, p<.05), harvesting innovation (r=-.218, p<.05), and Industry 2 (r=.327, p<.01). In addition, absorptive capacity exhibited significant relationships with harvesting innovation (r=-.198, p<.05), firm performance (r=.254, p<.05), and Industry 3 (r=-.239, p<.05). The correlation of harvesting innovation with Industry 2 (r=-.215, p<.05) was significant. Firm performance was significantly correlated with Industry 2 (r=.207, p<.05) and 3 (r=-.309, p<.01). Finally, Industry 1 had bivariate relationships with Industry 2 (r=-.357, p<.01) and 3 (r=-.237, p<.05), while Industry 2 and 3 are significantly correlated each other (r=.-419, p<.01). Therefore, there is a need to examine these relationships further.

For this purpose, path analysis was done by using Smart-PLS software as described in Figure 4.1 and Table 4.3. Equity ownership concentration (EOC) significantly influenced planting innovation (β = -.120, p<.05). Thus, Hypothesis 1-a was supported. No significant relationship was found between equity ownership concentration (EOC) and harvesting innovation (β = -.129, p>.05). Therefore, Hypothesis 1-b was not supported. The influence of absorptive capacity (2006) on planting innovation (2007) was not significant (β = .069, p>.05). Therefore, Hypothesis 2-a was not supported. Absorptive capacity also contained an insignificant relationship with harvesting innovation (2007) (β = -.207, p>.05). Thus, Hypothesis 2-b was not supported. Planting innovation (β =.087, p>.05) and harvesting innovation (β =-.091, p>.05) did not exhibit significant relationships with financial performance. Therefore, Hypothesis 3-a and 3-b were not supported. In addition, the effects of industries were controlled. Overall r square is at the lower level (r^2 = .136).

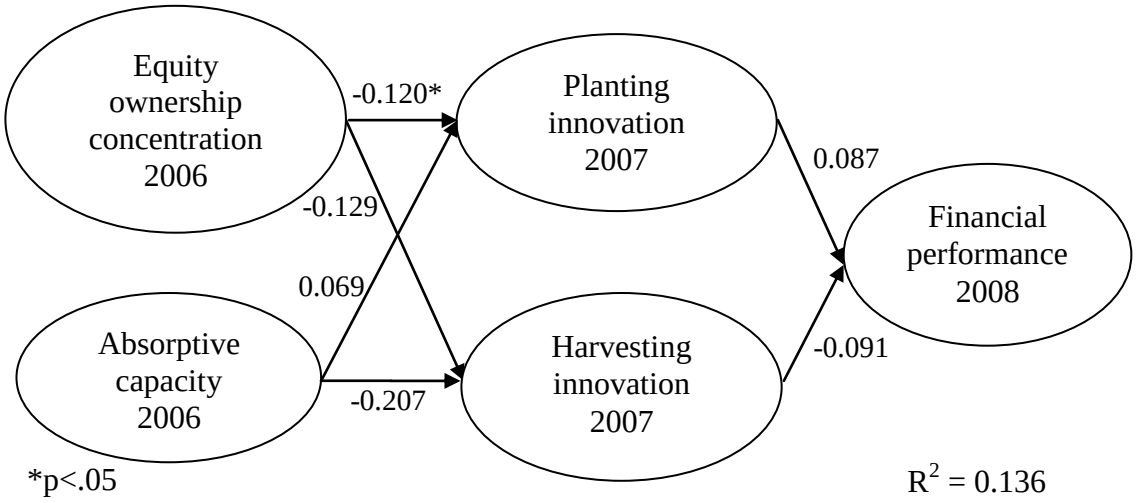


FIGURE 4.1

The results of path analysis

TABLE 4.2

Correlation among constructs

Measure	Mean	Standard Deviation	1	2	3	4	5	6	7
1 Equity ownership concentration	.410	.155							
2 Absorptive capacity	10.793	.303	-.028						
3 Planting innovation	.001	.006	-.203*	.083					
4 Harvesting innovation	.022	.054	-.218*	-.198*	-.068				
5 Firm performance	.006	.143	.122	.254*	.072	-.150			
6 Industry 1	.168	.376	.059	.098	-.079	-.075	.136		
7 Industry 2	.386	.489	.327**	.085	-.134	-.215*	.207*	-357**	
8 Industry 3	.218	.415	-.110	-.239*	-.070	.024	-.309**	-.237*	-.419**

Note: n=101, *p<.05, **p<.01

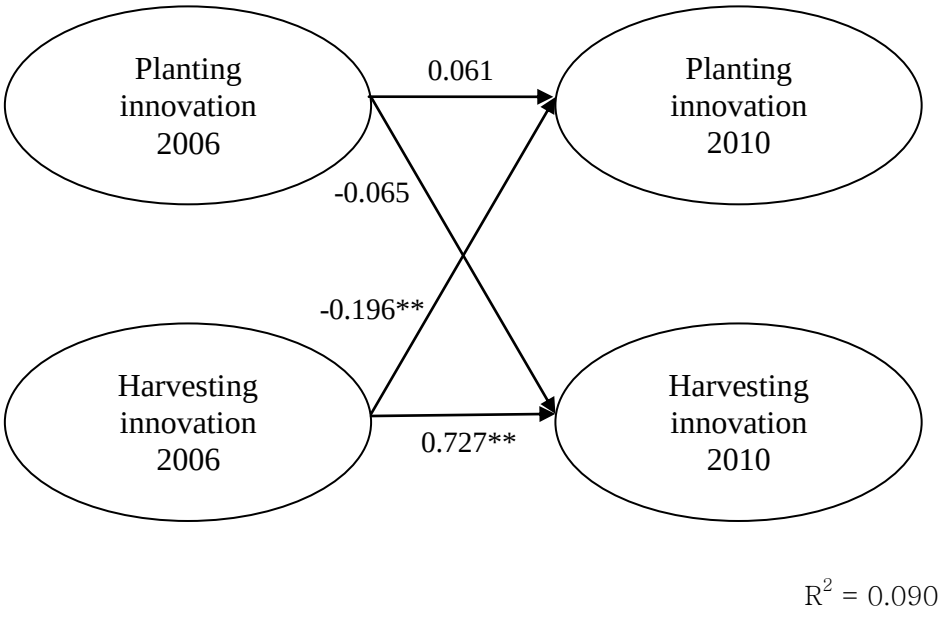
TABLE 4.3
Path coefficients of path analysis

Path	Path coefficients	T-Value	R^2
Equity ownership concentration -> Planting innovation	-.120*	2.268	
Absorptive capacity -> Planting innovation	.069	1.256	
Controls			.104
Industry 1 -> Planting innovation	-.238*	2.501	
Industry 2 -> Planting innovation	-.287*	2.410	
Industry 3-> Planting innovation	-.243*	1.932	
Equity ownership concentration -> Harvesting innovation	-.129	1.017	
Absorptive capacity -> Harvesting innovation	-.207	1.353	
Controls			.151
Industry 1 -> Harvesting innovation	-.219*	2.476	
Industry 2 -> Harvesting innovation	-.329**	3.000	
Industry 3-> Harvesting innovation	-.230	1.608	
Planting innovation -> Firm performance	.087	1.562	
Harvesting innovation -> Firm performance	-.091	0.938	
Controls			.136
Industry 1 -> Firm performance	.152	1.845	
Industry 2 -> Firm performance	.173	1.596	
Industry 3-> Firm performance	-.192	1.442	

Note: n=101, *p<.05, **p<.01

The long term relationship between planting and harvesting innovation was tested by using cross-lagged analysis (see Figure 4.2 and Table 4.4). First of all, planting innovation in 2006 had a significant relationship with planting innovation in 2010 (β = -.065, p>.05). In addition, harvesting innovation in 2006 significantly influenced planting innovation in 2010 (β = -.196, p<.01).To exclude autoregressive effects, the planting (β = .061, p>.05) and harvesting innovation (β =.727, p<.01) in 2010 were regressed on those in 2006. As a result, only hypothesis 4-b was supported. R square of this analysis was .090.

H4-a, H4-b



*p<.05, **p<.01

FIGURE 4.2

The results of cross-lagged analysis I: Planting and harvesting innovation

TABLE 4.4

Path coefficients of cross-lagged analysis I

Path	Path coefficient	T-Value	R^2
Harvesting innovation 2006 -> Planting innovation 2010	-.196**	2.931	
Autoregressive effects			
Planting innovation 2006 -> Planting innovation 2010	.061	.319	
			.090
Controls			
Industry 1 -> Planting innovation 2010	-.239*	2.226	
Industry 2 -> Planting innovation 2010	-.290	1.926	
Industry 3-> Planting innovation 2010	-.087	.514	
Planting innovation 2006 -> Harvesting innovation 2010	-.065	1.138	
Autoregressive effects			
Harvesting innovation 2006 -> Harvesting innovation 2010	.727**	8.502	
			.654
Controls			
Industry 1 -> Harvesting innovation 2010	-.218*	2.475	
Industry 2 -> Harvesting innovation 2010	-.264**	2.674	
Industry 3-> Harvesting innovation 2010	-.227*	2.376	

Note: n=101, *p<.05, **p<.01

Another cross-lagged analysis was implemented to examine the relationship between planting innovation and firm performance (see Figure 4.3 and Table 4.5). Planting innovation in 2006 exhibited an insignificant relationship with firm financial performance in 2010 (β = .082, p>.05). In addition, firm performance in 2006 was insignificantly related to planting innovation in 2010 (β = .150, p>.05). The autoregressive effects of the planting (β = .075, p>.05) and firm performance (β = .154, p>.05) were excluded from the analysis. In addition, the influences of industries were controlled. Thus, Hypothesis 3-a was not supported. R square of this analysis was .136.

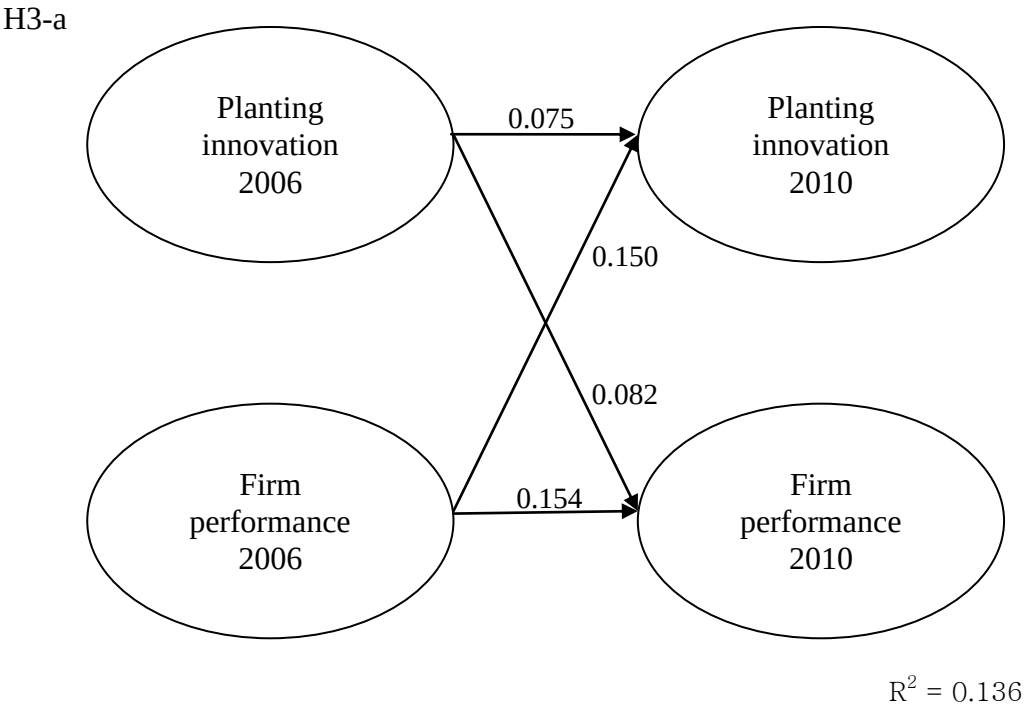


FIGURE 4.3

The results of cross-lagged analysis II: Planting innovation and firm performance

TABLE 4.5

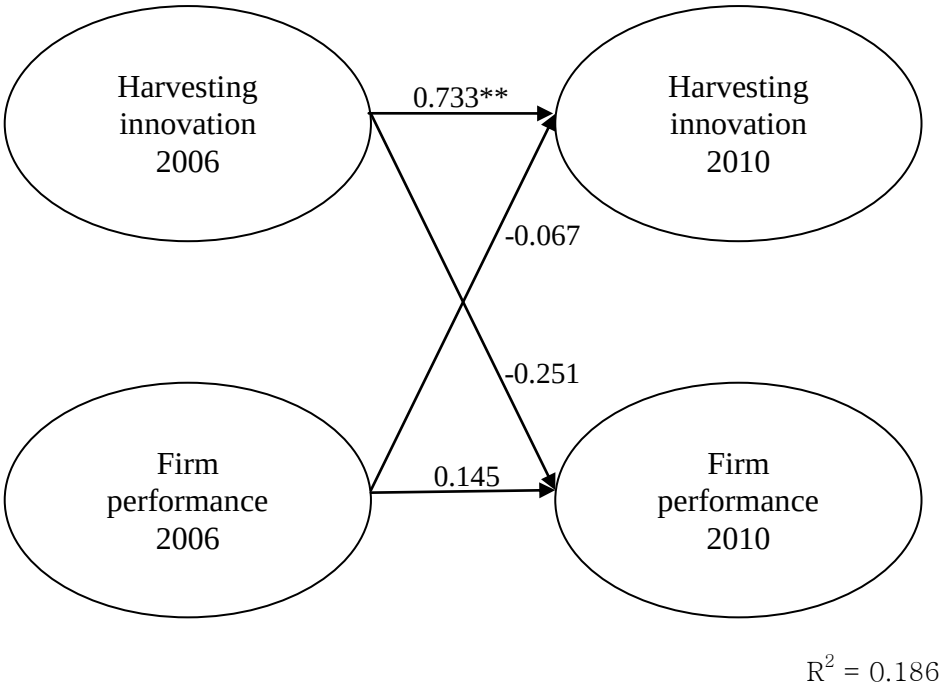
Path coefficients of cross-lagged analysis II

Path	Path coefficient	T-Value	R^2
Planting innovation 2006 -> Firm performance 2010	.082	.910	
Autoregressive effects			
Firm performance 2006 -> Firm performance 2010	.154	1.341	
			.136
Controls			
Industry 1 -> Firm performance 2010	.113	1.158	
Industry 2 -> Firm performance 2010	.239*	2.010	
Industry 3-> Firm performance 2010	-.099	0.790	
Firm performance 2006 -> Planting innovation 2010	.150	1.892	
Autoregressive effects			
Planting innovation 2006 -> Planting innovation 2010	.075	.391	
			.076
Controls			
Industry 1 -> Planting innovation 2010	-.244	1.934	
Industry 2 -> Planting innovation 2010	-.245	1.518	
Industry 3-> Planting innovation 2010	-.066	.388	

Note: n=101, *p<.05, **p<.01

Longitudinal analysis was employed to investigate the relationship between harvesting innovation and financial performance over time (see Figure 4.4 and Table 4.6). Harvesting innovation in 2006 did not show a significant relationship with firm performance in 2010 (β =- .251, p>.05). Therefore, Hypothesis 3-b was not supported. Harvesting innovation in 2010 had an insignificant relationship with firm performance in year 2006 (β = -.067, p>.05). Autoregressive effects of harvesting innovation (β = .733, p<.01) and firm performance (β = .145, p<.05) were also identified. Overall, r square by the precedent factors was at the lower level (r^2 = .186).

H3-b



*p<.05, **p<.01

FIGURE 4.4

The results of cross-lagged analysis III: Harvesting innovation and firm performance

TABLE 4.6

Path coefficients of cross-lagged analysis III

Path	Path coefficient	T-Value	R^2
Harvesting innovation 2006 -> Firm performance 2010	-.251	1.881	
<u>Autoregressive effects</u>			
Firm performance 2006 -> Firm performance 2010	.145	1.423	
			.186
<u>Controls</u>			
Industry 1 -> Firm performance 2010	.047	.463	
Industry 2 -> Firm performance 2010	.129	1.080	
Industry 3-> Firm performance 2010	-.123	1.033	
Firm performance 2006 -> Harvesting innovation 2010	-.067	1.211	
<u>Autoregressive effects</u>			
Harvesting innovation 2006 -> Harvesting innovation 2010	.733**	9.112	
			.654
<u>Controls</u>			
Industry 1 -> Harvesting innovation 2010	-.180	2.198	
Industry 2 -> Harvesting innovation 2010	-.230	2.499	
Industry 3-> Harvesting innovation 2010	-.219	2.473	

Note: n=101, *p<.05, **p<.01

4.4 SUMMARY

This chapter exhibited the relationships among ownership concentration, absorptive capacity, planting and harvesting innovation, and firm performance as described in Table 4.7. Ownership concentration was inversely related to planting innovation as hypothesized. In addition, cross-lagged analysis was implemented to examine the hypotheses from a long term perspective. Harvesting innovation was shown to discourage planting innovation over time.

TABLE 4.7

Summary of hypotheses

Hypotheses	Supported
H1-a Firms with a lower level of equity ownership concentration are more likely to participate in planting innovation than those with a higher level of equity concentration.	Yes
H1-b Firms with a lower level of equity ownership concentration are more likely to participate in harvesting innovation than those with a higher level of equity concentration.	No
H2-a Firms with a higher level of absorptive capacity are more likely to participate in planting innovation than those with a lower level of absorptive capacity.	No
H2-b Firms with a higher level of absorptive capacity are more likely to participate in harvesting innovation than those with a lower level of absorptive capacity.	No
H3-a A higher level of planting innovation leads to a higher level of firm performance.	No
H3-b A higher level of harvesting innovation leads to a higher level of firm performance.	No
H4-a Firms with a higher level of planting innovation at time 1 are less likely to participate in harvesting innovation at time 2 than those with a lower level of planting innovation at time 1.	No
H4-b Firms with a higher level of harvesting innovation at time 1 are less likely to participate in planting innovation at time 2 than those with a lower level of harvesting innovation at time 1.	Yes

CHAPTER 5

QUALITATIVE STUDY

5.1 INTRODUCTION

This chapter presents the findings of qualitative analysis. The researcher investigated how Samsung Electronics (SE), a global leader in its industry, has implemented planting and harvesting innovation, resulting in value creation. The first section briefly introduces the case company. In the following two sections, planting and harvesting innovations in the case firm are described. For this purpose, articles and other materials regarding the research topic were collected and analyzed. Particularly, the interviews of executives in the news articles for a decade have enabled the researcher to describe the corporate innovation activities of SE vividly. The third section deals with how both types of innovation are balanced in view of finite company resources. The firm has shown to implement both types of innovation successfully through co-innovation and its elements: collaboration, co-creation, and convergence. In addition, the results of innovation activities are discussed from the financial perspective.

5.2 CASE COMPANY: SAMSUNG ELECTRONICS

Samsung Electronics has been a major global player in electronics and relevant industries. Hoovers (www.hoovers.com), a leading corporate information provider on large businesses, describes the overall state of this “Electronics Samson.” (Table 5.1). In year 2010, it reported $138 billion as revenue and $17 billion as net profit. Its major products include digital electronics, semiconductors, and DVD players. In addition, a significant portion of its sales volume comes from overseas as can be seen on Table 5.2. Financial Times ranked Samsung Electronics as 36th in their

FT Global 500. It is beyond doubt that this firm has been successful in creating value in its businesses.

TABLE 5.1

Briefs of Samsung Electronics

Domains	Contents
Type	Public
Revenue (2010)	138 billion USD
Net income (2010)	14 billion USD
Employees (2010)	150,000
Ranking (2011)	#36 in FT Global 500
U.S. Patent (2010)	#2 (#1: IBM)
Major products	DVD players, digital TVs, digital still camers, computers, color monitors, LCD panels, printers, semiconductors, smartphones, tablet computers

* Based on the information from Hoovers (www.hoovers.com), Canon (http://www.usa.canon.com/cusa/about_canon/innovation/patents)

The webpage of Samsung (www.samsung.com) describes the history of Samsung Group and Electronics. In 1938, Samsung was founded as a small retail store in Daegu, Korea. The founding chairman, Lee Byung-Chull, established Samsung-Sanyo Electronics to diversify in 1969. As the name implies, the firm collaborated with Japan's electronics giant, Sanyo. It began its first production of black-and-white TV in 1970. After changing its name to Samsung Electronics, the firm began to produce color TV, microwaves, and personal computers. It has rapidly developed since it challenged the semiconductor industry in the 1980s.

Given the fact that Samsung Electronics was founded only 4 decades ago, the current performance and growth is astonishing. Despite the current status, the firm had been considered as a fast follower as a Samsung Electronics chief researcher Moon remembered (Song, 2004a). That is to say, Samsung had focused on producing

existing products at better quality and lower price. Therefore, it is an interesting research topic to examine how and why Samsung has evolved into a global giant in the electronics industry.

To answer this question, the researcher investigated how Samsung Electronics has developed capabilities to create value through innovative activities. In 2001, President Jang of Boozallen and Hamilton Korea, stated that Korean firms need to pursue breakthrough innovation to adapt to new market environments (Hwang, 2001). In other words, the case company as well as other local manufacturers should pursue innovation rather than continue to follow market leaders to survive in a changing environment. In the next section, the response of Samsung Electronics toward this challenge is examined.

TABLE 5.2

Sales volume of Samsung Electronics in 2010

	% of total
Asia/Pacific	
South Korea	17
China	16
Other countries	16
America	28
Europe	23
Total	**100**
	% of total
Digital media	37
Telecom	27
Semiconductor	24
LCD	19
Others	(7)
Total	**100**

* Retrieved at Hoovers (www.hoovers.com)

5.3 HARVESTING INNOVATION

Samsung Electronics has been participating in various innovation activities for achieving excellent commercial performance in the near future. By doing this, the firm can create and benefit from new markets with expectations of stable cash inflow. For instance, Samsung has developed new products like Rambus D ram, and Nand flash memory rather than increasing the accumulation rate of semiconductor (Song, 2004a). Since these new products reflect the needs of customers, including PC or smart-phone manufacturers, it seems likely that they will realize profit in the short term. Given the astonishing results that SE has shown, the process of harvesting innovation is becoming the center of attention.

SE has implemented innovative activities steadily. Vice President Yoon Jong-Yong stressed that management can be defined as "the control of resources and processes and continuum of innovation." (Economic Review, 2005). This fact implies that SE believes innovative strategy is not haphazard. Rather, the firm has introduced systemic methodologies based on the theoretical background.

Blue Ocean Strategy, by Kim & Maugborne (2005), has been the backbone of harvesting innovation in Samsung (Lee, 2005b). For instance, the case company SE invited Prof. Kim to train its executives. Senior executives, like Vice President Lee Ki-Won, continue to disseminate value innovation at SE (Song, 2004b). Firms can create value which individual customers never expected before through value innovation and resulting new products. Samsung's value innovation includes value management and value creation (Song, 2004b). While the former focuses on cost reduction and efficiency improvement, the latter aims to generate added value. Therefore, the firm can depend on creative ideas rather than the traditional quality improvement type programs.

The Value Innovation Program (VIP) Center, founded in 1998, has played a

key role in developing innovative new products in SE (Lee, 2005b; Lee, 2006b; Song, 2004a). This center has shown to nurture creativity and broaden the viewpoints of researchers. A chief researcher Moon stated that the introduction of value innovation methods has contributed to the creation of innovative ideas (Song, 2004a). By doing this, participants are expected to overcome the traps of conventional concepts, leading to innovative results.

In addition, SE found practical tools to implement harvesting innovation based on blue ocean strategy (Lee, 2006b). First of all, the VIP Center has executed the blue ocean strategy in four stages: visional recognition, visional search, visional strategy evaluation, and visional communication (Song, 2005). In addition, Prof. Kanda Noriaki at Seijo University in Japan was asked to introduce his "7 tools method" which enables firms to recognize value factors of their customers empirically (Kim, 2004). For instance, the survey of 226 Japanese employees triggered the production of a laptop working well in a bad wireless environment. These types of techniques are expected to help firms create new products successfully by reflecting innate needs and requirements of individual and business consumers.

Such efforts have led to the development of innovative new products which are expected to generate commercial performance soon. According to Vice President Park, all of creative ideas from VIP Center have been reflected in the design and development of new products (Kim, 2007). As a result, innovativeness of Samsung's new products has been globally recognized (see Table 5.3). These achievements, including dozens of CES (Consumer Electronics Show) innovation awards for a decade, prove that the innovative results of SE have been widely acknowledged by professionals in the field as well as ordinary customers. SE has succeeded in developing innovative new products after participating in harvesting innovation

activities.

TABLE 5.3

Innovation awards of Samsung Electronics

Year	Awards	References
2003	2003 Consumer Electronics Show (CES) Innovation Award (7 products, including camcorder, home theater system)	Kim (2003)
	2003 IF Design Award 2003 from IFDA (From Industrial Forum Design Hanover) (4 products, including PDA SPH-i330, Monitor Sync Master 152T, Home theater SPD 50 PNS/HTS-2100, Digital camcorder VP-D590i)	Lim (2003)
2004	2004 Consumer Electronics Show (CES) Innovation Award (11 products, including DLP Projection TV (HLP5685W) , 46inch LCD (LTP468W), 50inch PDP (HPP5091))	Hong (2004)
	2004 IDEA Silver Award (From Industrial Designers Society of America) (1 product, DLP Projection TV (HLP5685W))	Lim (2004)
	Innovation Specialists 10 (From Times) (Chief Researcher Kim Hyung-Kyun, Silver-nano drum washer)	Seo (2004)
2005	2005 Consumer Electronics Show (CES) Innovation Award (13 products)	Kang (2005)
	2005 ICES innovation award (1 product, Superslim 32inch CRT TV)	Kim (2005)
2006	2006 Consumer Electronics Show (CES) Innovation Award (15 products, including PMP, 4 door refrigerator, Bluetooth camcoderphone)	Lee (2005a)
2007	2007 Consumer Electronics Show (CES) Innovation Award (12 products, including MP3 “K5”, PDP TV, Home theater, silver-nano washer, and slide qwerty phone)	Lee (2006a)

2008	2008 Consumer Electronics Show (CES) Innovation Award (32 products, including MP3, Ultra mobile PC, and SSD)	Sung (2007)
	2008 Global Standard Management Award (new product innovation division) (From the Korea Management Association) (5 products, including Sense laptop, and SyncMaster Monitor)	Song (2008)
2009	2009 Consumer Electronics Show (CES) Innovation Award (42 products, including MP3, Ultra mobile PC, and SSD)	Park (2008)
	2009 Best Innovation Award (From HDI Show, Russia) (1 product, LED TV)	Yang (2009)
2010	2010 Consumer Electronics Show (CES) Innovation Award (21 products, including LED TV, Blu-ray player, and Home theater)	Lee (2009)
	2010 IEEE Corporate Innovation Recognition (1 service, Mobile WiMAX)	Choi (2010)
2011	2011 Consumer Electronics Show (CES) Innovation Award (30 products, including TV, Home theater, Washer, and SSD)	Yang (2011)

* Based on the information quien in references

5.4 PLANTING INNOVATION

Samsung Electronics (SE) has also focused on the creation of innovative results which may not realize any meaningful amount of revenue in the short term. The major results of planting innovation are original technologies which can result in competitive advantage and lead future business success in a long-term perspective. Executives of SE began to pay attention to this type of innovation results, at least since 2008. Vice Chairman Lee Yun-Woo stressed the importance of “technology preparation management” pursuing core technologies in order to respond to the

convergence across technologies and products (Yang, 2008). This statement exhibits the strong will of the CEO and executives to employ planting innovation.

The Samsung Advanced Institute of Technology (SAIT) has played a critical role in developing original technologies. Table 5.4 describes the research efforts currently proceeding in SAIT. The Future IT and Convergence domain seeks technologies across real 3D processing, communication theory and network, multicore processing, data intelligence, and medical imaging. The New Materials and Nanotechnology domain aims at developing areas, including flexible electronics, solid state lighting, film ceramic crystal composite materials, micro system integration, oxide materials and devices, spintronics, and nano structure and materials research. The Energy and Environment domain focuses on energy storage, energy conversion, and environment fields. The Bio and Health domain explores gene analysis and point of care testing (POCT). Indeed, Samsung has encouraged researchers to create a broad range of intellectual capital leading future technologies.

TABLE 5.4

Planting innovation in Samsung (SAIT)

Research domains	Specific technologies (examples)
Future IT & Convergence	Real 3D processing (3D capturing, multi-view, hologram, 3D touch technology)/ communication theory and network (high speed transmission technology)/ multicore processing (distinctive multi-core H/W and S/W platforms) / data intelligence (data analytics and personalized intelligence)/ medical imaging (molecular imaging)
New Materials & Nanotechnology	Flexible electronics (color display element technology, low temperature plastic backplane element technology)/ solid state lighting (LED technology) / film ceramic crystal composite materials (Quantum dot, CNT-BLU,

	printable OLED and plastic substrate) / micro system integration (Micro electro mechanical system (MEMS) technology)/ oxide materials & devices (amorphous oxide thin film transistor) / spintronics (new spin electronic device)/ nano structure & materials (meta-photonics, quantum dot Led, THz sources, energy harvesting and fiber electrocnics)
Energy & Environment	Energy storage (ultra light materials, new cooling material mechanisms)/ energy conversion (high photo efficiency technology)/ environment (electrochemical water treatment technology)
Bio & Health	Gene analysis (next generation human genome sequencing technology) / point of care testing (POCT) (noninvasive diagnostic techniques)

* Based on information retrieved from SAIT webpage (http://www.sait.samsung.co.kr)

Furthermore, SE seeks open innovation to improve efficiency and effectiveness of planting innovation. By doing this, the firm can create the innovative results with less burden. Vice Chairman Lee mentioned that open innovation needs to be encouraged due to shortened technology life cycle and convergence in the electronics industry (Yang, 2008). Following this notion, SE senior managers have focused on the utilization of external ideas and capabilities (Lee, 2011). Given the statements above, there is a strong consensus among executives about the need of utilizing external resources for its innovation.

M&A has been a major instrument to acquire external intellectual capital. SE has merged with several firms, including Amica (Polish Electronics) in 2009, and Transchip (Israel non-memory sediconductor manufacture) in 2008 (Jin, 2009). It has enabled SE to obtain already developed intellectual capital and dynamic capabilities, including R&D employees. For instance, the case company exhibited the intention of innovation orientation and HR retention in its letter to the board of directors as below:

SanDisk's Management and Employees

> *SanDisk is widely recognized for the quality of its people and its culture of innovation. For our part, that is a key reason we are attracted to your company and a significant portion of the transaction value to us is represented by the talented management and employees that we hope would continue to work for the company going forward. Our intention is to operate SanDisk as a separate subsidiary company inside of Samsung and to maintain the environment that has contributed to your success. We have a long term commitment to the space, financial stability and a strong desire to grow the SanDisk platform, thereby creating significant new opportunities for SanDisk employees. We do not plan to cut jobs. Rather, we want to work with you to find the best way to structure incentives to retain and motivate your key talent following the transaction (Kim, 2008).*

An additional route to obtain external technology is licensing. Firms are expected to manage a broader range of intellectual capital without investment by sharing their proprietary technologies with other participants. For example, SE and IBM established a cross-licensing agreement which allows the participants to utilize each other's patents for innovation in 2011 (Yonhap, 2011). These firms can share their patents without additional investment, resulting in the more stable basis for innovative activities. Therefore, this type of contract enables SE to implement

planting innovation with finite capacities. Executives of SE and IBM also announced that the objective of cross-licensing lies in sharing intellectual capital in the expectation of resulting innovative outputs.

> *"This licensing agreement will help both companies expedite innovation and achieve business growth by providing each company access to the other's patents for basic technologies," said Dr. Seungho Ahn, Executive Vice President and Head of the IP Center, Samsung Electronics. "We also hope the agreement will open new opportunities for wider collaboration between two of the leading innovators in the technology industry."*
>
> *"Patents and innovation are a critical component of IBM's high-value business strategy," said Ken King, vice president, Patents, Software & Services IP Licensing for IBM. "In addition to protecting the huge investment we make in R&D, patents also allow us establish cross-licenses, which provide IBM and partners like Samsung with significant freedom of action, which is essential in the competitive global business environment." (Yonhap, 2011)*

In sum, the case firm has implemented planting innovation which is expected to generate financial gains in the long term. SAIT has implemented several major research projects by itself. In addition, SE has utilized external capabilities through M&A and licensing. Despite the impressive results of planting innovation, the question of how SE will effectively leverage all of its innovative activities with

limited resource is still unanswered. In the next section, the role of convergence in managing both types of innovation is examined to answer this question.

5.5 AMBIDEXTERITY AND CO-INNOVATION

Since SE is implementing planting and harvesting innovation coincidently, one major task is balancing both types of innovative activities. Otherwise, the firm may suffer from the lack of financial cash flows or future momentum in leading the industry. Despite their excellent automatic watches, Swiss firms, like Omega, should overcome the danger of extinction in 1970s after Seiko, a Japanese manufacturer, initially developed the revolutionary quarts movement technology. In contrast, Texas Instrument (TI) failed to achieve commercial success as Japanese manufacturers did even though it initiated the development of transistor technology.

The current business environment forces firms to expand their strategic unit beyond existing organizational boundaries. Since the corporate activities are closely related to other subjects, like vendors, or research institutes, the effort of a single organization may not result in meaningful outcomes without collaboration. For instance, a firm may be disadvantaged due to the lack of excellent machinery from its suppliers. From this perspective, it can be said that the success and failure of firms today lies in managing the relationships among firms themselves and other stakeholders.

Beyond the conventional exploration and open innovation focusing on the use of external resources, SE has been searching for a solution to balance planting and harvesting innovation through co-innovation and its elements: convergence, collaboration, and co-creation with stakeholders (Lee, Olson, and Trimi, 2012) (see Figure 5.1). First of all, the VIP Center has mainly focused on the collaboration

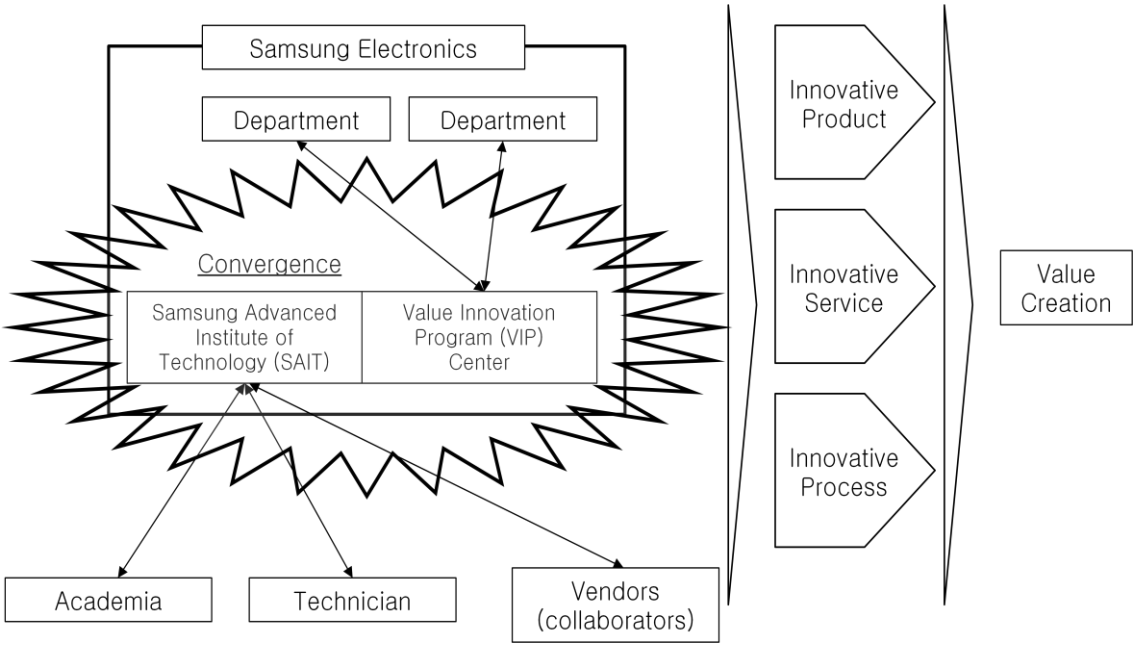
among intra-organizational departments. Resulting convergence across departments enables the firm to recognize the diverse viewpoints other than the opinions of engineers. Thus, SE can avoid the risk of overlooking customer demands, improving the quality of harvesting innovation. A VIP center Vice President Lee mentioned that firms interested in value innovation need to adopt a cross functional team (CFC) concept with a separate space to promote inter-departmental collaboration for value innovation (Song, 2005). This procedure is expected to encourage the formal and informal sharing of ideas, opinions and viewpoints since participants have more opportunities to communicate with one another. For instance, the CFC team consisting of marketers, designers, and engineers in the firm developed a new slim style laptop which caught the foney of Japanese consumers (Kim, 2004). Furthermore, the practitioners of the institution sometimes collaborate with an external partner. For instance, they worked with Prof. Noriaki's consulting team members to search solutions to improve innovation performance (Kim, 2004).

In addition, SAIT has played a key role in connecting SE with external entities. While SAIT has implemented its own research projects, it also has tried to manage inter-organizational networks with academia, technicians, and collaborators. It allows the firm to share the risks inherent in planting innovation. This type of solutions includes industry-academia collaboration projects, and M&As. By doing this, it can diminish the uncertainty of innovative practices. All these efforts allow the firm to maximize its value with finite organizational resources.

Another example of collaboration lies in its value-chain management beyond the use of external capabilities. Hyup-sung-hoe, an association of Samsung's collaborating vendors, has played a key role in co-innovation processes (Kim, 2009a). According to association president Lee, SE and collaborating vendors have

participated in managerial innovation activities, including sectional committees, and meetings. What all these articles stress is that Samsung's innovation activities cover its supply chain as well as the firm itself. Given the fact that current business activities must include vendors, the improvement of innovation capabilities of the value chain as well as a firm is essential for gaining competitive advantage. For instance, auto makers need to "nurture" good suppliers to produce an innovative vehicle. SE considers the embracement of new ventures with excellent technologies as another route for open innovation (Kim, 2009b). By doing this, the firm expects a higher level of technological capabilities in its business network. That is, the firm manages its supply chain to compete successfully, as opposed to exchanging products or services for monetary rewards. Figure 5.1 presents SE's value chain convergence activities.

SE has participated in industry-academia collaboration projects. This enables the case company to interact with partners as well as utilize their tangible and intangible resource. Particularly, research universities can provide professional scholars, their research capacities, and infrastructure. In 2012, SE established the Center for Intelligent Computing (CIC) with Seoul National University (Park, 2012). While the former supports the facilities and programs, the latter provides the research areas and faculty members. Such projects allow SE to benefit from the results of innovation while sharing the burden of investment. Furthermore, it seems likely that individual participants share ideas and opinions due to their "relationships" even after the official project is finished, beyond organizational boundaries.



* Based on the information from SAIT (www.SAIT.samsung.com) and Kim (2004)

FIGURE 5.1

Co-innovation in Samsung Electronics

In addition, SE has directly established the Samsung Talent Program (STP) with 14 Korean Universities as shown in Table 5.5 describes (Park, 2012). This program can nurture and develop R&D employees to fit its needs. It can be said that SE has collaborated with academia to acquire HR talent as well as intellectual capital for its innovation. This case also implies that a firm can influence organizational change of other participants to reflect its own needs for better convergence.

In sum, the use of a co-innovation mechanism has played a key role in managing planting and harvesting innovation with limited organizational resources. The case of Samsung revealed that the firm has tried to be intimately connected to the various innovation subjects, including diverse internal departments, academia, technicians, and suppliers to collaborate and co-create for value creation. In addition to external resources, the closely interconnected relationships among participants are

expected to improve innovation activities. Overall, co-innovation allows SE to manage both types of innovation while coping with its fast expanding global presence.

TABLE 5.5

Universities participating in the STP program

Universities participating in STP program
Kangwon University, Kyungbuk University, Kyunghee University, Korea University, Kwangwoon University, Pusan University, Sogang University, Sungkyunkwan University, Aju University, Inha University, Cheonnam University, Choongang University, Hanyang University, Hongik University

* Source: Park (2012)

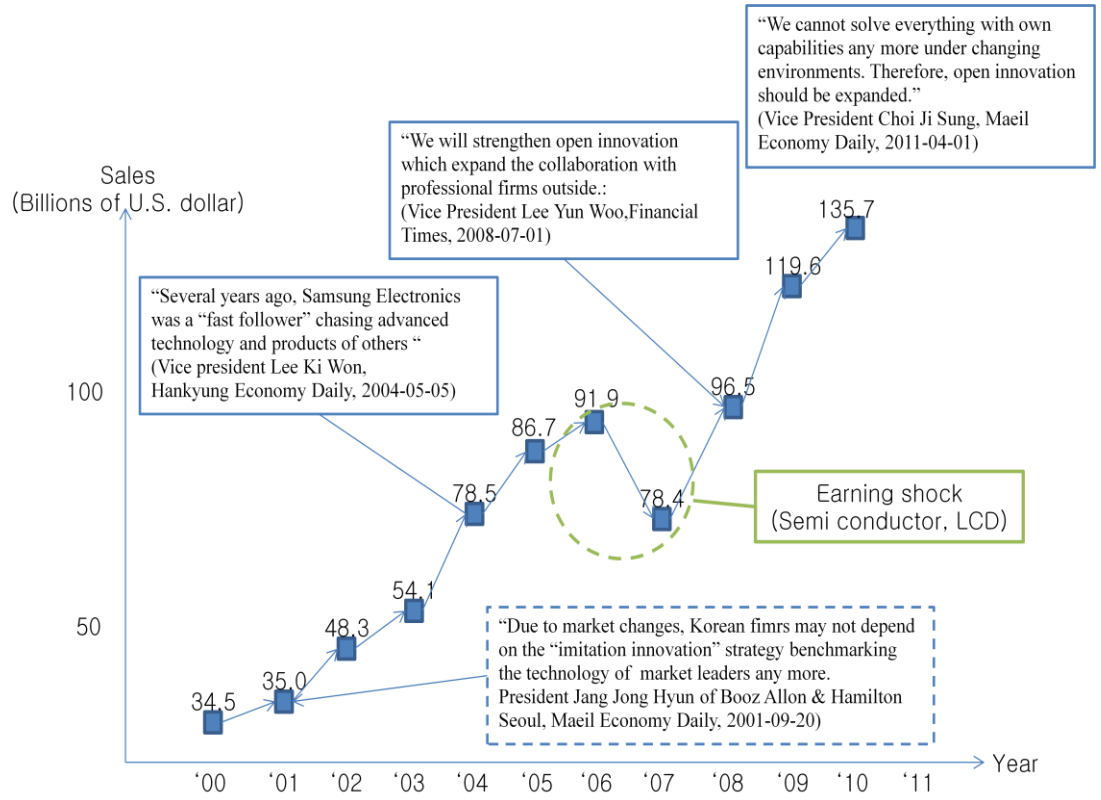
5.6 FINANCIAL PERFORMANCE

The innovation investment of Samsung Electronics has shown tremendous financial gains. The financial information from Daum (www.daum.net), a major portal site in Korea, exhibits that SE's sales volume has drastically increased since the early 2000. According to Song (2004a), SE was considered as just one of fast followers in the early 2000s. Since SE has paid more attention to harvesting innovation, its sales volume has surged from 2001 to 2004. This fact implies that the firm continued its growth while actively pursuing in the innovative activities which can create financial gains in the near future.

The revenue of the firm was drastically diminished in 2007 with the global financial crisis. This "earning shock" was due to the decrease of demands for LCDs and semiconductors (Park, 2007). In addition, it confronted a long-lasting crisis, soon afterward. In 2012, the Federal Reserve Bank announced that the net asset of median

family in the US dwindled by 38.8% from 2007 as a result of “the Great Recession” from December 2007 to June 2009 as shown in Figure 5.2 (Bae & Go, 2012). Given the common sense that the consumption of middle class families in the U.S. has been the locomotive of global economy for decades, it can be said that the effect of the crisis on the macro-economic environment would be challenging for years to come. Therefore, SE should pursue even more innovations to overcome this crisis. Otherwise, the firm may suffer from the diminishing demands for its current products, services, or technologies.

Samsung executives began to search solutions for the creation of original technologies, while continuing its harvesting innovation. Since 2008, the vice president explicitly announced the importance of original technologies (Yang, 2008). Despite the global financial crisis (Bae & Go, 2012), SE has continued its growth. In 2010, the revenue was approximately $ 135.7 billion. Therefore, it can be said that SE has steadily expanded its business after it introduced harvesting and planting innovation even though it had to deal with a hostile macro-economic environment.



* Based on the financial information from Daum (www.daum.net), and news articles from Naver (www.naver.com)

FIGURE 5.2

Financial trend of Samsung Electronics

5.7 SUMMARY

Qualitative analysis showed how Samsung Electronics (SE) implemented planting and harvesting innovation. Based on blue ocean theory, SE succeeded in developing globally renowned products. SE also pursued original technology which may result in an advantage in technology-driven industry. Furthermore, co-innovation enables SE to balance planting and harvesting innovation with finite resources. These efforts explain the financial success of SE.

CHAPTER 6

DISCUSSION AND CONCLUSION

6.1 INTRODUCTION

This chapter describes the interpretation of research results. Firstly, the results of quantitative and qualitative analyses are discussed. The statistical method was employed to answer the research question: How do planting and harvesting innovation interact with other factors and firm performance? The case study examined the following research question: How are planting and harvesting innovation implemented in a real business? In addition, the limitations and implications of the analysis are presented.

6.2 DISCUSSION

This dissertation investigated planting and harvesting innovation to answer the research question, “Which classification of innovation explains the heterogeneous timing of revenue realization?” While harvesting innovation seeks commercial results in the short term, planting innovation pursues the development of technology for a long time. For instance, a firm with the CDMA wireless technology may not succeed financially without the dispersion of mercantile CDMA phones. Given finite resources, firms need to balance planting and harvesting innovation efficiently. Otherwise, they fail to develop both new products for market launching and original technologies for future while continuing their businesses.

Both quantitative and qualitative analyses were implemented to investigate this research topic. To answer the second research question, “How do planting and harvesting innovation interact with other factors and firm performance?,” phase 1

examined the relationship between precedent factors, planting and harvesting innovation, and firm performance through a quantitative analysis. For this purpose, PLS analysis was employed to verify the path model and cross-sectional models with limited data. This method enables the research of exploratory topics with a small sample. In addition, the PLS method is free from several statistical assumptions, including normal distribution of the data (Chin, 1997; Hair, Ringle, & Sarstedt, 2011).

The path analysis described the overall relationships among planting and harvesting innovation, ownership concentration, absorptive capacity, and firm performance. Ownership concentration was shown to be negatively related to planting innovation. This result supports the notion that firms are more likely to develop original technology when they can share risk with more investors. Given the fact that the original purpose of corporation is to collect capital for investing at the public stock market, firms adhering to this purpose tend to disperse their ownership.

The influence of absorptive capacity on both types of innovation was not significant. The researcher provides several possible reasons for this result. Since Korean SMEs are mostly suppliers to global giants, they may not have their own planting and harvesting innovation programs. Rather, they are tied to the major buyers' innovation plans. Therefore, statistical analysis may fail to observe the effects of absorptive capacity with the current sample. In addition, many local companies may depend on non-innovative strategies, including cost advantage. More research is needed to verify this issue.

Cross-lagged analysis allows the researcher to examine the hypotheses from the long term perspective by identifying auto-regressive effects (Baysinger & Butler, 1985; Davidson & Rowe, 2004; Delma & Wilklund, 2008; Fullagar, Gallagher, Clark, & Carroll, 2004). Harvesting innovation at time 1 discourages planting innovation at

time 2. Both planting and harvesting innovation requires a huge amount of investment. Given the limited resources, firms tend to focus on harvesting innovation which is expected to realize cash flow earlier. Therefore, it can discourage planting innovation activities. The influence of planting and harvesting innovation on firm performance was not significant in both cross-sectional and longitudinal analysis. One possible explanation is that the time frame of 5 years may be too short to observe the effects of innovation. Even though the financial return from harvesting innovation is faster than that from planting innovation, it may take longer than 5 years. The study using a longer period of data (e.g. 10 years) is recommended to overcome this issue.

Phase 2 investigated how firms manage planting and harvesting innovation through a case study as the third research question presents, “How are planting and harvesting innovation implemented in a real business?” Samsung Electronics (SE) was chosen as a case company since it is the largest electronics firm in the world and used innovation as a vehicle to move from an outsourcing firm to a global giant in innovation. Currently, its sales volume is approximately $138 billion, #2 in the U.S. patents ranking (#1: IBM), and it is ranked #36 in FT Global 500. It is a dramatic success for a local firm which began its business in the 1970s. Since SE has announced that innovation is the core of its business activities in its mission statement, the researcher investigates how it has implemented planting and harvesting innovation, resulting in its current status.

SE has participated in various activities to develop innovative new technology as well as products. The interview indirectly collected from news articles allows the researcher to grasp the innovative activities in SE. Harvesting innovation has led to the development of diverse, new products which receive world-renowned innovation awards. SE has also focused on planting innovation which can result in

original technology. Based on blue ocean strategy, Value Innovation Program (VIP) Center has been accountable for the development new products for market launching. Samsung Advanced Institute of Technology (SAIT) aims to pursue original technologies which guarantee technological advances in future.

Furthermore, co-innovation and its elements, convergence, collaboration, and co-creation, (Lee, Olson, & Trimi, 2012) enables SE to balance planting and harvesting innovation while continuing its business. Collaboration may be the key success factor of SE since it allows application of tacit knowledge for convergence. VIP Center has played a critical role in encouraging the collaboration among different departments. This enables the development of a new product reflecting diverse stakeholders. SAIT has been responsible for the collaboration with outside participants, including academic researchers, technicians, and vendors to co-create value. It enables the firm to pursue innovative outcomes while managing financial status. The financial performance of SE also exhibits that its innovation activities have resulted in meaningful progress.

6.3 LIMITATIONS AND IMPLICATIONS

This study is not free from weakness. The generalizabilty of this study may be constrained due to several reasons as scholars like Tversky and Kahneman (1986) concerned. The quantitative analysis used a Korean sample of firms which may limit the application of results to other cultures. In addition, the use of a single case analysis may constrain the generalization of results. Since the time frame of this study is limited primarily from 2006 to 2010, this study may not avoid the limitation of a specific time period. Future researchers are recommended to overcome these limitations by using a more easily generalized sample, multiple samples, and broader

time frame.

Despite the limitations, this research provides several meaningful implications. Theoretically, it presents a new distinction of innovation: planting and harvesting innovation. Although various classifications of innovation have been provided (March, 1991; Damanpour, Walker, & Avellaneda, 2009; Dewar & Dutton, 1986; Ettlie, Bridges, & O'Keefe, 1984), few researchers pay attention to whether the purpose of innovation is the commercialization of its results in the short term. While planting innovation aims to develop original technologies, harvesting innovation focuses on the development of new products for market launching. The researcher is convinced that this new categorization will contribute to the development of the management field. It reminds researchers of the fact that the collection period of innovation investment should be considered during the strategic decision making. Firms participating in innovation projects may suffer from financial problems. From this perspective, the planting and harvesting framework is believed to provide useful implications to innovation researchers.

This study also provides implications from methodological perspectives. The combination of PLS method and cross-lagged model enables scholars to implement longitudinal analysis even when the data is weak. PLS analysis is expected to work well with the small sample size and rough data (Chin, 1997; Hair, Ringle, & Sarstedt, 2011). Cross-sectional analysis has been used to observe the longitudinal effects of independent factors (Baysinger & Butler, 1985; Davidson & Rowe, 2004; Delma & Wilklund, 2008; Fullagar, Gallagher, Clark, & Carroll, 2004). Therefore, it can contribute to examine contexts in which researchers cannot obtain the large database. For instance, many other countries do not have a large number of companies as U.S.

The use of indirect interviews from news articles allows the author to observe

the opinions of Samsung executives over time. In addition, it can collect the interviews of executives at that time rather than ask a few, current employees about what happened in the past. It provides future researchers with proper methods of studying exploratory research issues. Overall, the research method used in this study enables scholars to investigate the strategy and management field with limited data. The use of this underused but promising methodology can contribute to overcome the limitations in this area.

Practitioners can obtain lessons from the results of this study. They are recommended to disperse investment risk with more shareholders to implement planting innovation. The convergence of internal and external entities, including suppliers, academia, and other businesses is essential to cope with the investment in both types of innovation. In addition, they are recommended to closely interact with intra-organizational departments and outside participants, including vendors, research institutions, and technicians to achieve innovative results. Furthermore, they need to nurture innovative capabilities of entire internal and external stakeholders as co-innovators. This allows firms to achieve expected innovative results due to the synergy among participants.

6.4 CONCLUSION

In sum, this dissertation investigates the research question, "Which classification of innovation explains the heterogeneous timing of revenue realization?" In high-tech industries, leading firms should pursue innovative results to maintain their current status. In addition, they should evolve their interactions with stakeholders to the level of "co-innovation." Otherwise, they cannot lead or create new trends with finite resources, resulting in their perishing.

The planting and harvesting framework provides valuable implications for both researchers and practitioners. While the former enables firms to expect commercial gains in the short term, the latter pursues breakthrough in the long term. Firms are recommended to consider the collection period of their innovation investment to manage both innovation outcomes and financial cash flow. Quantitative analysis implies that firms need to share risk with more stock owners for planting innovation. The result of the case study was the highlighting of the significance of co-innovation to manage innovation projects efficiently. Firms should expect competitive advantage and better performance by converging, collaborating, and co-creating with stakeholder.

REFERENCE

Aboulnasr, K., Narasimhan, O., Blair, E., & Chandy, R. (2008). Competitive response to radical product innovations. Journal of Marketing, 72, 94-110.

Adler, P. S., Goldoftas, B., & Levine, D. I. (1999). Flexibility versus efficiency? A case study of model changeovers in the Toyota production system. Organization Science, 10, 43-68.

Afuah, A. N. (1998). Innovation Management: Strategies, Implementation, and Profits. London: Oxford University Press.

Ahuja, G. & Lampert, C. M. (2001). Entrepreneurship in the large corporation: A longitudinal study of how established firms create breakthrough inventions. Strategic Management Journal, 22, 521-543.

Aiken, M. & Hage, J. (1971). The organic organization and innovation. Sociology, 5, 63-82.

Alchian, A. A. & Demsetz, H. (1972). Production, information cost, and economic organization. American Economic Review, 62, 777-795.

Ali, A. (1994). Pioneering versus incremental innovation: Review and research propositions. Journal of Product Innovation Management, 11, 46-61.

Almirall, E. & Casadesus-Masanell, R. (2010). Open versus closed innovation: A model of discovery and divergence. Academy of Management Review, 35, 27-47.

Amihud, Y. & Lev, B. (1999). Does corporate ownership structure affect its strategy towards diversification. Strategic Management Journal, 20, 1063-1069.

Andersen, T. (2008). The performance relationship of effective risk management: Exploring the firm-specific investment rationale. Long Range Planning, 41, 155-176.

Andersen, T. (2011). The risk implications of multinational enterprise. International Journal of Organizational Analysis, 19, 49-70.

Andriopoulos, C. & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. Organization Science, 20, 696-717.

Attride-Stirling, J. (2001). Thematic networks: An analytic tool for qualitative research. Qualitative Research, 1, 385-405.

Audretsch, D. B. & Feldman, M. P. (1996). R&D spillovers and the geography of innovation and production. American Economic Review, 86, 630-640.

Baccara, M. & Razin, R. (2006). Curb your innovation: On the relationship between innovation and governance structure. NYU Working Paper No. CLB-06-010. Retreived at SSRN:http:ssrn.com/abstract=1291578

Bae, B. & Go, S. (2012). The middle class in Korea and U.S. was demolished as the result of the global financial crisis in 2008. Kukminilbo, 2012-06-12, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=005&aid=0000514948

Baldridge, J. V. & Burnham, R. A. (1975). Organizational innovation: Individual, organizational, and environmental impacts. Administrative Science Quarterly, 20, 165-176.

Balkin, D. B., Markman, G. D., & Gomez-Mejia, L. R. (2000). Is CEO pay in high-technology firms related to innovation? Academy of Management Journal, 43, 1118-1129.

Bantel, K. A. & Jackson, S. E. (1989). Top management and innovations in banking: does the composition of the top team make a difference? Strategic

Management Journal, 10, 107-124.

Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17, 99-120.

Bateman, T. S. & Strasser, S. (1984). A longitudinal analysis of the antecedents of organizational commitment. Academy of Management Journal, 27, 95-112.

Baysinger, B. D. & Butler, H. N. (1985). Corporate governance and the board of directors: Performance effects of changes in board composition. Journal of Law, Economics, & Organization, 1, 101-124.

Baysinger, B. D., Kosnik, R. D., & Turk, T. A. (1991). Effects of board and ownership structure on corporate R&D strategy. Academy of Management Journal, 34, 205-214.

Belkaoui, A. & Pavlik, E. (1992). The effects of ownership structure and diversification strategy on performance. Managerial and Decision Economics, 13, 343-352.

Benner, M. J. & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. Academy of Management Review, 28, 238-256.

Berle, A. & Means, G. (1933). The Modern Corporation and Private Property. New York: Macmillan.

Bolton, P. & Von Thadden, E-. L. (1998). Block, liquidity and corporate governance. Journal of Finance, 53, 1-25.

Bontis, N. & Serenko, A. (2009). Longitudinal knowledge strategizing in a long-term healthcare organization. International Journal of Technology Management, 47, 276-297.

Boyd, B., Gove, S., & Hitt, M. (2005). Construct measurement in strategic

management research: Illusion or reality? Strategic Management Journal, 26, 239-257.

Brozen, Y. (1951). Invention, innovation, and imitation. American Economic Review, 41, 239-257.

Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. Industrial Marketing Management, 31, 515-524.

Cave, R. (1980). Industrial organization, corporate strategy and structure. Journal of Economic Literature, 58, 64-90.

Chaganti, R. & Damanpour, F. (1991). Institutional ownership, capital structure, and firm performance. Strategic Management Journal, 12, 479-491.

Chandy, R. K. (2000). The incumbent's curse? Incumbency, size, and radical product innovation. Journal of Marketing, 64, 1-17.

Chen, C-. J. (2004). The effects of knowledge attribute, alliance characteristics, and absorptive capacity on knowledge transfer performance. R&D Management, 34, 311-321.

Chen, Y-. S., Lin, M. J., & Chang, C-. H. (2009). The positive effects of relationship learning and absorptive capacity on innovation performance and competitive advantage in industrial markets. Industrial Marketing Management, 38, 152-158.

Chesbrough, H. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. Industrial and Corporate Change, 11, 529-555.

Chesbrough, H. (2003). Open Innovation: The New Imperative for Creating and Profiting from Technology. Boston, MA: Harvard Business School

Publishing.

Chesbrough, H. & Crowther, A. K. (2006). Beyond high tech: Early adopters of open innovation in other industries. R&D Management, 36, 229-236.

Chin, W. W. (1997). Overview of the PLS method. Retrieved at http://disc-nt.cba.uh.edu/chin/PLSINTRO.HTM

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), Modern Methods for Business Research: pp. 295-336. Mahwah: Lawrence Erlbaum.

Choi, J. (2010). Samsung Electronics receives IEEE corporate innovation recognition for the first time as the Korean firm. EBN, 2010-06-28, Retrieved at http://www.ebn.co.kr/news/n_view.html?id=443881

Choi, S. B., Lee, S. H., & Williams, C. (2011). Ownership and firm innovation in a transition economy: Evidence from China. Research Policy, 40, 441-452.

Clydesdale, G. (2007). Economic decline and the failure of Chinese entrepreneurs. Quarterly Journal of Austrian Economics, 10, 160-179.

Cohen, W. M. & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. Administrative Science Quarterly, 35, 128-152.

Combs, J. G. (1999). Explaining interfirm cooperation and performance: Toward a reconciliation of predictions from the resource-based view and organizational economics**.** Strategic Management Journal, 20, 867-888.

Crossan, M. & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. Journal of Management Studies, 47, 1154-1191.

Daft, R. L. (1978). A dual-core model of organizational innovation. Academy of Management Journal, 21, 193-210.

Daft, R. L. (1982). Bureaucratic versus nonbureaucratic structure and the process of innovation and change. In S.B. Bacharach (Ed.), Research in the Sociology of Organizations, Greenwich, Conn: JAI Press.

Daft, R. L. (1983). Organization Theory and Design. New York: West.

Damanpour, F. & Evan, W. M. (1984). Organizational innovation and performance: The problem of "organizational lag." Administrative Science Quarterly, 29, 392-409.

Damanpour, F., Szabat, K. A., & Evan, W. M. (1989). The relationship between types of innovation and organizational performance. Journal of Management Studies, 26, 587-601.

Damanpour, F., Walker, R. M., & Avellaneda, C. N. (2009). Combinative effects of innovation types and organizational performance: A longitudinal study of service organizations. Journal of Management Studies, 46, 650-675.

Danneels, E. (2002). The dynamics of product innovation and firm competences. Strategic Management Journal, 23, 1095-1121.

Darroch, J. (2005). Knowledge management, innovation and firm performance. Journal of Knowledge Management, 9, 101-115.

David, P., Hitt, M., & Gimeno, J. (2001). The influence of activism by institutional investors on R&D. Academy of Management Journal, 44, 144-157.

Davidson, W. N. & Rowe, W. (2004). Intertemporal endogeneity in board composition and financial performance. Corporate Ownership & Control, 1, 49-60.

Deeds, D. L. (2001). The role of R&D intensity, technical development and absorptive capacity in creating entrepreneurial wealth in high technology start-ups. Journal of Engineering and Technology Management, 18, 29-47.

Delmar, F. & Wilklund, J. (2008). The effect of small business managers' growth

motivation on firm growth: A longitudinal study. Entrepreneurship: Theory and Practice, 32, 437-457.

Denis, D. J., Denis, D. K., & Sarin, A. (1999). Agency theory and the influence of equity ownership structure on corporate diversification strategies. Strategic Management Journal, 20, 1071-1076

Dewar, R. D. & Dutton, J. E. (1986). The adoption of radical and incremental innovations: An empirical analysis. Management Science, 32, 1422-1433.

Dhanaraj, C. & Beamish, P. W. (2004). Effect of equity ownership on the survival of international joint ventures. Strategic Management Journal, 25, 295-305.

Dougherty, D. & Hardy, C. (1996). Sustained product innovation in large, mature organizations: Overcoming innovation-to-organization problems. Academy of Management Journal, 39, 1120-1153.

Downs, G. W. & Mohr, L. B. (1976). Conceptual issues in the study of innovation. Administration Science Quarterly, 21, 700-714.

Drucker, P. F. (1969). Management's new role. Harvard Business Review, 47, 49-54.

Economic Review (2005). Vice chairman Yun Jong Yong [Technology innovation and management]. Economic Review, 2005-07-06, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=114&oid=093&aid=0000001563

Eisenhardt, K. M. (1989a). Agency theory: An assessment and review. Academy of Management Review, 14, 57-74.

Eisenhardt, K. M. (1989b). Building theories from case study research. Academy of Management Review, 14, 532-550.

Eisenhardt, K. M. & Martin, J. A. (2000). Dynamic capabilities: What are they? Strategic Management Journal, 21, 1105-1121.

Eisenhardt, K. M. & Schoonhoven, C. B. (1996). Resource-based view of strategic alliance formation: Strategic and social effects in entrepreneurial firms. Organization Science, 7, 136-150.

Ettlie, J. E., Bridges, W. P., & O'Keefe, R. D. (1984). Organization strategy and structural differences for radical versus incremental innovation. Management Science, 30, 682-695.

Ettlie, J. E. & Reza, E. M. (1992). Organizational integration and process innovation. Academy of Management Journal, 35, 795-827.

Evan, W. M. (1966). Organizational lag. Human Organizations**,** Spring, 51-53.

Fabrizio, K. R. (2009). Absorptive capacity and the search for innovation. Research Policy, 38, 255-267.

Fahy, J. (2002). A resource-based analysis of sustainable competitive advantage in a global environment. International Business Review, 11, 57-77.

Fornell, C. & Bookstein, F. L. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. Journal of Marketing Research, 19, 440-452.

Fosfuri, A. & Tribo, J. A. (2008). Exploring the antecedents of potential absorptive capacity and its impact on innovation performance. Omega, 36, 173-187.

Francis, J. & Smith, A. (1995). Agency costs and innovation some empirical evidence. Journal of Accounting and Economics, 19, 383-409.

Friedrich, T. L., Mumford, M. D., Vessey, B., Beeler, C. K., & Eubanks, D. L. (2010). Leading for innovation. International Studies of Management and Organization, 40, 6-29.

Fritz, R. (1951). Innovation in business: A systemic presentation. American Journal of Economics and Sociology, 10, 285-291.

Fullagar, C., Gallagher, D., Clark, P., & Carroll, A. (2004). Union commitment and participation: A 10-year longitudinal study. Journal of Applied Psychology, 89, 730-737.

Galbreath, J. (2006). Does primary stakeholder management positively affect the bottom line?: Some evidence from Australia. Management Decision, 44, 1106-1121.

Galunic, C. & Rodan, S. (1998). Resource recombinations in the firm: Knowledge structures and the potential for Schumpeterian innovation. Strategic Management Journal, 19, 1193-1201.

Gatignon, H., Tushman, M. L., Smith, W., & Anderson, P. (2002). A structural approach to assessing innovation: Construct development of innovation locus, type, and characteristics. Management Science, 48, 1103-1122.

Gedajlovic, E., Cao, Q., & Zhang, H. (2011). Corporate shareholdings and organizational ambidexterity in high-tech SMEs: Evidence from a transitional economy. Journal of Business Venturing, (In Press) Retrieved at http://www.sciencedirect.com/science/article/pii/S0883902611000553

Georsky, P. A. (2005). Understanding the implications of empirical work on corporate growth rates. Managerial and Decision Economics, 26, 129-138.

Gibbert, M., Ruigrok, W., & Wicki, B. (2008). What passes as a rigorous case study? Strategic Management Journal, 29, 1465-1475.

Gibson, B. & Cassar, G. (2005). Longitudinal analysis of relationships between planning and performance in small firms. Small Business Economics, 25, 207-222.

Gibson, C. B. & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. Academy of Management Journal, 47,

209-226.

Gopalakrishnan, S. & Damanpour, F. (1997). A review of innovation research in economics, sociology, and technology management. Omega, 25, 15-28.

Götz, O., Liehr-Gobbers, K., & Krafft, M. (2009). Evaluation of structural equation models using the partial least squares (PLS) approach. In V. Vinzi, W. Chin, J. Henseler, & H. Want (Eds.), Handbook of Partial Least Squares: Concepts, Methods, and Applications. Berlin: Springer.

Green, S. G., Gavin, M. B., & Aiman-Smith, L. (1995). Assessing a multidimensional measure of radical technological innovation. IEEE Transactions on Engineering Management, 42, 203-214.

Grimpe, C. & Sofka, W. (2009). Search patterns and absorptive capacity: Low-and high-technology sectors in European countries. Research Policy, 38, 495-506.

Gruber, H. (1992). Persistence of leadership in product innovation. Journal of Industrial Economics, 40, 359-375.

Gummesson, E. (2000). Qualitative Methods in Management Research. Thousand Oaks, CA: Sage.

Gumusluoglu, L. & Ilsev, A. (2009). Transformational leadership, creativity, and organizational innovation. Journal of Business Research, 62, 461-473.

Hair, J., Ringle, C., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of Marketing Theory and Practice, 19, 139-152.

Hambrick, D. C. & D'Aveni, R. A. (1992). Top team deterioration as part of the downward spiral of large corporate bankruptcies. Management Science, 38, 1445-1466.

Han, J. K., Kim, N., & Srivastva, R. K. (1998). Market orientation and organizational performance: Is innovation a missing link? Journal of Marketing, 62, 30-45.

Haro-Domínguez, M., Arias-Aranda, D., Lloréns-Montes, F., & Moreno, A. (2007). The impact of absorptive capacity on technological acquisitions engineering consulting companies. Technovation, 27, 417-425.

Hansen, M. T. & Birkinshaw, J. (2007). The innovation value chain. Harvard Business Review, 85, 121-130.

Hassard, J. (1991). Multiple paradigms and organizational anlaysis: A case study. Organization Studies, 12, 275-299.

Hatch, N. W. & Mowery, D. C. (1998). Process innovation and learning by doing in semiconductor manufacturing. Management Science, 44, 1461-1477.

He, Z-. L. & Wong, P-. K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. Organization Science, 15, 481-494.

Henseler, J., Ringle, C., & Sinkovics, R. (2009). The use of partial least squares path modeling in international marketing. Advances in international Marketing, 20, 277-319.

Hernán, R., Marín, P. L., & Siotis, G. (2003). An empirical evaluation of the determinants of research joint venture formation. Journal of Industrial Economics, 51, 75-89.

Hill, C. W. & Snell, S. A. (1988). External control, corporate strategy, and firm performance in research intensive industries. Strategic Management Journal, 9, 577-590.

Hill, C. W. & Snell, S. A. (1989). Effects of ownership structure and control on corporate productivity. Academy of Management Journal, 32, 25-46.

Hong, S. (2004). LG-Samsung Electronics, “Awards.” Financial News, 2004-01-08, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid

=014&aid=0000103808

Hoskisson, R. E., Hitt, M. A., Wan, W. P., & Yiu, D. (1999). Theory and research in strategic management: Swings of a pendulum. Journal of Management, 25, 417-456.

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. Strategic Management Journal, 20, 195-204.

Hwang, I. (2001). No future for Korean firms: (1) Technology imitation. Maeil Business Newspaper, 2001-09-20, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=009&aid=0000151003

Jang, S., Hong, K., Bock, G. W., & Kim, I. (2002). Knowledge management and process innovation: The knowledge transformation path in Samsung SDI. Journal of Knowledge Management, 6, 479-485.

Jansen, J. (2005). Ambidextrous organizations: A multiple-level study of absorptive capacity, exploratory and exploitative innovation, and performance. Doctoral dissertation. Erasmus Research Institute of Management, Erasmus University. Retreived at http://repub.eur.nl/res/pub/6774/.

Jansen, J., Van den Bosch, F. A. J., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation and performance: Effects of organizational antecedents and environmental moderators. Management Science, 52, 1161-1174.

Jansen, J., Vera,D., & Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism. Leadership Quarterly, 20, 5-18.

Jansen, J., Volberda, H., & Van den Bosch, F. (2005). Exploratory innovation, exploitative innovation, and ambidexterity: The impact of environmental and organizational antecedents. Schmalenbach Business Review, 57, 351-363.

Jensen, M. C. & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. Journal of Financial Economics, 3, 305-360.

Jeon, J. (2009). Firms with sales volume more than 150 billion Won are excluded from small and medium businesses. Maeil Business Daily, 2009-03-17, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=009&aid=0002080856

Jin, S. (2009). Samsung takes over Polish Amico. Moneytoday, 2009-12-22, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=008&aid=0002254573

Johannessen, J. A., Olsen, B., & Lumpkin, G. T. 2001. Innovation as newness: What is new, how new, and new to whom? European Journal of Innovation Management, 4, 20-31.

Johnson, J. L., Sohi, R. S., & Grewal, R. (2004). The role of relational knowledge stores in interfirm partnering. Journal of Marketing, 68, 21-36.

Jöreskog, K.G. & Wold, H. (1982). The ML and PLS Techniques For Modeling with Latent Variables: Historical and Comparative Aspects. In H. Wold and K. Jöreskog (Eds.), Systems Under Indirect Observation: Causality, Structure, Prediction, Amsterdam: North-Holland.

Julien, P. & Ramangalahy, C. (2003). Competitive strategy and performance of

exporting SMEs: An empirical investigation of the impact of their export information search and competencies. Entrepreneurship Theory & Practice, 27, 227-245.

Kachaner, N., Lindgardt, Z., &Michael, D. (2011). Innovating low-cost business models. Strategy & Leadership, 39, 43-48.

Kang, K (2005). Korean digital technologies chase Japan. Naeil Sinmun, 2005-01-13, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=105&oid=086&aid=0000012376

KASB (2001). Statement of Korean accounting standards. Seoul, Korea: Korean Accounting Standards Board. Retrieved at http://eng.kasb.or.kr/web/services/bbs/bbsView.action?bbsBean.bbsCd=25&bbsBean.bbsSeq=3&searchBean.currentPage=1&ctgCd=&searchBean.startDt=&searchBean.endDt=&searchBean.searchKey=1&searchBean.searchVal=

Kelm, K. M., Narayanan, V. K., & Pinches, G. E. (1995). Shareholders value creation during R&D innovation and commercialization stages. Academy of Management Journal, 38, 770-786.

Kim, N. (2003). Consumer electronics show (CES): The vogue of Digital TV. Daily Kookmin, 2003-1-10, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=005&aid=0000133389

Kim, M. (2004). The era of value innovation: (4) VI embedded in Samsung. Hankyung Business Daily, 2004-05-01, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=015&aid=0000706224

Kim, Y. (2005). Samsung Electronics launches 39cm width CRT TV. EBN, 2005-01-31, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=001&oid=120&aid=0000001029

Kim, Y. (2007). Samsung value innovation program (VIP) center. Financial News, 2007-11-04, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=014&aid=0000355858

Kim, B. (2008). Samsung Electronics announces proposal for combination with Sandisk in letter to board of directors. Moneytoday, 2008-09-17, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=008&aid=0002034388

Kim, C. (2009a). Collaborating vendors benefit from Samsung Electronics. Maekyung Economy, 2009-08-06, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=024&aid=0000026894

Kim, M. (2009b). Samsung embraces ventures. Munhwailbo, 2009-11-04, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=021&aid=0002013900

Kim, W. & Maugborne, W. (2005). Blue Ocean Strategy. Boston, MA: Harvard Business School Press.

Kimberly, J. R. & Evanisko, M. J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. Academy of Management

Journal, 24, 689-713.

Lado, A. A. & Wilson, M. C. (1994). Human resource systems and sustained competitive advantage: A competency-based perspective. Academy of Management Review**,** 19, 699-727.

Lane, P. J., Cannella, A. A., Jr., & Lubatkin, M. H. (1998). Agency problems as antecedents to unrelated mergers and diversification: Amihud and Lev reconsidered. Strategic Management Journal, 19, 555-578.

Lane, P. J., Koka, B. R., & Pathak, S. (2006). The reification of absorptive capacity: A critical review and rejuvenation of the construct. Academy of Management Review, 31, 833-863.

Lane, P. J. & Lubatkin, M. (1998). Relative absorptive capacity and interorganizational learning. Strategic Management Journal, 19, 461-477.

Lane, P. J., Salk, J. E., & Lyles, M. A. (2001). Absorptive capacity, learning, and performance in international joint ventures. Strategic Management Journal, 22, 1139-1161.

Larsson, R. & Finkelstein, S. (1999). Integrating strategic, organizational, and human resource perspectives on mergers and acquisitions: A case study of synergy realization. Organizational Science, 10, 1-26.

Lau, C-. M. & Ngo, H-. Y. (2004). The HR system, organizational culture, and product innovation. International Business Review, 13, 685-703.

Lee, K. (2005a). Samsung & LG receive “CES2006” innovation awards. Digitaltimes, 2005-11-17, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=105&oid=029&aid=0000120483

Lee, T. (2005b). [Searching blue ocean] Large firms: Samsung Electronics, Be a

consumer. Hankyung Business Daily, 2005- 10 – 10, Retrieved at http://www.hankyung.com/news/app/newsview.php?aid=2005100701291.

Lee, S. (2006a). Samsung & LG sweep “CES innovation awards.” Moneytoday, 2006-11-09, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=008&aid=0000719042

Lee, T. (2006b). Korea innovation forum: Samsung electronics VIP center. Hankyung Business Daily, 2006-2-14, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=015&aid=0000872791

Lee, H. (2009). Samsung Electronics receives CEO 2010 innovation awards for 23 products. Nocutnews, 2009-11-12, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=105&oid=079&aid=0002107115

Lee, D. (2011). Samsung Electronics vice president Choi Jisung: Respond early to even natural disasters. Daily Maekyung, 2011-04-01, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=009&aid=0002439029

Lee, S. M. & Olson, D. L. (2010). Convergenomics: Strategic innovation in the convergence era. Burlington, VT: Gower Publishing.

Lee, S. M., Olson, D.L., & Trimi, S. (2010). The impact of convergence on organizational innovation. Organizational Dynamics, 39, 218-225.

Lee, S. M., Olson, D. L., & Trimi, S. (2012). Co-innovation: Convergenomics, collaboration, and co-creation for organizational values. Management Decision, 50, 817-831.

Lee, P. M. & O'Neill, H. M. (2001). Ownership structures and R&D investments of U.S. and Japanese firms: Agency and stewardship perspectives. Academy of Management Journal, 46, 212-225.

Lengnick-Hall, C. A. (1992). Innovation and competitive advantage: What we know and what we need to learn. Journal of Management, 18, 399-429.

Li, H. & Atuahena-Gima, K. (2001). Product innovation strategy and the performance of new technology ventures in China. Academy of Management Journal, 44, 1123-1134.

Liao, S., Fei, W. C., & Chen, C. C. (2007). Knowledge sharing, absorptive capacity, and innovation capability: An empirical study of Taiwan's knowledge-intensive industries. Journal of Information Science, 33, 340-359.

Lim, H. (2003). Samsung Electronics receives IF design award. Yonhap News, 2003-03-13, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=105&oid=001&aid=0000333531

Lim, Y. (2004). Samsung launches a DLP projection looks like a wall-mounted TV. Digital Times, 2004-07-19, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=105&oid=029&aid=0000074453

Lim, L., Garnsey, E., & Gregory, M. (2006). Product and process innovation in biopharmaceuticals: A new perspective on development. R&D Management, 36, 27-36.

Lin, Z., Yang, H., & Arya, B. (2009). Alliance partners and firm performance: Resource complementarity and status association. Strategic Management Journal, 30, 921-940.

Loh, L. & Venkatraman, N. (1992). Determining of information technology outsourcing: A cross-sectional analysis. Journal of Management Information Systems, 9, 7-24.

Lorenzoni, G. & Lipparini, A. (1999). The leveraging of interfirm relationships as a distinctive organizational capability: A longitudinal study. Strategic Management Journal, 20, 317-338.

Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. (2006). Ambidexterity and performance in small- to medium-sized firms: The pivotal role of top management team behavior integration. Journal of Management, 32, 646-672.

Malhotra, A., Gosain, S., & El Sawy, O. A. (2005). Supply chains: Gearing for partner-enabled market knowledge creation. MIS Quarterly, 29, 145-187.

March, J. (1991). Exploration and exploitation in organizational learning. Organization Science, 2, 71-87.

Marriam, S. B. (2009). Qualitative Research: A Guide to Design and Implementation. San Francisco, CA: Jossey-Bass.

McGrath, R. G., Tsai, M. H., Venkataraman, S., & MacMillan, I. C. (1996). Innovation, competitive advantage and rent: A model and test. Management Science, 42, 389-403.

McDermott, M. & O'Connor, G. (2002). Managing radical innovation: An overview of emergent strategy issues. Journal of Product Innovation Management, 19, 424-438.

McMahon, A. (2011). Does workplace diversity matter? A survey of empirical studies on diversity and firm performance, 2000-09. Journal of Diversity Management, 5, 37-48.

Miller, D. & Shamsie, J. (1996). The resource-based view of the firm in two

environments: The Hollywood film studios from 1936 to 1965. Academy of Management Journal, 39, 519-543.

Min, Q. & Fei, X. (2008). The impact of information system usage on performance: Based on the innovation perspective. International Conference on Information Management, Innovation Management and Industrial Engineering, 2008.

Morgan , N. A., Vorhies, D. W., & Mason, C. H. (2009). Market orientation, marketing capabilities and firm performance. Strategic Management Journal, 30, 909-920.

Morris, T., Lydka, H., & O'Creevy, M. (1993). Can commitment be managed? A longitudinal analysis of employee commitment and human resource policies. Human Resource Management Journal, 3, 21-42.

Muller, D. C. & Tilton, J. E. (1969). Research and development costs as a barrier to entry. Canadian Journal of Economics, 2, 570-579.

Munson, F. C. & Pelz, D. C. (1979). The innovating process: A conceptual framework. Working paper, University of Michigan.

Murovec, N. & Prodan, I. (2009). Absorptive capacity, its determinants, and influence on innovation output: Cross-cultural validation of the structural model. Technovation, 29, 859-872.

Nelson, R. & Winter, S. G. (1982). An Evolutionary Theory of Economic Change. Cambridge, MA: Harvard University Press.

Nelson, R. & Winter, S. G. (2002). Evolutionary theorizing in economics. Journal of Economics Perspectives, 16, 23-46.

Newbert, S. L. (2005). New firm formation: A dynamic capability perspective. Journal of Small Business Management, 43, 55-77.

Nieto, M. & Quevedo, P. (2005). Absorptive capacity, technological opportunity,

knowledge spillovers, and innovative effort. Technovation, 25, 1141-1157.

Nieto, J. S. & Santamaria, L. (2007). The importance of diverse collaborative networks for the novelty of product innovation. Technovation, 27, 367-377.

Nohria, N. & Gulati, R. (1996). Is slack good or bad for innovation? Academy of Management Journal, 39, 1245-1264.

Normann, R. (1971). Organizational innovativeness: Product variation and reorientation. Administrative Science Quarterly, 16, 203-215.

O'Connor, G. C. (1998). Market learning and radical innovation: A cross case comparison of eight radical innovation projects. Journal of Product Innovation Management, 15, 151-166.

Ornaghi, C. (2006). Spillovers in product and process innovation: Evidence from manufacturing firms. International Journal of Industrial Organization, 24, 349-380.

O'Reilly, C. & Michael, T. (2004). The Ambidextrous Organization. Harvard Business Review, 82, 74-81.

Oxley, J. E., Rivkin, J. W., & Ryall, M. D. (2010). The strategy research initiative: Recognizing and encouraging high-quality research in strategy. Strategic Organization, 8, 377-386.

Park, S. (2007). The bad performance of Samsung Electronics in the first quarter, Why? Sekyeilbo, 2007-4-14, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=022&aid=0000220925

Park, Y. (2008). Samsung & LG receive a number of CES 2009 innovation awards. EBN, 2008-11-12, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=119&oid=

120&aid=0001948690

Park, Y. (2012). Industry-academia collaboration, “upgrade.” Economic Review, 2012-03-13, Retrieved at http://er.asiae.co.kr/erview.htm?idxno=2012030902203442586

Penrose, E. T. (1959). The Theory of the Growth of the Firm. New York: John Wiley.

Perren, L. & Ram, M. (2004). Case-study method in small business and entrepreneurship research: Mapping boundaries and perspective. International Small Business Journal, 22, 83-101.

Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. Strartegic Management Journal, 14, 179-191.

Pettigrew, A. (1990). Longitudinal field research on change: Theory and practice. Organization Science, 1, 267-292.

Pettigrew, A., Thomas, H. & Whittington, R. (2002). Strategic management: The strengths and limitations of a field. In A. Pettigrew, H. Thomas, & R. Whittington (Eds.), Handbook of Strategy and Management. London: Sage.

Phelps, C. C. (2010). A longitudinal study of the influence of alliance network. Academy of Management Journal, 53, 890-913.

Porter, M. (1991). Toward a dynamic theory of strategy. Strategic Management Journal, 12, 95-117.

Qureshi, I. & Compeau, D. (2009). Assessing between-group differences in information systems research: A comparison of covariance- and component-based SEM. MIS Quarterly, 33, 197-214.

Raisch, S. & Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. Journal of Management, 34, 375-409.

Raisch, S., Birkinshaw, J., Probst, G., & Tushman, M. (2009). Organizational

ambidexterity: Balancing exploitation and exploration for sustained performance. Organization Science, 20, 685-695.

Rechner, P. & Dalton, D. (1991). CEO duality and organizational performance: A longitudinal analysis. Strategic Management Journal, 12, 155-160.

Ringle, C., Sarstedt, M., & Straub, D. (2012). Editor's comments: A critical look at the use of PLS-SEM in MIS quarterly. MIS quarterly, 36, iii-xiv.

Romano, C. A. (1989). Research strategies for small business: A case study approach. International Small Business Journal, 7, 435-443.

Roberts, P. W. (1999). Product innovation, product-market competition and persistent profitability in the U.S. pharmaceutical industry. Strategic Management Journal, 20, 655-670.

Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. Journal of Business Venturing, 26, 441-457.

Rothaermel, F. T. & Hess, A. M. (2007). Building dynamic capabilities: Innovation driven by individual-, firm-, and network-level effects. Organization Science, 18, 898-921.

Rubach, M. J. & Sebora, T. C. (1998). Comparative corporate governance: Competitive implications of an emerging convergence. Journal of World Business, 33, 167-184.

Rumelt, R., Schendel, D., & Teece, D. (1994). Fundamental Issues in Strategy: A Research Agenda. Boston, MA: Harvard Business School Press.

Schroeder, D. M. (1990). A dynamic perspective on the impact of process innovation upon competitive strategies. Strategic Management Journal, 11, 25-41.

Schumpeter, J. A. (1934). The Theory of Economic Development. Cambridge, MA:

Harvard University Press.

Seo, D. (2004). Times Samsung's silver-nano washer. Etnews, 2004-10-15, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=105&oid=030&aid=0000085189

Shan, W., Walker, G., & Kogut, B. (1994). Interfirm cooperation and startup innovation in the biotechnology industry. Strategic Management Journal, 15, 387-394.

Simonin, B. L. (1999). Ambiguity and the process of knowledge transfer in strategic alliance, Strategic Management Journal, 20, 595-623.

Simsek, Z. (2009). Organizational ambidexterity: Towards a multilevel understanding. Journal of Management Studies, 46, 597-624.

Song, D. (2004a). Open the era of value innovation: (3) The case of Samsung Electonics. Hankyung Business Daily, 2004-04-19, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=015&aid=0000701971

Song, D. (2004b). Open the era of value innovation: (5) VI from executives. Hankyung Business Daily, 2004-05-05, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=015&aid=0000706660

Song, D. (2005). Toward the blue ocean: An interview with Lee Dong Jin, a VIP center Vice President at Samsung Electronics. Hankyung Business Daily, 2005-11-08, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=015&aid=0000848475

Song, H. (2008). Global standard management award. Hankyung Business Daily, 2008-05-15, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=015&aid=0001968473

Stieglitz, N. & Heine, K. (2007). Innovations and the role of complementarities in a strategic theory of the firm. Strategic Management Journal, 28, 1-15.

Stock, G. N., Greis, N. P., & Fischer, W. A. (2001). Absorptive capacity and new product development. Journal of High Technology Mamagement Research, 12, 77-91.

Subramanian, A. (1996). Organizational innovativeness: Exploring the relationship between organizational determinants of innovation, types of innovations, and measures of organizational performance. Omega, 24, 631-647.

Summer, C., Bettis, R., Duhaime, I., Grant, J., Hambrick, D., Snow, C. & Zeithaml, C. (1990). Doctoral education in the field of business policy and strategy. Journal of Management, 16, 361-398.

Sung, K. (2007). Samsung Electronics & LG receive a number of CES innovation awards. Nocutnews, 2007-11-14. Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=105&oid=079&aid=0000201958

Tarafdar, M. & Gordon, S. R. (2007). Understanding the influence of information systems competencies on process innovation: A resource-based view. Journal of Strategic Information Systems, 16, 353-392.

Teece, D. (1986). Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. Research Policy, 15, 285-305.

Teece, D. (2009). Dynamic Capabilities and Strategic Management: Organizing for Innovation and Growth. Oxford: Oxford University Press.

Teece, D., Pisano G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18, 509-533.

Thomsen, S. & Pedersen, T. (2000). Ownership structure and economic performance in the largest European companies. Strategic Management Journal, 21, 689-705.

Tippins, M. & Sohi, R. (2003). IT competency and firm performance: Is organizational learning a missing link? Strategic Management Journal, 24, 745-761.

Tishler, A. & Milstein, I. (2009). R&D wars and the effect of innovation on the success and survivability on firms in oligopoly markets. International Journal of Industrial Organization, 27, 519-531.

Tosi, H. L., Jr. & Gomez-Mejia, L. R. (1989). The decoupling of CEO pay and performance: An agency theory perspective. Administrative Science Quarterly, 34, 169-189.

Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. Academy of Management Journal, 44, 996-1004.

Tsai, W. & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. Academy of Management Journal, 41, 464-476.

Tsai, K-. H. & Wang, J-. C. (2008). External technology acquisition and firm performance: A longitudinal study. Journal of Business Research, 23, 91-112.

Tushman, M. & O'Reilly, C. (1996). Ambidextrous organizations: Managing evolutionary and revolutionary change. California Management Review, 38,

8-30.

Tushman, M., Smith, W. K., Wood, R. C., Westerman, G., & O'Reilly, C. (2010). Organizational designs and innovation streams. Industrial and Corporate Change, 19, 1331-1366.

Tversky, A. & Kahneman, D. (1986). Rational choice and the framing of decisions. Journal of Business, 59, 251-278.

Uotila, J., Maula, M., Keil, T., & Zahra, S. A. (2009). Exploration, exploitation, and financial performance: Analysis of S&P 500 corporations. Strategic Management Journal, 30, 221-231.

Utterback, J. M. & Abernathy, W. J. (1975). A dynamic model of process and product innovation. Omega, 3, 639-656.

Van de Ven, A. H. (1986). Central problems in the management of innovation. Management Science, 32, 590-607.

Van de Ven, A. H. & Huber, G. P. (1990). Longitudinal field research methods for studying the process of innovation. Organization Science, 1, 213-219.

Van den Bosch, F. A. J., Van Wijk, R., & Volberda, H. W. (2003). Absorptive capacity: Antecedents, models, and outcomes. In M. Easterby-Smith & M. A. Lyles (Eds.), Handbook of Organizational Learning and Knowledge Management: 278-301. Oxford, UK: Blackwell.

Van Maanen, J. (1979). Reclaiming qualitative methods for organizational research: A preface. Administrative Science Quarterly, 24, 520-526.

Van Wijk, R., Van Den Bosch, F. A. J., & Volberda, H. W. (2002). Knowledge and networks. In M. Easterby-Smith & M. A. Lyles (Eds.), Companion to Organizational Learning and Kfnowledge: Oxford, UK: Blackwell.

Verona, G. (1999). A resource-based view of product development. Academy of

Management Review, 24, 132-142.

Veugelers, R. & Cassiman, B. (2005). R&D cooperation between firms and universities: Some empirical evidence from Belgian manufacturing. International Journal of Industrial Organization, 23, 355-379.

Veugelers, R. & Cassiman, B. (1999). Make and buy in innovation strategies: Evidence from Belgian manufacturing firms. Research Policy, 28, 63-80. Retrieved at http://scholar.googleusercontent.com/scholar?q=cache:RoxBmFa8Rz8J:scholar.google.com/&hl=en&as_sdt=0,28

Wang, C. L. & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. International Journal of Management Review, 9, 31-51.

Wernerfelt, B. (1984). A resource based view of the firm. Strategic Management Journal, 5, 171-180.

Westhead, P., Wright, M., & Ucbasaran, D. (2001). The internalization of new and small firms: A resource-based view. Journal of Business Venturing, 16, 333-358.

Whittington, R., Pettigrew, A., & Thomas, H. (2002). Conclusion: Doing more in strategy research. In A. Pettigrew, H. Thomas, & R. Whittington (Eds.), Handbook of Strategy and Management, 475-488. London: Sage.

Williander, M. (2007). Absorptive capacity and interpretation system's impact when 'going green': An empirical study of Ford, Volvo cars and Toyota. Business Strategy and Environment, 16: 202-213.

Wolfe, R. A. (2007). Organizational innovation: Review, critique and suggested research directions. Journal of Management Studies, 31, 405-431.

Woodruff, R. B. (1997). Customer value: The next source for competitive advantage.

Journal of the Academy of Marketing Science, 25, 139-153.

Wright, P., Ferris, S. P., Sarin, A., & Awasthi, V. (1996). Impact of corporate insider, blockholder, and institutional equity ownership on firm risk taking. Academy of Management Journal, 39, 441-463.

Wu, H-., L., Lin, B-. W., & Chen, C-. J. (2007). Examining governance-innovation relationship in the high-tech industries: Monitoring, incentive and a fit with strategic posture. International Journal of Technology Management, 39, 86-104.

Yang, H. (2008). Samsung Electronics Vice President Lee Yun Woo: Initiate future core technologies. Financial News, 2008-07-01, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=014&aid=0001993742

Yang, H. (2009). Samsung electronics, "TV of light" shines, Financial News, 2009-05-05, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=014&aid=0002134713

Yang, H. (2011). Samsung Electronics receives 30 CES innovation awards. Financial News, 2011-11-09, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=101&oid=014&aid=0002542625

Yonhap (2011). Samsung Electronics and IBM announce patent cross-license agreement. Yonhap, 2011-02-09, Retrieved at http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=104&oid=001&aid=0004904103

Zahra, S. A. & Covin, J. G. (1995). Contextual influences on the corporate

entrepreneurship performance relationship: A longitudinal analysis. Journal of Business Venturing, 10, 43-58.

Zahra, S. A. & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. Academy of Management Review, 27, 185-203.

Zahra, S. A. & Hayton, J. C. (2008). The effect of international venturing on firm performance: The moderating influence of absorptive capacity. Journal of Business Venturing, 23, 195-220.

Zahra, S. A., Hayton, J. C., & Salvato, C. (2004). Entrepreneurship in family vs. non-family firms: A resource-based analysis of the effect of organizational culture. Entrepreneurship: Theory and Practice, 28, 363-381.

Zaltman, G., Duncan, R., & Holbek, J. (1973). Innovations and Organizations. New York: Wiley.

Zajac, E. J., Golden, B. R., & Shortell, S. M. (1991). New organizational forms for enhancing innovation: The case of internal corporate joint ventures. Management Science, 37, 170-184.

Zhang, Y. (2009). A study of corporate reputation's influence on customer loyalty based on PLS-SEM model. International Business Research, 2, 28-35.

Zott, C. (2003). Dynamic capabilities and the emergence of intraindustry differential firm performance: Insights from a simulation study. Strategic Management Journal, 24, 97-125.