Session 1 영어세션

좌장 : 이중우(인제대) / 장소 : B-101 / 시간 : 15:00~16:00

- Start-Up Firms' Value Creation through International Expansions : Evidence from an Event Study in Korea 발표자 : 오한모(전북대) 토론자 : 송윤아(조선대)
- Distance and Intra-Firm Trade: Evidence from Korean Firms 발표자 : 이시영(중앙대) 토론자 : 권종욱(강원대)
- Entrepreneurial Orientation and Performance in Global Markets: The Role of Marketing Standardization 발표자 : 조진완, 정인식(고려대) 토론자 : 김길성(전남대)
- Friendship or Hostility to introduce New Product: from the perspective of Foreign Collaboration 발표자 : 김미옥(KOTRA), 남윤주, 곽주영(연세대) 토론자 : 김순성(고려대)

Start-Up Firms' Value Creation through International Expansions: Evidence from an Event Study in Korea

Han-Mo Oh Associate Professor, Chonbuk National University ice1004@jbnu.ac.kr

I. Introduction

The globalization of the world economy has spurred firms of all sizes to expand their operations into foreign markets (Parker, 1998; Zahra & George, 2002). In this respect, the ability of a firm to export a portion of its sales is gradually esteemed as an important measure of firm value at a national level (Westhead, Wright, & Ucbasaran, 2001). In addition, the capability of engaging in international marketing is thought of as a necessary ingredient to ensure the survival and growth of new and small firms (hereinafter referred to as start-up firms) (D'Souza & McDougall, 1989). Start-up firms, however, are more likely to fail in their overseas businesses than large firms. The most important reason is that small and new firms are relatively insufficient in resources (e.g., informational resources) for overcoming the liabilities of newness and foreignness in foreign markets. Therefore, a common sense dictates that a key driver of a firm's successful market expansion is knowledge of how to compete in the new market. In effect, firms can learn how to compete in foreign markets through direct international experience, which they accrue over time (Barkema & Drogendijk, 2007; Johanson & Vahlne, 1977; 1990).

Against this background, some start-up firms have successfully expanded their businesses into foreign markets although they have had little prior direct experience in the markets. Many start-up firms often gain useful knowledge of how to compete in foreign markets by learning either through prior entries into other country markets or from other firms' experiences (hereinafter referred to as indirect learning) (Kim & Miner, 2007; Manz & Sims, 1981; Srinivasan, Haunschild, & Grewal, 2007).

Despite the importance of start-up firms' indirect learning from other firms, research provides few insights into these domains. Underpinning the belief that the market value to a 국제경영관리학회 2016 추계학술대회

firm's marketing strategy is a proxy of the long-term financial performance, the present study attempts to address a research issue of how start-up firms' indirect learning affect the market value. Even though expanding internationally may have detrimental effects if the greater complexity associated with international expansion exceeds management capability of coordinating activities across many different countries, increasing internationalization of sales often enhances the firm's market value (Geringer, Beamish, & Da Costa, 1989). Building heavily on the knowledge-based view and the organizational learning theory, the current study develops an empirically testable model that can explain the effect of start-up firms' indirect learning on value creation in the context of international expansions. The model is tested using a compiled archival dataset in regard to start-up firms' intranational expansions.

The rest of this manuscript is organized as follows. In the next section, hypotheses are developed. The method of the present study is then described. Next, the empirical results are presented. Finally, the manuscript offers a discussion of implications for theory and practice and indicates the limitations of the current research and some suggestions for future research.

II. Hypotheses

2.1 Indirect Learning

Start-up firms can acquire knowledge through four sources of indirect learning: (1) foreign competitors in the domestic market, (2) domestic competitors in the foreign market, (3) global competitors in the global market, and (4) interfirm relationships in the foreign market. First, when a start-up firm begins to expand its business into a foreign market, it is typically more disadvantageous than local competitors within the industry in regard to marketing, innovation, and general business processes (Wright et al., 2005). Such a firm can overcome this disadvantage through indirect learning from foreign competitors in the domestic market. Second, start-up firms that want to expand its business into foreign markets can also learn indirectly from their domestic competitors in the foreign market. Third, a start-up firm can indirectly learn how to compete in a foreign market by observing global competitors' activities. Finally, start-up firms may indirectly learn how to compete in foreign markets through their interfirm relationships in the markets. Learning through business group affiliations or interfirm partnerships are representative examples of indirect learning from those

relationships.

In expanding business into a foreign market, a start-up firm can overcome barriers by learning from local rivals's activities. Specifically, firms could learn the ways of positioning brands, making better product decisions, and adapting business processes to local environments from those rivals with more advanced knowledge on these dimensions (Leclerc, Schmitt, & Dube, 1994). Accordingly, this indirect learning would in turn enable firms to develop brands, products, skills, and processes they need in order to compete in host country markets. Therefore, it is hypothesized that:

H1: A firm's greater exposure to local rivals positively affects the firm's market value.

Many start-up firms can cope with host-country environments by observing their domestic rivals' activities although the rivals have lower brand awareness than their local counterparts. By often interacting closely with domestic competitors in the industry, a start-up firm can observe how its domestic peers overcome a disadvantage in a host country market (Chittoor et al., 2009). This indirect learning is relatively effective in industries that are further along in their international growth and that are closely integrated into host-country markets to other industries (Elango & Patnaik, 2007). In these industries, fast followers can have affluent opportunities to acquire knowledge about host-country markets by observing the activities of domestic market leaders. Thus, it is hypothesized that:

H₂: A start-up firm's exposure to domestic rivals with greater target market experiences positively affects the firm's market value.

Start-up firms can indirectly learn the ways of competing in foreign markets by observing the activities of global firms that dominate their industry in the global market. Typically, a global firm plays a role model for other firms in the industry that desire to compete globally. In fact, start-up firms with global aspirations often look to such a global firm for inspiration and learning. In industries in which global enterprises dominate, the activities of them are more salient. Moreover, if the gap between a firm and a leading global competitor is so wide, with respect to brands, products, and technologies, this would provide the start-up firm with many opportunities to learn what it gains to compete globally. Therefore, it is posited that: H₃: A start-up firm's exposure to large global rivals with greater target market experiences positively affects the firm's market value.

Start-up firms can indirectly learn the ways of competing in foreign markets through their network members that operate in those markets. The direct experience of member firms in host country markets may offer first-hand knowledge about what it takes an approach in order to accomplish success and avoid failure as firms plan and execute their own growth (Elango & Patnaik, 2007). For instance, a start-up firm can learn how to compete in a host country by gaining knowledge about customers and suppliers from network members. In addition, a start-up firm affiliated with a business group can benefit from the experience of member firms in other industries that may be further along in international growth and more closely integrated into host country markets. In essence, business groups operate in multiple industries of international competition earlier than other industries. The managers of a start-up firm planning to operate in a host country market in a more competitive or leading edge industry can learn the optimal practices from member firms that have attained greater international growth. Thus, it is hypothesized that:

H₄: A start-up firm's interfirm relationships with greater market experience positively affects the firm's market value.

Leaders with education and work experience from foreign markets play a particularly important role in the international growth of start-up firms (Herrmann & Datta, 2005; Sambharya, 1996). First, leaders' managerial discretion is relatively high in start-up firms (Crossland & Hambrick, 2011; Guillen, 2000). Thus, leaders with education and work experience from foreign markets can ensure that their knowledge of the markets has a substantial influence on decisions related to the international growth of the start-up firms they lead. Second, because start-up firms are often in conditions that constrain the extent to which these firms have direct experience of foreign markets, the knowledge and experience that their leaders bring from other contexts is particularly important for the firms. Moreover, such education and experience is less common among leaders of start-up firms relative to large firms. Thus, such education and experience is a novel, relatively inimitable resource for some emerging-market firms, giving it greater importance in their international growth. Specifically, education and work experience in foreign markets can help leaders of start-up firms learn what it takes to enter and compete in foreign markets (Hitt et al., 2000). Leaders with such education and experience have a better understanding of the institutions that underpin business in foreign markets. They also have firsthand awareness of the quality of products available in foreign markets and therefore of the improvements that their start-up firm must make to match the expectations of foreign market customers. More generally, through their keener appreciation of the opportunities and challenges of foreign markets, such leaders are able to make them salient to other decision makers within the firm (Herrmann & Datta, 2005; Sambharya, 1996). Therefore, it is hypothesized that:

- H₅: A start-up firm that has leaders with education and work experience from foreign markets affects exhibit greater market value than other firms.
- 2.2 Contingency Factors

2.2.1 Market Type

A market type (i.e. developed or emerging economies) can influence the effect of indirect learning on market expansion success. It is expected that a start-up firm's learning plays a more pivotal role in contributing to financial performance in advanced or developed markets than in emerging markets. Specifically, the intensity of competition, which demands more sophisticated market-based assets and capabilities, is often greater in developed than emerging market economies. In this respect, because of the abundance of international suppliers that operate and compete with one another for market share in developed economies and the existence of more sophisticated customers in terms of their demands, it is expected that organizational capabilities play a more salient role for exporters that sell products to developed markets than emerging ones. Thus, it is hypothesized that:

- H₆: The type of a market has a moderating influence on the effect of a start-up firm's indirect learning on market value creation.
- 2.2.2 Expansion Strategy

국제경영관리학회 2016 추계학술대회

The expansion strategy is a fundamental decision a start-up firm makes when it enters a new market because the choice of entry automatically constrains the firm's marketing and production strategy. The strategy can also affect how a start-up firm faces the challenges of entering a new country and deploying new skills to market its product successfully (Gillespie & Hennessy, 2015). A start-up firm entering a foreign market faces an array of choices to serve the market. A start-up firm can choose any of these entry modes or some combination of them to enter a host country. The key attribute that distinguishes the different expansion strategy is the degree to which they offer a start-up firm control over its key marketing resources (Anderson & Gatignon, 1986). At one end of the spectrum is the export of goods, which has the lowest degree of control. The resource-based view holds that as the degree of control increases, the firm's chances of success increase because the firm can deploy key resources that are essential to success (Gatignon & Anderson, 1988; Isobe, Makino, & Montgomery, 2000). These resources can be intangible properties, such as brand equity and marketing knowledge (Arnold, 2004), or tangible properties, such as a patent or a process blueprint. Control over such properties gives a firm the freedom to deploy resources flexibly, thus enhancing its chances of success. In the context of international markets, control provides two key benefits. First, it safeguards key resources from leakage, such as patent theft. Second, it allows for internal operational control, which is essential to a firm's success in emerging markets (Luo, 2001). In addition, a start-up firm can control key complementary resources, such as access to local distribution channels, which can be important to its success in any country. Therefore, it is hypothesized that:

H₇: The type of expansion strategy has a moderating influence on the effect of a start-up firm's indirect learning on market value creation.

III. Method

3.1 Data and Sample

A comprehensive dataset of start-up firms' international extension events was drawn from several secondary data sources. The data were collected from multiple sources regarding international accounting such as the WISEfn's database of publicly traded Korean companies, the Korea Listed Companies Association foreign affiliate database, and the Global COMPUSTAT database. Finally, the size of sample was 102 announcements of start-up firms' international expansions.

3.2 Measures

3.2.1 Dependent Variable

Tobin's q was used as a measure of market value of start-up firms. According to Luo and Bhattacharya (2006), the measure was derived of the market value and the book value of the firm using Compustat's annual financial database. Tobin's q was then calculated as the market value of a firm divided by the book value of total assets for each firm-year observation.

3.2.2 Independent Variables

A start-up firm's indirect learning from foreign competitors was measured using the market share of all publicly held foreign competitors in the domestic market (i.e., a ratio of the sum of the revenues of all publicly held foreign competitors in the domestic market to the sum of the revenues of all competitors in the market). This measure would be a good proxy for the extent of foreign market competition in a focal start-up firm's domestic market (Elango & Patnaik, 2007). The greater this competition, the greater the knowledge of foreign markets that exists in the domestic market, and the greater the extent to which start-up firms can learn from such competitors. In the present research, a negligible value (.00001) was added to the relevant figures to perform a log-transformation and to reduce the difference between extreme values.

Start-up firms' indirect learning from domestic competitors was measured using the sum of the revenues for all publicly held domestic competitors in the focal country market. This measure would be a proxy for the extent of a focal start-up firm's domestic competitors' foreign market activity (Chittoor et al., 2009; Elango & Patnaik, 2007). The greater this value, the greater the extent to which focal start-up firms can learn indirectly from such competitors. A negligible value (.00001) was added to the figures to perform a log-transformation and to reduce the difference between extreme values.

A start-up firm's indirect learning from global competitors was measured using the sum of

the revenues of the top three global competitors of the focal start-up firm. The greater this value, the greater the extent to which firms can learn indirectly from such competitors. The top three global competitors were identified by matching the Standard Industrial Classification between the focal firm and the global competitors and then selecting the top three firms. In the current research, a log-transformation of the sum of revenues for the top three global competitors was conducted.

Start-up firms' indirect learning from the network was measured using the revenues of network members in the target market. This measure allowed us to capture how much the focal firm can indirectly learn about target markets from the scale and scope of the network's target-market activity. Indirect learning from networks was operationalized as indirect learning through business groups or partnerships. A measure of scale and scope of a network's target-market activity was performed by multiplying the total target-market revenues of a business group or partnership (scale) with the most commonly used measure of scope: entropy (Sorescu, Chandy, & Prabhu, 2003).

The market type was measured by creating a dummy variable. The dummy variable was coded as either a developed market or an emerging market. Whereas an emerging market was coded as zero, a developed market was coded as one.

Expansion strategy was coded according to the press releases. Indirect expansion is a binary variable coded as one if the firm conducts the international expansion through external channel entities.

3.2.3 Control Variables

Several control variables were included to better estimate. The variables are the industry size ratio, the age of the start-up firm, the target industry growth rate, the start-up firm's marketing expenditures, the start-up firm's domestic sales growth, and the start-up firm's operating margin. These variables ensure that there are no systematic causes of value creation beyond the impact of the independent variables.

The first control variable is an industry size ratio. The ratio was measured by the number of firms listed for the primary SIC code of a start-up firm. The ratio was used to capture the size of the industry and level of competition within which each is operating.

The second control variable is the age of a start-up firm. As the time in which a start-up firm has been in business increases, the accuracy of market evaluations of the firm would

improve because investors typically have greater knowledge about the firm. The age of the firm was calculated by subtracting its founding date from the year of the expansion announcement. The founding date for the firm was captured using several resources such as start-up firms' websites.

The third control variable is the growth rate of the start-up firm's industry. A higher industry growth rate leads to the expectation of larger future returns. The growth rate of the firm's industry is included as the compounded average of the last three years of sales growth prior to the international brand extension.

The fourth control variable is the start-up firm's marketing expenditures. A start-up firm's marketing expenditures can act as a proxy for the resources available for marketing and managing an offering. Total selling and general administrative expense for the four quarters before an international expansion was used as a proxy for marketing expenditures (e.g., Dutta, Narasimhan, & Rajiv, 1999).

The fifth control variable is the start-up firm's domestic sales growth. Domestic sales growth was measured as the growth rate of the firm's domestic sales (Shervani, Frazier, & Challagalla, 2007).

The last control variable is the start-up firm's operating margin. It is expected that abnormal returns would be larger when the firm has a high operating margin. Barth et al. (1998) showed that high-equity brands are associated with high operating margins. Operating margin was calculated as the net income divided by revenue.

IV. Analysis and Results

4.1 Descriptive Statistics

Of the international expansion events, approximately 41% occurred in North America, 32% in North America, and 27% in other countries. The means, standard deviations, minimum and maximum values, and correlations of the measures were calculated. Collinearity diagnostics were conducted by computing the variance inflation factors (hereinafter referred to as VIFs) for all independent variables. The VIF values ranged from 1.01 to 1.69. The correlation matrix and the VIFs together indicate that multicollinearity is little likely to present from the data.

국제경영관리학회 2016 추계학술대회

4.2 Model Estimates

A multiple regression analysis was conducted to test the hypothesized effects. The results report that the overall model is significant (F=3.67, p<.01). The overall of .35 suggests that the model has good explanatory power. Among the control variables is the age of a start-up firm that is the one significant variable (β =.307, p<.01).

First, indirect learning from local competitors has a positive effect on value creation (β =.117, p<.05). Second, indirect learning from domestic competitors has a positive effect on international growth (β =.251, p<.01). Third, indirect learning from global competitors has a positive effect on international growth (β =.196, p<.01). Fourth, indirect learning from interfirm relationships has a positive effect on international growth. Fifth, indirect learning from leaders has a positive effect on value creation (β =.201, p<.01).

In addition, two of the interaction terms with market type—indirect learning from domestic competitors (β =196, p<.01) and indirect learning from networks (β =.108, p<.05)—were significantly different from zero, suggesting that these two drivers hold differently for emerging and developed markets. Conversely, two of the interaction effects with market type (indirect learning from local competitors) and indirect learning from global competitors) were not significantly different from zero, suggesting that these two drivers hold equally well for emerging and developed markets. The main effect for the type of a market (emerging) was positive and significant, suggesting that, in general, expansion into emerging markets has been more successful than expansion into developed markets (β =.261, p<.01).

Finally, three of the interaction terms with market type–indirect learning from domestic competitors (β =-.185, p<.01), indirect learning from local competitors (β =-.162, p<.01), indirect learning from networks (β =-.102, p<.05)–were significantly different from zero. The main effect for the type of expansion strategy was negative and significant (β =-.206, p<.01).

V. Discussion

5.1 Implications

The results of the present research contain several implications for start-up firms' managers.

First, start-up firms in interfirm relationships can be more successful in international expansion than other firms. Essentially, by sharing informational resources with member firms in networks, a start-up firm can learn how to compete well in a host country. Nonetheless, a start-up firm not allied with other firms may have difficulties in having an information-sharing mechanism and in succeeding international expansion.

Second, start-up firms can identify potential competitors by confirming whether the competitors have operated in industries with many competitors, have domestic competitors with experience in host countries, and have relationships with other firms that have international experience. A start-up firm that can indirectly learn how to compete in a host country market may pose significant threats to its counterparts.

Third, the manager of a start-up firm should carefully select a target market. Specifically, indirect learning from domestic competitors and from networks hold differently for emerging and developed markets. In the event that a start-up firm conducts an expansion into an emerging economy, the firm need to focus on indirect learning from domestic rivals and from network firms.

Lastly, the manager of a start-up firm should prudently choose an expansion strategy. In particular, indirect learning from domestic competitors, from local competitors, and from networks hold differently for direct and indirect expansion. In the case that a start-up firm conducts a direct expansion, the firm need to focus on indirect learning from domestic rivals, from local rivals, and from network firms.

The current study may contribute theoretically to the literature on international business research as follows. First, the present research may advance the organizational learning research. Previous research has highlighted the importance of direct learning and ignored the impact of indirect learning. The current research aimed to correct this imbalance. The results of the research suggest that indirect learning can be influential to successful expansion into overseas markets.

Second, the present research identified conditions where a firm can successfully expand its business into a host country market despite having little prior direct experience in the market. This research suggests the existence of indirect learning factors influencing the success of start-up firms' international expansions. Moreover, the research may enhance an understanding of the effect of indirect learning within the context of international expansions.

Third, the present research may be seminal in the examination of start-up firms' international expansion performance. Specifically, this study models the success of start-up firms' international expansion into foreign economies through direct learning and indirect learning. The research can be a basis for establishing a theory and formulating a model that can provides a better explanation

국제경영관리학회 2016 추계학술대회

of successful international expansion of start-up firms.

Finally, the method that the current research has employed may apply to further research. The method, an event study, has been rarely used in research on start-up firms' international expansion success. Using this method, future researchers may address many issues of international business and management.

5.2 Limitations and Directions for Future Research

Despite the important contributions, the present study has several limitations; therefore, further research is desirable. First, the current study focuses exclusively on a home country-Korea. It is unclear whether these findings are generalized across other home countries. Therefore, further research may apply the model developed in the present research to other countries.

Second, the current study assumes that only seven determinants of the success of start-up firms' international expansion. Nonetheless, an analysis of disaggregate firm-level factors, such as the level of resource investment in international marketing, management, and production could enhance the validity of the results of the study.

Third, no robustness checks were conducted in the present study. Subsequently, it is essential to find alternate measures and estimation methods and to examine the robustness of findings.

Fourth, the current study viewed only two modes as the type of intranational expansion. Therefore it is significant to investigate the model in other entry modes, such as licensing and franchising, strategic alliances, and greenfield vs brownfield investments.

Finally, most variables in the present study were measured with the use of data in the first year of an international expansion event. The evolution of an international expansion's fortunes over time could lead to greater insights into how the start-up firm adjusts its strategies to exploit the opportunities offered by target country markets.

References

Anderson, E. & Gatignon, H. (1986), "Modes of Foreign Entry: A Transaction Cost Analysis and Propositions," *Journal of International Business Studies*, 17(3), 1–25.

Arnold, David (2004), *The Mirage of Global Markets*, Upper Saddle River, NJ: Prentice Hall. Barkema, H. G. and Drogendijk, R. (2007), "Internationalising in Small, Incremental or Larger Start-Up Firms' Value Creation through International Expansions - Han-Mo Oh

Steps?" Journal of International Business Studies, 38(7), 1132-1148.

- Barth, M. E., Clement, M., Foster, G., & R. Kasznik (1998), "Brand Values and Capital Market Valuation," *Review of Accounting Studies*, 3(1–2), 41–68.
- Chittoor, R., Sarkar, M. B., Ray, S. & Aulakh, P. S. (2009), "Third-world Copycats to Emerging Multinationals: Institutional Changes and Organizational Transformation in the Indian Pharmaceutical Industry," *Organization Science*, 20(1), 187–205.
- Crossland, Craig and Donald Hambrick (2011), "Differences in Managerial Discretion Across Countries: How Nation-Level Institutions Affect the Degree to Which CEOs Matter," *Strategic Management Journal*, 32(8), 797-819.
- Dutta, S., Narasimhan, O., & Rajiv, S. (1999). "Success in High-technology Markets: Is Marketing Capability Critical?" *Marketing Science*, 18(4), 547–568.
- D'Souza, D. E., & McDougall, P. P. (1989). "Third World Joint Venturing: A Strategic Option for the Smaller Firm," *Entrepreneurship Theory and Practice*, 13(4), 19–33.
- Elango, B. & Patnaik, C. (2007), "Building Capabilities for International Operations through Networks: A Study of Indian Firms", *Journal of International Business Studies*, 38(4), 541–555.
- Gatignon, H. & Anderson, E. (1988), "The Multinational Corporation's Degree of Control Over Foreign Subsidiaries: An Empirical Test of a Transaction Cost Explanation," *Journal* of Law, Economics, and Organization, 4(2), 89–120.
- Geringer, M. J., Beamish, P. W., & Da Costa, R. C. (1989), "Diversification Strategy and Internationalization: Implications for MNE Performance," *Strategic Management Journal*, 10(2), 109–119.
- Gillespie, K. & Hennessy, H. D. (2015), *Global Marketing*, Abingdon-on-Thames, UK: Routledge.
- Guillen, M. F. (2000), "Business Groups in Emerging Economies: A Resource-Based View," Academy Management Journal, 43(3), 362–380.
- Herrmann, P. & Datta, D. K. (2005), "Relationships Between Top Management Characteristics and International Diversification: An Empirical Investigation," *British Journal of Management*, 16(1), 69–78.
- Hitt, M. A., Dacin, M. T., Levitas, E., Arregle, J. L., & Borza, A. (2000), "Partner Selection in Emerging and Developed Market Contexts: Resource-Based and Organizational Learning Perspectives," *Academy of Management Journal*, 43(3), 449–467.
- Isobe, T., Makino, S., & Montogmery, D. B. (2000), "Resource Commitment, Entry Timing,

and Market Performance of Foreign Direct Investments in Emerging Economies: The Case of Japanese International Joint Ventures in China," *Academy of Management Journal*, 43(3), 468–484.

- Johanson, J. & Vahlne, J.-E. (1977), "The Internationalization Process of the Firm-A Model of Knowledge Development and Increasing Foreign Market Commitments," *Journal of International Business Studies*, 8(1), 23–32.
- Johanson, J. & Vahlne, J.-E. (1990), "The Mechanism of Internationalisation," International Marketing Review, 7(4), 11–24.
- Khanna, T. and Palepu, K. (2000), "Is Group Affiliation Profitable in Emerging Markets? An Analysis of Diversified Business Groups," *Journal of Finance*, 55(2), 867–891.
- Kim, J.-Y. and Miner, A. S. (2007), "Vicarious Learning from the Failures and Near-failures of Others: Evidence from the U.S. Commercial Banking Industry," *Academy of Management Journal*, 50(2), 687–714.
- Leclerc, F., Schmitt, B. H., & Dube, L. (1994), "Foreign Branding and Its Effects on Product Perceptions and Attitudes," *Journal of Marketing Research*, 31(2), 263–270.
- Luo, X. & Bhattacharya, C. B. (2006), "Corporate Social Responsibility, Customer Satisfaction, and Market Value," *Journal of Marketing*, 70(4), 1–18.
- Luo, Y. (2001), "Determinants of Entry in An Emerging Economy: A Multilevel Approach," Journal of Management Studies, 38(3), 443–472.
- Manz, C. C. and Sims, H. P. (1981), "Vicarious Learning: The Influence of Modeling on Organizational Behavior," Academy of Management Review, 6(1), 105–113.
- Parker, B. (1998), Globalization and Business Practice: Managing across Boundaries, London: Sage Publication.
- Sambharya, R. B. (1996), "Foreign Experience of Top Management Teams and Its Effect on International Diversification Strategies of U.S. Multinational Corporations," *Strategic Management Journal*, 17(9), 739 - 746.
- Shervani, T. A., Frazier, G., & Challagalla, G. (2007), "The Moderating Influence of Firm Market Power on the Transaction Cost Economics Model: An Empirical Test in a Forward Channel Integration Context," *Strategic Management Journal*, 28(6), 635–652.
- Sorescu, A. B., Chandy, R. K. & Prabhu, J. C. (2003), "Sources and Financial Consequences of Radical Innovation: Insights from Pharmaceuticals," *Journal of Marketing*, 67(4), 82–102.
- Westhead, P., Wright, M., & Ucbasaran, D.(2001), "The Internationalization of New and Small

Start-Up Firms' Value Creation through International Expansions - Han-Mo Oh

Firms: A Resource-Based View," Journal of Business Venturing, 16(4), 333-358.

- Wright, M., Filatochev, I., Hoskisson, R. E. & Peng, M. W. (2005), "Strategy Research in Emerging Economies: Challenging the Conventional Wisdom", *Journal of Management Studies*, 42(1), 1–33.
- Zahra, S. & George, G. (2002), International Entrepreneurship: The Current Status of the Field and Future Research Agenda, New York, NY: Blackwell.

Distance and Intra-Firm Trade: Evidence from Korean Firms

Shi Young Lee (Chung-Ang University, Seoul, Korea) Yun Su Kim (Chung-Ang University, Seoul, Korea)

Revised: October 4, 2016

<u>Abstract</u>

This paper compares and analyzes the relative impact of distance on intra-firm exports and imports using Korean firm-level data. We find the evidence that intra-firm exports from the perspective of affiliates are more sensitive to the distance effect than intra-firm imports. This can be justified on the premise that intra-firm exports are more likely to originate from vertical FDI, where the main motive is to save on trade (distance) costs. However, if distance costs are high, firms nullify the distance effect by offshoring their production facilities. The distance effect is not an important determinant in the case of horizontal FDI. Intra-firm imports are more likely to follow horizontal FDI. Our results imply that the distance effect may contain important information about the nature of FDI and can help to shape a firm's business strategy.

JEL Classifications: F10, F14

Keywords: Intra-firm exports, intra-firm imports, horizontal and vertical FDI, firm-specific intrinsic asset

I. Introduction

In his acclaimed book, *The Death of Distance*, published in in 1997, Cairncross shows that distance is no longer relevant today. Although technology has obliterated the importance of geographical proximity, distance still matters. Existing literature shows evidence of the significance of distance in international economics and logistics.¹ Underpinning this, our study claims that distance may entail important information and implications for business strategy. This is the main motive of our study.

Intra-firm trade is a major component of international trade, owing to growth in emerging markets and the falling cost of foreign investment. Intra-firm trade can be followed by FDI which typically requires incurring large fixed costs and may be influenced by trade costs.² In case of horizontal FDI, as the trade costs increase between headquarters and affiliates, firms tend to locate their production facilities overseas (Helpman, 1984; Markusen and Venables, 2000). Vertical FDI features firms that prefer to set up their affiliates in closer destinations to save on trade costs (Chen, 2014). Notice that the distance can be a proxy for trade cost. Therefore, trade costs may have a relatively different impact on intra-firm trade dependent on the form of FDI takes.

The objective of this study is to compare and analyze the relative impact of distance on intra-firm exports and imports by utilizing Korean firm-level data. We find that the distance between headquarters and their affiliates is more sensitive to intra-firm exports than to intra-firm imports from the perspective of Korean affiliates. This is because intra-firm exports are based on vertical FDI while intra-firm imports originate from horizontal FDI. With vertical FDI, the cross-country factor prices differential and trade costs are important. The distance effect is crucial for determining the comparative advantage in vertical FDI.³ This finding can be interpreted on the basis that trade flow to the downstream (parent firm) is cost sensitive in vertical FDI. In contrast, intra-firm imports may be less sensitive to the distance variable. This is justified on the rationale that intra-firm imports are more likely to generate from horizontal FDI. The distance effect can be absorbed in horizontal FDI as firms have already established their production facilities in host countries, as in theoretical predictions. The benefit that accrues from the transfer of firm-specific intrinsic asset may outweigh the distance cost in determining the comparative advantage of horizontal FDI.

¹ There is abundant literature on the effect of geographical distance on trade (from the gravity model). However, the literature on distance effect on intra-firm exports and imports has been scanty. The only exception is Egger and Pfaffermayr (2005), to our knowledge.

 $^{^2}$ We refer to intra-firm trade as the trade between headquarters and affiliate. In this study, the distance refers to the distance between headquarter and affiliate.

³ Notice that this rationale is based on the concept of local comparative advantage pioneered by Deardoff (2014).

We have also categorized the host countries by income levels to analyze the differential impact of intra-firm trade. Our findings show evidence of horizontal FDI for high income host countries and vertical FDI for middle and low income host countries. This validates the existing hypothesis that vertical FDI may be sensitive to factor price differential and distance effect, while distance effect may not be important for horizontal FDL

The next section provides an overview of intra-firm trade based on the data from Korean firms. Section III will focus on explaining the data and models used in the study. Section IV presents results and implications. The final section concludes.

II. Overview of Intra-Firm Trade: Evidence from Korean Firms

This section provides an overview of intra-firm trade of Korean affiliates based on the data collected by Export-Import Bank of Korea. As in other emerging markets, Korea's intra-firm trade has shown steady growth. Our data indicate that the total volumes of intra-firm imports by Korean affiliates is double that of intra-firm exports.



Figure 1A: Sales Structure by Korean Affiliates

Source: Korea Export-Import Bank (2011)

Figure 1A demonstrates that local sales (50%) top the sales structure, followed by intrafirm exports (16%).⁴ Figure 1B illustrates the purchase structure with intra-firm imports (37%) dominating other sources, followed by local purchase (29%).

⁴ This indicates that horizontal FDI may be more important in terms of proportions.



Figure 1B: Purchase Structure by Korean Affiliates

Source: Korea Export-Import Bank (2011)



Figure 2A: Industry Composition of Intra-Firm Exports

Source: Korea Export-Import Bank (2011)

From Figure 2A, it is clear that the manufacturing sector leads other industries for intrafirm exports. The retail and wholesales industry is the most important determinant for intra-firm imports in Figure 2B. The proportion of retail and wholesale industry may dominate intra-firm imports as they are likely to originate from horizontal FDI, and the transfer of firm-specific intrinsic asset of the parent firm to its affiliates may be important for horizontal FDI.5

⁵ Notice that it is essential to transfer the firm-specific intangible asset such as brand power to increase sales in the host country for horizontal FDI.







Figure 3A: Distance and Intra-Firm Exports (2011)

We have plotted distance with respect to intra-firm trade volumes. In Figure 3, the relationship between the distance and intra-firm trade is not precise. The volume of intra-firm exports tends to decline for near-distant countries (Figure 3A); however, this relationship seems to be fragile for some far-distant countries. In contrast, the relationship between distance and intra-firm imports is not clear; the cluster of dots in Figure 3B does not show much change as distance increases.⁶ Thus, scrutinized and

⁶ In Figure 3, distance seems to be independent of intra-firm trade, especially in terms of intra-firm imports.

solid (statistical) analysis may be required to examine the relationship between the distance and intra-firm trade.





III. Data and Model

Our primary data sources are Export-Import Bank of Korea and KISVALUE. The data is drawn from Korean affiliates data of 2011. The observation unit is an affiliate-parent, industry, and country. We have a total sample size of 2,891 observations. We excluded the following data: (i) affiliates with no sales/purchase (943 samples); (ii) affiliates with no employment (168 samples); (iii) parent data omitted (399 samples); (iv) unreliable data (11 samples). We have used the remaining 1,396 observations for statistical analysis. Table 1 describes variables and Table 2 summarizes the statistics of those variables.

In this study, the shares of the intra-firm exports and imports shares are dependent variables. As seen in Figure 4, the share of intra-firm trade tends to cluster around either 0 or 1. In this case, it is not appropriate to use ordinary least square (OLS) analysis. Therefore, we have applied the Tobit model for estimating the relative impact of distance on intra-firm trade.⁷

⁷ Our model is similar to that of Corcos *et al* (2013) which analyzes the determinants of intrafirm trade: Antras and Helpman (2004), Grossman and Helpman (2005), Marin and Verdier (2003), Nunn (2007) and Yeaple (2006).

Independent Variable		Definition
	Distance	Log(Distance from parent to host country)
Country Variables	GDP	Log(GDP of host country)
	Per GDP	Log(Per capita GDP of host country)
	A_Productivity	Log(Total Sales/Total Employment)affiliate
Affiliate Variables	A_K/L	Log(Total Assets/Total Employment)affiliate
	A_Age	Log(number of years in operation)
	P_Productivity	Log(Parent Firm Total Sales/Parent Firm Total Employment)
	P_K/L	Log(Total Assets/Total Employment)parent
Parent Firm Variables	P_Ownership	Dummy(Ownership over 50%=1, otherwise =0)
	P_OFDI	Log(accumulated investment)
	P_size	Dummy(Large=1, otherwise=0)

Table 1: Description of Variables

Intra-Firm Exports (S IFE)

$$\begin{split} &\ln(S_IFE)_{i}=\ \beta_{0}\ +\ \beta_{1}\ ln(Distance)_{i}\ +\ \beta_{2}\ ln(GDP)_{i}\ +\ \beta_{3}\ ln(Per\ GDP)_{i}\ +\ \beta_{4}ln(A_productivity)_{i}\ +\ \beta_{5}ln(A_K/L)_{i}\ +\ \beta_{6}ln(A_Age)_{i}\ +\ \beta_{7}ln(P_productivity)_{i}\ +\ \beta_{8}ln(P_K/L)_{i}\ +\ \beta_{9}d(P_Ownership)_{i}\ +\ \beta_{10}ln(P_OFDI)_{i}\ \ +\ \beta_{11}d(P_Size)_{i}\ +\ \epsilon_{i} \end{split}$$

 $\begin{array}{l} \underline{Intra-Firm \ Imports \ (S_IFl)} \\ ln(S_IFI)_i = \ \beta_0 \ + \ \beta_1 \ ln(Distance)_i \ + \ \beta_2 \ ln(GDP)_i \ + \ \beta_3 \ ln(Per \ GDP)_i \ + \ \beta_4 ln(A_productivity)_i \ + \ \beta_5 ln(A_K/L)_i \ + \ \beta_6 ln(A_Age)_i \ + \ \beta_7 ln(P_productivity)_i \ + \ \beta_8 ln(P_K/L)_i \ + \ \beta_9 d(P_Ownership)_i \ + \ \beta_{\ 10} ln(P_OFDI)_i \ \ + \ \beta_{\ 11} d(P_Size)_i \ + \ \epsilon_i \end{array}$

Variables	Obs	Mean	Std. Dev.	Min	Max
Distance	1396	7.749	1.003	6.858	9.874
GDP	1396	7.855	1.673	1.472	9.650
Per GDP	1396	8.988	1.097	6.608	11.650
A_Productivity	1396	12.199	2.161	4.290	18.941
A_KL	1396	12.004	1.856	5.064	19.644
A_AGE	1396	7.843	0.862	3.970	10.141
P_Produtivity	1396	13.352	1.123	1.799	16.688
P_KL	1396	13.405	0.836	10.827	17.132
P_OFDI	1396	15.791	1.285	13.816	22.015
Dummy Variable			÷.	frequency	7
	Over 50	%{1}		1287	
P_Ownership	Otherwi	se {0}		109	
D. Siza	Major C	company {1}	ł	697	
r_size	Otherwi	se {0}		699	

Table 2: Summary Statistics





However, our Tobit model cannot distinguish between the choice decision of intra-firm trade (extensive margin) and value of intra-firm trade given the choice (intensive margin). Therefore, we have adopted Heckman two-stage model to estimate the distinctions and to determine the impact of our independent variables on extensive and intensive margins. Corcos *et al* (2013) also adopted a similar approach when they analyzed intra-firm trade for French firms.

IV. Results and Implications

Table 3 presents results from the Tobit model. The coefficients of relative impact of distance on the share of intra-firm exports are unambiguously negative and insignificant for intra-firm imports. This result is consistent for the different host country income levels, indicating different relative impact of distance on intra-firm exports and imports.

	T	otal	High Income H	Iost Countries	Middle and Lo Cour	w Income Host ntries
	(1)	(2	2)	(1	3)
-	Intra-Firm	Intra-Firm	Intra-Firm	Intra-Firm	Intra-Firm	Intra-Firm
	Exports	Imports	Exports	Imports	Exports	Imports
Distance	-0.188 ***	0.022	-0.231 ***	-0.017	-0.263 ***	0.029
	(0.028)	(0.016)	(0.049)	(0.040)	(0.052)	(0.027)
GDP	-0.044 ***	-0.009	0.025	0.020	-0.085 ***	0.007
	(0.014)	(0.009)	(0.024)	(0.019)	(0.030)	(0.016)
Per GDP	0.053 *	0.025	0.099	-0.070	0.070	-0.028
	(0.027)	(0.016)	(0.114)	(0.076)	(0.059)	(0.032)
A_Productivity	-0.050 ***	0.021 *	-0.023	0.048 **	-0.080 ***	0.008
	(0.019)	(0.012)	(0.028)	(0.024)	(0.024)	(0.015)
A_KL	-0.072 ***	0.010	0.016	-0.013	-0.081 ***	0.016
	(0.022)	(0.014)	(0.035)	(0.029)	(0.026)	(0.016)
A_AGE	0.084 ***	-0.022	0.010	-0.016	0.089 ***	-0.027 *
	(0.023)	(0.014)	(0.036)	(0.029)	(0.027)	(0.016)
P_Produtivity	0.046 **	0.004	0.008	-0.005	-0.072	-0.023
	(0.020)	(0.012)	(0.020)	(0.018)	(0.039)	(0.021)
P KL	-0.003	-0.027	0.090 **	-0.076 **	0.092 **	0.020
_	(0.027)	(0.017)	(0.042)	(0.034)	(0.036)	(0.018)
P Ownership	0.106	0.208 ***	0.092	0.208 *	0.056	0.193 ***
_ 1	(0.068)	(0.044)	(0.141)	(0.107)	(0.076)	(0.048)
P OFDI	0.051 ***	-0.013	0.008	-0.032 *	0.089 ***	0.001
—	(0.016)	(0.010)	(0.024)	(0.019)	(0.019)	(0.012)
P Size	-0.006	0.005	-0.038	0.060	-0.007	-0.008
	(0.041)	(0.026)	(0.083)	(0.066)	(0.046)	(0.029)
cons	0.533	-0.029	-1.035	2.019 **	1.414 **	-0.105
	(0.438)	(0.268)	(1.352)	(0.974)	(0.691)	(0.392)
Number of obs	12	396	34	2	10	28
LR chi2(11)	241.660 ***	87.900 ***	35.960 ***	20.770 **	190.270 ***	30.060 ***
Log likelihood	-949 015	-901.60688	-158 366	-253 352	-744 107	-619 797
Pseudo R2	0.113	0.0465	0.102	0.039	0.113	0.024

Table 3: Tobit Model

*** p<1%, ** p<5%, * p<10%.

Note: Standard error is given in parentheses. Range of high-income host countries: per capital $GNI \ge$ \$12,476; middle and low- income countries: per capita GNI <\$12,476.

Intra-firm exports are sensitive to the distance effect. Intra-firm exports are more likely to originate from vertical FDI where the main motive is to save trade (distance) costs.⁸ Deardoff (2014) provides a theoretical framework that trade costs and production costs may affect the pattern of comparative advantage (concept of local comparative advantage). This concept is more likely to apply to vertical FDI where the location choices of vertical FDI depend on factor price differential and trade costs.

In contrast, intra-firm imports are less sensitive to the distance effect. This result can be justified on the basis that intra-firm imports are more likely to generate from horizontal FDI. For high distance costs, firms tend to nullify the distance effect by shifting their production facilities overseas. Therefore, distance effect may not be significant in horizontal FDI. Instead, the benefit of transfer of firm-specific intrinsic assets such as brand power becomes important when the benefits are not subject to the distance effect.⁹

The GDP of middle and low-income host countries may have a negative impact on intra-firm exports. This result confirms our hypothesis that intra-firm exports are based on vertical FDI. As the capital-labor ratios of parent firms increase, this expands intra-firm exports and reduces intra-firm imports of high-income host countries. This result is consistent with the theoretical predictions made by existing literature. The number of years in operations (experience) matter for intra-firm exports, but may not be important for intra-firm imports. The experience may have a positive impact on business operations, especially for vertical FDI in middle- and low-income host countries.

Table 4 reports the results from Heckman two-stage model. The distance effect may be important for extensive margin of intra-firm exports while it may not affect intra-firm imports. For intensive margins, the distance variable has a negative impact on intra-firm exports, consistent with the result from the Tobit model. The productivities of parent firms and their affiliates have conflicting signs for intensive margins of intra-firm trade, consistent with the theoretical prediction made by Antras and Helpman (2004). The experience of affiliates again may be decisive for extensive and intensive margins of intra-firm trade, intra-firm exports than for intra-firm imports.

⁸ If we exclude affiliate data from China, then the sign of coefficient of intra-firm exports is not significant, indicating the role of China for strengthening Korean intra-firm trade. This result also confirms China's important role in vertical FDI.

⁹ Irarrazabal, Moxnes and Opromolla (2013) assert that horizontal FDI often transfers the intrinsic asset of parent firm to its affiliates in order to increase its sales.

	Intra-Firm I	Export				Intra-Firm l	lmport		
	Heckman	First	Heckma	an		Heckman	First	Heckma	an
Variable	Stage		Second St	tage	Variable	Stage	<u>)</u>	Second St	tage
	(1)		(2)			(1)		(2)	
Distance	-0.400	***	-0.109	***	Distance	-0.070		0.037	***
	(0.054)		(0.035)			(0.053)		(0.011)	
GDP	-0.071	**	-0.025	**	GDP	-0.034		-0.001	
	(0.028)		(0.012)			(0.029)		(0.006)	
Per GDP	0.130	**	0.011		Per GDP	0.034		0.031	***
	(0.054)		(0.022)			(0.054)		(0.012)	
A_Productivity	-0.029		-0.046	***	A_Productivity	0.164	***	-0.044	***
	(0.038)		(0.014)			(0.038)		(0.012)	
A_KL	-0.145	***	-0.030	*	A_KL	-0.075	*	0.038	***
	(0.044)		(0.017)			(0.043)		(0.011)	
A_AGE	0.187	***	0.044	**	A_AGE	-0.004		-0.021	**
	(0.045)		(0.022)			(0.044)		(0.010)	
P_Produtivity	0.051		0.033	**	P_Produtivity	-0.032		0.015	*
	(0.040)		(0.014)			(0.041)		(0.009)	
P_KL	-0.027		0.008		P_KL	-0.063		0.001	
	(0.056)		(0.019)			(0.057)		(0.013)	
P_Ownership	0.232	*	Exclud	e	P_Ownership	0.551	***	Exclud	e
	(0.136)		_			(0.130)		—	
P_OFDI	0.148	***	Exclud	e	P_OFDI	0.012		Exclud	e
	(0.034)		_			(0.035)		_	
P_Size	-0.032		Exclud	e	P_Size	-0.198	*	Exclud	e
	(0.102)		_			(0.102)		_	
P_EMP	-0.025		Exclud	e	P_EMP	0.083	***	Exclud	e
	(0.025)		_			(0.026)		_	
cons	0.203		1.023		cons	0.068		-0.066	
_	(0.874)		(0.296)		_	(0.874)		(0.175)	
Inverse Mills			0 300	***	Inverse Mills			-0.151	*
Ratio			0.500		Ratio			-0.131	
	—		(0.103)			—		(0.079)	
Wald chi2(8)		63.80	0 ***		Wald chi2(8)		77.35	0 ***	
Number of obs		13	96		Number of obs		13	96	
Censored obs		8	11		Censored obs		44	19	
Uncensored obs		58	85		Uncensored obs		94	7	

Table 4: Heckman Two-Stage Model

*** p<1%, ** p<5%, * p<10%

Note: Standard error is shown in parentheses.

V. Concluding Remarks

This paper investigates the distance effect on intra-firm exports and imports. Our main finding is that the distance variable appears to have a negative impact on intra-firm exports than on intra-firms imports. Our results suggest that the distance effect may contain some important information about the nature of FDI and can help shape a

comprehensive business strategy for firms.

Further investigation is required to scrutinize the distance effect in order to develop more precise business strategy. Future extensions should consider the sequence of production chains¹⁰ and cross-industry effects to explicitly analyze the distance effects and develop a more precise business strategy for firms.

References

Antras, P. and E. Helpman (2004), "Global Sourcing," *Journal of Political Economy*, 112:552-580.

Cairncross, F. (1997), *Death of Distance: How the Communication Revolutions Will Change Our Lives*, Harvard Business Review Press.

Chen, C. (2014), "The Impacts of Trade Costs on Horizontal and Vertical FDI Locations – Evidence from Taiwanese FDI in China," LSE Working Paper.

Corcos, G., Irac, D., Mion, G. and T. Verdier (2013), "The Determinants of Intra-Firm Trade: Evidence from French Firms," *The Review of Economics and Statistics*, 95(3): 825–838.

Deardorff, A. (2014), "Local Comparative Advantage: Trade costs and the Pattern of Trade," *International Journal of Economic Theory*, 10: 9-35.

Egger, P. and M. Pfaffermayr (2005), "The Determinants of Intra-Firm Trade: In Search for Export-Import Magnification Effects," *Review of World Economics*, 141(4): 648-669.

Grossman, M. and E. Helpman (2005), "Outsourcing in a global economy," *Review of Economic Studies*, 72(1): 135-159.

Harms, P., Lorz, O. and D. Urban (2012), "Offshoring along the Production Chains," *Canadian Journal of Economics*, 45(1): 93-106.

Helpman, E. (1984), "Multinational Corporations and Trade Structure," *Review of Economic Studies*, 52(3): 443-458.

Irarrazabal, A., Moxnes, A. and L. Opromolla (2013), "The Margins of Multinational Production and the Role of Intra-Firm Trade," *Journal of Political Economy*, 121(1): 74-126.

Kleinert, J. and F. Toubal (2010), "Gravity for FDI," *Review of International Economics*, 18(1): 1–13.

Marin, D. and T. Verdier (2003), "Globalization and the new enterprise," *Journal of the European Economic Association*, 1(2-3): 337-344.

Markusen, R. and A. Venables (2000), "The Theory of Endowment, Intra-Industry and Multi-National Trade," *Journal of International Economics*, 52(2): 209-234.

Nunn, N (2007), "Relationship-specificity, Incomplete Contracts, and the Pattern of Trade," *Quarterly Journal of Economics:* 569-600.

Yeaple, R. (2006), "Offshoring, Foreign Direct Investment, and the Structure of US Trade," *Journal of the European Economic Association*, 4: 602-611.

¹⁰ For example, Harms, Lorz, and Urban (2012) claim that technological constraints determine the sequence of global value chain and trade cost can be analyzed given the technological constraints.

Entrepreneurial Orientation and Performance in Global Markets: The Moderating Effect of Marketing Standardization

Jinwan Cho Ph.D. Student Korea University Business School Jwcho1981@korea.ac.kr

Insik Jeong Professor Korea University Business School <u>ijeong@korea.ac.kr</u>

I. Introduction

In international markets, firms continuously challenge by technological changes and diverse demands from consumers in different countries and it is inevitable for firms to face greater levels of market and technological uncertainty. In order to cope with such a turbulent environment, it is essential for firms to develop new imperatives, such as entrepreneurial orientation. (Atuahene-Gima and Ko, 2001) and IB scholars have explored the importance of entrepreneurship. (Oviatt and McDougall, 1994) Particularly, the risk-taking, innovation and proactiveness have been argued as core elements of entrepreneurial orientation (Covin and Slevin, 1990) and considered as important drivers for firm survival and success in competitive global economic environment. Furthermore, it is suggested that entrepreneurial activity allows firms to enhance their capabilities and outcompete their rivals (Knight, 1997). While previous literature have addressed the importance of entrepreneurial orientation in field of both marketing and strategic management (Covin and Slevin, 1990; Lumpkin and Dess, 1998; Matsuno et al. 2002), only limited researches have tried to explore the impact of entrepreneurial orientation in field or firms that entered overseas markets.

In this study, we argue that firm's level of entrepreneurial orientation- that is, firm's propensity to take risks and be proactive and innovative in international markets-is a important determinants of global new products performance. In addition, following research stream on performance implication of entrepreneurial orientation, export performance will be also examined (Kuivalainen et al., 2007; Lumpkin and Dess, 2005).

Futhermore, the moderating effect of marketing standardization will be tested. According to Zou and Cavusgil (2002), issue of marketing standardization is "the most influential domain" in

international marketing research, and Samiee and Roth (1992) also emphasized that marketing standardization is a critical issue for both researchers and business practitioners. Despite its importance in international marketing context, the role of marketing standardization has not been debated or examined in entrepreneurship research context. Thus, finding the relationship between entrepreneurial orientation and marketing standardization can contribute and shed new light on both entrepreneurship and marketing standardization literature by expanding scope of research stream.

In following section, we review the relevant literature on entrepreneurial orientation and develop research hypotheses, followed by data collection, measurement, and result. Finally. We conclude with discussion section.

II. Literature Review

2.1 Entrepreneurship and Entrepreneurial Orientation

Many scholars have argued that the origin of entrepreneurial studies is market entry problem (Matsuno et al., 2002). As Miles and Snow (1978) emphasized the term "What business shall we enter?" new entry has been the fundamental root of entrepreneurial studies (Lumpkin and Dess, 1996). Many IB literature which evolved around entrepreneurship show the evidence why market entry is central issue in entrepreneurial studies. For studies of international new ventures and born-global have explained that entrepreneurship or entrepreneurial orientation allow SMEs to exploit market opportunities through learning and enhanced capabilities despite limited resources in international markets and further enhance their business performance in international markets (Knight and Cavusgil, 2004; Zhou et al., 2010). While IB scholars attempted to explain the importance of entrepreneurship based on emergence of early internationalization and international new ventures (Oviatt and McDougall, 1994), marketing scholars also have adopted the concept of entrepreneurship but with distinct perspectives.

Previous literature of entrepreneurship or entrepreneurial orientation in marketing field rather emphasized the role of marketing as it is responsible for analyzing environmental changes and translate the analysis into utilization of firm resources and product-market portfolios (Murray, 1981). Jain (1983) emphasized that marketing input can effectively incorporated environmental changes into corporate strategy and marketing is a function which should proactively manage changes in external environment (Zeithaml and Zeithaml, 1984). As Morris and Paul (1987) described as "marketing is concerned with the facilitation of exchange processes between organizations and their environments", marketing has been perceived as homeland for the entrepreneurial process in organizations and marketing managers were described as "administrative entrepreneur" (Murray, 1981).

Based on the notion that marketing takes critical roles in forming entrepreneurial process and establishing entrepreneurial orientation throughout the organization, marketing scholars attempted to link the entrepreneurship with the concept of market-orientation (Matsuno et al., 2002; Merlo and Auh, 2009; Webb et al., 2011; Atuahene-Gima and Ko, 2001). While Matsuno et al. (2002) have tested that entrepreneurial proclivity is determinants of three dimensions of organizational structure and also market-orientation, Merlo and Auh (2009) tested the three way interaction between market-orientation, Marketing subunit influence, and entrepreneurial proclivity. Also Atuahene-Gima and Ko (2001) have developed the 2X2 matrix based on the combinations of market-orientation and entrepreneurial orientation. Most of studies which explored the interplay between market-orientation and entrepreneurial orientation were

linked to firm performance and generally found the positive influence.

2.2 Benefits of Marketing Standardization

The studies on standardization and adaptation have been intensively explored after the seminar article by Levitt (1983). While he argued that due to the homogenization across countries, homogenization of consumers has also occurred based on the rapid globalization of markets spurred by advanced technologies and communication methods, some other scholars also proposed a different perspective which argued that there is more segmentation within countries (Porter 1986). While diverse definition emerged among scholars, recent literature referred the concept of marketing standardization as "the degree to which firms apply common marketing-mix variables across national markets" (Schilke, Reimann, and Thomas 2009). Based on conceptual background, the issue of marketing standardization and adaptation was tested extensively and considered as the most important element of international marketing (Zou and cavusgil 2002). However, the outcome of those studies found to be mixed. In the previous literatures, the relationship between standardization and performance have been most widely tested and showed both significant and insignificant results. (Albaum and Tse 2001, Samiee and Roth 1992, Johansson and Yip 1994, O'Donnell and Jeong 2000, Zou and Cavusgil 2002, Chung 2003, Ozsomer and Simonin 2004, Lages, Jap, and Griffith 2008, Schilke, Reimann, and Thomas 2009). The inconsistent result of marketing standardization has been explained recently by argument that it is rather the degree of level and thus recent studies have favored on contingency perspectives that the impact of marketing standardization may vary with internal characteristics (Schilke, Reimann, and Thomas 2009) or environmental fit (Katsikeas, Samiee, and Theodosiou 2006). This perspective is also in line with the argument by Samiee and Roth (1992) who articulated that standardization should be viewed along with other firm policies or strategies. In similar vein, the relationship between the entrepreneurial orientation and marketing standardization may provide meaningful insight for both research stream

III. Research Hypotheses

3.1 Entrepreneurial orientation on export performance

Performance implication of entrepreneurial orientation is well-established in previous literature. While Knight and Cavusgil (2004) noted that entrepreneurial orientation may help to gain market knowledge and allow efficient resource utilization in international market, Zhou et al. (2010) have articulated that entrepreneurial proclivity enhances capabilities by upgrading network capabilities as well as knowledge capabilities and this in turn create higher international performance. Chen et al. (2012) have also found that entrepreneurial orientation elevate incline both exploitative and exploratory capabilities and create positive influence on financial performance, and customer relationship performance. Also building on market orientation, Slater and Narvar also confirmed the positive impact of entrepreneurial orientation on business performance. Other studies in marketing also discovered the positive impact of entrepreneurial proclivity on business performance (Matsuno et al., 2002; Merlo and Auh, 2009). Based previous literature, we can predict that entrepreneurial orientation have positive influence on diverse set of firm performance as Covin and Slevin (1990) mentioned entrepreneurial orientation as "key element for gaining competitive advantage and consequently greater financial reward", thus we posit that

H1: Entrepreneurial orientation is positively related to export performance.

3.2 The Moderating Role of Marketing Standardization

As described above, previous literatures of standardization versus adaptation in marketing program have been extensively tested for its impact on firm's performance based on benefits which lies on cost saving through economies of scale and delivering consistent messages to consumers through uniform marketing activities across the nations (Samiee and Roth 1992). Starting with Samiee and Roth (1992) which resulted insignificant relationship to ROI, ROS, and sales growth, various researches have tried to find the relationship between marketing standardization and performance (Johansson and Yip 1994, O'Donnell and Jeong 2000, Albaum and Tse 2001, Zou and Cavusgil 2002, Schilke, Reimann, and Thomas 2009). While inconclusive finding on the relationship between marketing standardization and performance has led the contingency perspectives which emphasize the level of degree rather than absolute level of either standardization or adaptation, the marketing standardization variable mostly analyzed as an independent variable to predict the firm performance. As Samiee and Roth (1992) mentioned, it is also critical to explore the role of marketing standardization along with other strategic posture or firm policies. For entrepreneurial firms which are SMEs in many cases, marketing standardization can be an important factor when entering into international markets. Compare to MNEs who are usually resource abundant, SMEs inevitably face with resource constraint and the level of scarcity can be greater in foreign market. The entrepreneurial orientation is one of mechanism to mitigate potential resource constraint and liability of foreignness simultaneously. In marketing activities, SMEs may have to choose standardized marketing strategy in international markets to minimize marketing cost and achieve economies of scale as articulated as benefits of marketing standardization. Even though entrepreneurial firms possess very proactive and risk taking posture, they can further enhance their competitive advantage through standardized marketing programs across the nations, thus it is posited that

H2: The degree of marketing standardization positively moderate the relationship between entrepreneurial orientation and export performance.

IV. Methodology

4.1 Sample and Data

The data was originally drawn from Korean SMEs which actively participating in international markets through exporting. After eliminating samples which omitted some part of items or any irrelevant samples, the final samples were consist of 153 firms. The respondents of this questionnaire were key informants, mainly executives of companies or managers who are in charge of international markets.

4.2 Measurement

In order to test research hypotheses, all variables used in this study were measured based on previous literature that had shown acceptable reliability and validity. Also, most of variables were measured with multi-item scales with 5 point Likert scales. First of all, entrepreneurial orientation was measured by 9 items which indicate proactiveness, innovativeness, and risk-taking (Zhou et al., 2010). Export performance was measured by 4 items that indicating sales growth, market share, market penetration, and overall ojective following Morgan et al. (2004). Finally, marketing standardization was measured by 5 items following previous studies (O'Donnell and Jeong 2000) and it was reverse coded as 1 indicates "very similar" and 5 indicates "very different".

Numbers of control variables were also inserted. A firm size was captured by log of total number of employees and R&D intensity was measured by R&D expenditure over total revenue. Finally, environmental variables (environmental uncertainty) was added which measured by multi-items with 5 point Likert scale.

4.3 Measurement Model

To confirm the internal consistency of variables used for this study, the reliability and validity were tested. Based on the measurement model table, cronbach's alpha for all variables were above 0.7 which indicating internal consistencies among variables. Also, factor loading for all items in each variable found to be above acceptable range indicating all items are well representing each variable. Overall, result of measurement model does not indicate any evidence of validity issue.

<Table 1. Sample Characteristics> <Table 2. Measurement model in appendix>

V. Analysis and Results

Overall, as it is predicted in hypothesis 1, the positive impact of entrepreneurial orientation is significant throughout all modes which indicates that entrepreneurial orientation does enhance performance in international markets. Thus, we can accept the hypothesis 1. However, we found that interaction between entrepreneurial orientation and marketing standardization is significant but in opposite direction. Since the items of marketing standardization was coded reversely, the result should indicate negative moderating effect in order to confirm the moderating effect of marketing standardization. Surprisingly, the result was an opposite which we reject hypothesis 2. We may interpret that marketing standardization may not further enhance performance of firms in international markets, rather performance can be greater when firms pursue adaption strategy when they employ marketing strategy. This result would call for further examination.

<Table 3. The result of Hierarchical multiple regression analysis in appendix>

Firm Characteristics	Frequency (%)
Number of employees	
Below 25	38 (25.5%)
26-100	48 (31.4%)
101-250	33 (20.9%)
250-500	22 (14.4%)
Over 500	12 (7.8%)
Product type	
Industrial goods	65 (42.5%)
Consumer goods	88 (57.5%)
Export experience	
Less than 15 years	105 (68.6%)
15~30 years	44 (28.8%)
More than 30 years	4 (2.6%)

<Table 1. Sample Characteristics>

	Cronbach's Alpha	Factor Loading
Entrepreneurial Orientation	0.894	
EO1		0.711
EO2		0.662
EO3		0.684
EO4		0.685
EO5		0.744
EO6		0.692
EO7		0.796
EO8		0.805
EO9		0.854
Export Performance	0.886	
EXP1		0.866
EXP2		0.904
EXP3		0.799
EXP4		0.891
Marketing Standardization	0.783	
STD1		0.792
STD2		0.753
STD3		0.690
STD4		0.708
STD5		0.727

<Table 2. Measurement Model>

		Export Performance	
Variables	Model 1	Model 2	Model 3
Intercept	1.098**	1.030**	0.962**
	(0.012)	(0.031)	(0.041)
Firm size	0.130**	0.130**	0.129**
	(0.001)	(0.001)	(0.001)
Environmental Uncertainty	0.102	0.099	0.120
	(0.256)	(0.276)	(0.184)
R&D intensity	0.009	0.008	0.009
	(0.308)	(0.323)	(0.293)
Entrepreneurial Orientation	0.321***	0.323***	0.342***
	(0.000)	(0.000)	(0.000)
Marketing Standardization		0.025	0.001
		(0.731)	(0.986)
			0.238**
EO x STD			(0.016)
R-Square	0.193	0.193	0.225
Adj. R-Square	0.171	0.166	0.193
F	8.777***	7.003***	7.022***

<Table 3. Result of Hierarchical Multiple Regression Analysis>

References

Atuahene-Gima, Kwaku, and Anthony Ko. "An empirical investigation of the effect of market orientation and entrepreneurship orientation alignment on product innovation." *Organization science* 12.1 (2001): 54-74.

Atuahene-Gima, Kwaku. "Resolving the capability—rigidity paradox in new product innovation." *Journal of marketing* 69.4 (2005): 61-83.

Brockman, Beverly K., and Robert M. Morgan. "The role of existing knowledge in new product innovativeness and performance." *Decision Sciences* 34.2 (2003): 385-419.

Cavusgil, S.T. and Knight, G., 2015. The born global firm: An entrepreneurial and capabilities perspective on early and rapid internationalization. *Journal of International Business Studies*, 46(1), pp.3-16.

Colder, Peter N. "Insights from senior executives about innovation in international markets." *Journal of Product Innovation Management* 17.5 (2000): 326-340.

Cooper, Robert G., and Elko J. Kleinschmidt. "The impact of export strategy on export sales performance." *Journal of international business studies* (1985): 37-55.

Covin, J.G. and Slevin, D.P., 1990. New venture strategic posture, structure, and performance: An industry life cycle analysis. *Journal of business venturing*, *5*(2), pp.123-135.

Dess, G.G. and Lumpkin, G.T., 2005. The role of entrepreneurial orientation in stimulating effective corporate entrepreneurship. *The Academy of Management Executive*, *19*(1), pp.147-156.

Hirunyawipada, Tanawat, Michael Beyerlein, and Charles Blankson. "Cross-functional integration as a knowledge transformation mechanism: Implications for new product development." *Industrial Marketing Management* 39.4 (2010): 650-660.

Im, Subin, et al. "Determinants of Korean and Japanese new product performance: An interrelational and process view." *Journal of International Marketing* 11.4 (2003): 81-112.

Jeong, Insik, Jae H. Pae, and Dongsheng Zhou. "Antecedents and consequences of the strategic orientations in new product development: The case of Chinese manufacturers." *Industrial Marketing Management* 35.3 (2006): 348-358.

Jeong, Insik. "A cross-national study of the relationship between international diversification and new product performance." *International Marketing Review*20.4 (2003): 353-376.

Knight, Gary A., and S. Tamar Cavusgil. "Innovation, organizational capabilities, and the born-global firm." *Journal of International Business Studies* 35.2 (2004): 124-141.

Knight, Gary A., and S. Tamar Cavusgil. "Innovation, organizational capabilities, and the born-global firm." *Journal of International Business Studies* 35.2 (2004): 124-141.

Levitt, T., 1993. The globalization of markets. *Readings in international business: a decision approach*, 249.

Lumpkin, G. Thomas, and Gregory G. Dess. "Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle." *Journal of business venturing* 16.5 (2001): 429-451.

Lumpkin, G. Tom, and Gregory G. Dess. "Clarifying the entrepreneurial orientation construct and linking it to performance." *Academy of management Review* 21.1 (1996): 135-172.

Lyon, D.W., Lumpkin, G.T. and Dess, G.G., 2000. Enhancing entrepreneurial orientation research: Operationalizing and measuring a key strategic decision making process. *Journal of management*, *26*(5), pp.1055-1085.

Matsuno, K., Mentzer, J.T. and Özsomer, A., 2002. The effects of entrepreneurial proclivity and market orientation on business performance. *Journal of marketing*, *66*(3), pp.18-32.

Matsuno, Ken, John T. Mentzer, and Ayşegül Özsomer. "The effects of entrepreneurial proclivity and market orientation on business performance. "*Journal of marketing* 66.3 (2002): 18-32.

McDougall, P.P. and Oviatt, B.M., 2000. International entrepreneurship: the intersection of two research paths. *Academy of management Journal*, *43*(5), pp.902-906.

McDougall, P.P. and Oviatt, B.M., 2003. Some fundamental issues in international entrepreneurship. *Entrepreneurship Theory & Practice*, 18, p.27.

Merlo, Omar, and Seigyoung Auh. "The effects of entrepreneurial orientation, market orientation, and marketing subunit influence on firm performance." *Marketing Letters* 20.3 (2009): 295-311.

Nakata, Cheryl, and K. Sivakumar. "National culture and new product development: An integrative review." *The Journal of Marketing* (1996): 61-72.

Nielsen, Bo Bernhard, and Sabina Nielsen. "The role of top management team international orientation in international strategic decision-making: The choice of foreign entry mode." *Journal of World Business* 46.2 (2011): 185-193.

O'Donnell, S. and Jeong, I., 2000. Marketing Standardization within global industries: an empirical study of performance implications. *International Marketing Review*, *17*(1), pp.19-33.

Olson, Eric M., et al. "Patterns of cooperation during new product development among marketing,

operations and R&D: Implications for project performance." *Journal of Product Innovation Management* 18.4 (2001): 258-271.

Samiee, S. and Roth, K., 1992. The influence of global marketing standardization on performance. *The Journal of Marketing*, pp.1-17.

Schilke, O., Reimann, M. and Thomas, J.S., 2009. When does international marketing standardization matter to firm performance?. *Journal of International Marketing*, *17*(4), pp.24-46.

Sethi, Rajesh. "New product quality and product development teams." *Journal of Marketing* 64.2 (2000): 1-14.

Song, Michael, and Mitzi M. Montoya-Weiss. "The effect of perceived technological uncertainty on Japanese new product development." *Academy of Management journal* 44.1 (2001): 61-80.

Xie, Jinhong, X. Michael Song, and Anne Stringfellow. "Interfunctional conflict, conflict resolution styles, and new product success: A four-culture comparison." *Management science* 44.12-part-2 (1998): S192-S206.

Yeoh, P.L. and Jeong, I., 1995. Contingency relationships between entrepreneurship, export channel structure and environment: a proposed conceptual model of export performance. *European Journal of Marketing*, 29(8), pp.95-115.

Zahra, Shaker A., and Jeffrey G. Covin. "Contextual influences on the corporate entrepreneurshipperformance relationship: A longitudinal analysis." *Journal of business venturing* 10.1 (1995): 43-58.

Zahra, Shaker A., R. Duane Ireland, and Michael A. Hitt. "International expansion by new venture firms: International diversity, mode of market entry, technological learning, and performance." *Academy of Management journal* 43.5 (2000): 925-950.

Zhou, Lianxi, Bradley R. Barnes, and Yuan Lu. "Entrepreneurial proclivity, capability upgrading and performance advantage of newness among international new ventures." *Journal of International Business Studies* 41.5 (2010): 882-905.

Zhou, Xiaoyu, Yi Han, and Rui Wang. "An Empirical Investigation on Firms' Proactive and Passive Motivation for Bribery in China." *Journal of business ethics* 118.3 (2013): 461-472.

Friendship or Hostility to introduce New Product: from the perspective of Foreign Collaboration

Yunjoo Nam Ph.D.Student, Yonsei University yinam24@gmail.com

Jooyoung Kwak Associate Professor, Yonsei University jooyoung.kwak@yonsei.ac.kr

> Miok Kim Senior Deputy Director, KOTRA <u>mokim@kotra.or.kr</u>

Introduction

Today's market environment has been unstable and development of technology has accelerated rapidly. In response to such quick changes, it is necessary for firms to acquire an ability to manufacture products demanded by the markets in time. Innovation is "a process that begins with an idea, proceeds with the development of an invention, and results in the introduction of a new product, process or service to the marketplace (Thornhill, 2006)" and is generally distinguished into radical and incremental innovation. If a technology is new to the adopting unit and new to the referent group of organizations (Daft and Becker, 1978) is sufficient to warrant the designation of a rare and radical, as opposed to incremental, innovation (Ettlie, 1984). Along these lines, it is generally assumed that the process of innovation consists of an ongoing pursuit of harnessing new and unique knowledge (Subramaniam and Youndt, 2005; Saenz et al., 2009). As innovation became an inevitable consideration that contributes big parts of firms' performance, most firms have invested in their capability building to increase innovation possibility. It is supported by Schumpeter that anyone seeking a profit must innovate.

Our research has distinctive points from the previous collaboration and innovation research that we

articulate product innovation into two parts, product that are "new to firm" and "new to market." New to firm refers to introduction of new product whether that is improved from previous product or totally newly invented within the firm. Otherwise, new to market refers to launching new product whether improved or invented to market before any firm else. Thus, the concept of new to firm is limited to product originality at firm level while new to market is broader concept that originality at market level. Moreover, a common trend in the literature related to collaboration between small and medium-sized enterprises in recent years has been the development of strategically managed collaborative industry networks (Bernal et al., 2002). SMEs may be of particular interest, given that they may often be the source of important innovations, but possess limited experience capabilities and management resources for bringing their innovations to international markets (Coviello and Munro, 1997; Bernal et al., 2002). Knight (2000) affirms that despite the importance of small and medium-sized companies to international business, little research has considered the role of SMEs have become crucial players in international economies and trade (Knight, 2000), relatively little is known about how these firms operate and proper under globalization or network internationally (Tornroos, 2000; Bernal et al., 2002). We remark that our paper is to apply these new innovative concepts to Korean small-and-medium-sized firms.

Previously a firm's internal R&D capability is emphasized and the firm makes an effort to increase its comparative advantage in R&D to increase its chance of innovation, but now firms are turning to external capabilities for such innovation. Along with internal R&D capability, external R&D has been an ongoing trend as "open innovation" takes a big part of innovation these days (Eui Young Chung, 2013). Open innovation allows firms to collaborate with other organizations, firms, universities, research centers, or government. Although the term "open innovation" has been a big part of innovation research, there are not many studies concerning foreign collaboration. There are still many business scholars overlook open innovation as domestic external R&D partners, but as the world economy converges into a unified global market, it is necessary for organizations to understand better their collaboration with foreign partners.

Thus, today it is important for firms to understand the importance of their interaction with external organizations to achieve innovations. By interacting and sharing tacit and explicit knowledge with others, the individual enhances the capacity to define a situation or problem, and apply his or her knowledge so as to act and specifically solve the problem (Nonaka et al., 2006). Therefore, knowledge sharing and diffusion are both essential in order to create new knowledge and produce innovation (Dalkir, 2005). The stream of innovation

study has been mostly focused on what determines the degree of a firm's innovation, in addition to the relationship between a firm's innovation and performance, cooperation effect in innovation, cooperation with domestic partners, and others. Although many studies proved the positive effect of firms' cooperation or collaboration with other organizations, research centers, universities, or governments, there is still a dearth of study on foreign collaboration (Das, 2000; Goerzen, 2005; Elche, 2008; Choi, 2011; Choi, 2013etc). Therefore, the current study examines how Korean firms' foreign collaboration affects their possibility of innovation and how Korean firms' foreign collaboration affects the firm's possibility of reaching out to new market.

In our research, we define innovation as introduction of "new product." The purpose of this study is to further expand the boundary of collaboration type from domestic to international alliance as well as to measure the effect of different types of collaboration such as horizontal and vertical collaboration. Furthermore, we investigate how these different typologies of collaboration formation influence vary accordingly firm's research and development intensity.

Theoretical background and hypothesis

Resource-based theory and Social network theory

Resources are "tangible and intangible assets which are tied semi-permanently to the firm" (Lavie, 2006), "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by the firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness" (Barney, 1991; Lavie, 2006), "stocks of by the firm" (Amit and Schoemaker, 2006; Lavie, 2006). Then, Barney (1991) classifies firm resources into physical capital resources, human capital resources, and organizational capital resources (Teng, 2000). Physical resources include tangible assets such as land, plant, equipment, finished and semi-finished goods, as well as intangible assets such as brand name, copyright and patent. Human resources include the education, training, experience, relationships, skills, and intelligence of individual staff in a firm. Finally, organizational resources include corporate culture, organizational structure, rules, procedures, management information systems, as well as a firm's relationships with external institutions (Tsang, 1997). Though resources are defined in several ways, however, there is a shared commonality among them that resources are firm-specific knowledge and asset that are not imitable.

Many resources are firm-specific, imperfectly imitable (Teng, 2000), scare, and lacking in direct substitutes (Barney, 1991), thus, firms are continuously heterogeneous in terms of their resource base (Teng, 2000). Because of individual firm's heterogeneous resource, thus, the resource-based view considers strategic alliances as strategies used to access other firms' resources, for the purpose of garnering otherwise unavailable competitive advantages and values to the firm (Teng, 2000). It is important for firms to obtain such scarce, not imitable, unique, and not substitutable resources that are essential to gain competitive advantage. Previous researches suggest several ways to acquire resources such as through using alliances such as forming joint ventures, and making M&A deals (Kamien, 1992; Chuang, 1999; Hagedoorn, 2002).

There is a growing evidence to suggest that firms no longer rely exclusively on their internal R&D activities to maintain their competitiveness (Veugelers and Cassiman, ; Narula and Hagedoorn, ; Archibugi and Iammarino, Narula; 2001). Firms previously internalized their R&D expenditure, ability, or even risk. Non-internal activities, apart from the obvious benefits of exploring new areas and instigating radical change, have the advantage of being a 'reversible' form of investment (Narula, 2001). Through externalizing, firms can reduce risk, accelerate research process, and decrease expenditure. In today's competitive market environment, value maximization of a firm through pooling and utilizing valuable resources is essential. That is, firms are viewed as attempting to find the optimal resource boundary through which the value of their resources is better realized than through other resource combinations (Teng, 2000).

We draw upon social network theory to complement the resource-based view to explain how networking influence learning and innovation from strategic alliances. Alliance provides an ideal platform for a firm to learn, as diverse partners bring together diverse range of information and resources to work together on specific projects (Doz, 1996; Hamel, 1991; Inkpen, 2002; Inkpen and Tsang, 2007; Lui, 2009; Kim and Lui, 2010). Gulati (1999) proposed that valuable resources, such as information, may be inherent in the networks within which firms are situated that, in turn, provide strategic advantage. Prior research indicated that networks enable forums for discussion, direct attention to new practices, and facilitate the transmission of information (Davis and Greve, 1997; Palmer et al., 1995; Goerzen, 2005). Firms with limited resources considered alliances as a way of extending their competences, thus, alliance clearly provides an opportunity for small and medium-sized enterprises to have access to capabilities they ordinarily might not be able to afford, or to justify a higher-than industry average R&D intensity to top management (Narula, 2001).

Collaborative activities and product innovation

Innovation is seen as becoming increasingly evenly distributed, as fewer firms are able to "go alone" in the field of technology. The resource-based and network theory can be cited as the main theoretical background for the relationship between technical cooperation and technical innovation (HJ Kim and BG Kim, 2013). Firms enter into collaborative arrangements for innovation because they do not internally possess all of the necessary resources and/or because they wish to reduce the risks associated with innovation (Tether, 2001). It is important to acquire innovative knowledge from external networks and to utilize collaboration for innovation (Park, 2014). The ability to take advantage of external knowledge plays a key role in the creation of innovation performance (Cohen and Levinthal, 1990). From the perspective of the resource-based theory, it can ensure a sustainable competitive advantage by securing complementary resources, new knowledge, technology and experience (Barney, 1991) for technical innovation through cooperation between partners because each partner has different resources and technical capacity. In particular, the external technical cooperation network can play a key role in increasing the novelty of product innovation because it can secure variation in new sources of knowledge, which maximizes the performance of technical innovation through the technical cooperation network with the outside (Nieto and Santamaria, 2007). And this is supported by several previous studies that greater number of cooperative relationships among companies has a more positive effect on technical innovation performance (Haytornthwaite, 1996; Ahuja, 2000; Elche, 2008; Kim, 2010; Choi, 2010).

As the resource-based and social network theory assert the synergy effect of combination of heterogeneous resources, we may apply the theory at global scope. Countries differ in terms of political, social, cultural and economic conditions, even for the same industry, organizational fields should vary across countries. It is thus reasonable to assume that, there is a greater degree of heterogeneity among firms across countries than within a country – the effect of "country imprinting" (Kogut, 1993; Tsang, 1997). In the international arena, multinational companies may enter foreign markets by acquiring a local company, may also seek the resources of their local partners, such as local facilities, knowledge, and connections, by forming international joint ventures (Beamish, 1987, Yan and Gray, 1994; Teng, 2000). It is necessary to search external actors who play a significant role in innovation, and as the market converges into a global level, studies on foreign partnering is becoming particularly essential.

Selecting Collaboration Partner

Domestic and international Collaboration

"International alliances" are voluntary and continuous arrangements between firms from different countries that involve exchange, sharing, or co-development of products, technologies, or services (Gulati, 1995; Harrigan, 1988; Parkhe, 1993; Uzzi, 1997). Parkhe (1991) and Dacin (1997) define international alliances as "...cooperative arrangements, involving cross-border flows and linkages that utilize resources and/or governance structures from autonomous organizations headquartered in two or more countries."

Many studies indicate domestic ties are relatively easier than international ties to deal with culturally, and transaction costs often are lower (Anderson, H'akansson, and Johanson, 1994; Elg, 2000). It is more difficult to find compatible partners in cross-border alliances because firms based in different countries may have largely different criteria in selecting partners and thus seek different benefits from the alliances (Dacin, 1997). Though international cooperation accompanies uncertainty and risk, managers engage in international collaboration activities because of a greater degree of heterogeneity among firms across countries than within a country (Kogut, 1993; Tsang, 1997). Furthermore, increased R&D competition, along with continually shorter product life cycles, has made the achievement of technological breakthroughs difficult (Mario, 2008), as a result, the development of innovations requires substantial and diverse resources. Previously demonstrated by resource based view, internationalization helps to generate R&D resources which are often unavailable to domestic firms (Kobrin, 1991; Kotabe, 1991).

Nonaka (1995) suggests knowledge-based view of the firm that innovation is an information-andknowledge-intensive process (Nonaka and Takeuchi, 1995; Mario, 2008). Highly international firms tend to have geographically dispersed R&D departments (von Zedtwitz and Gassmann, 2002; Kurokawa et al., 2007; Mario, 2008), thus, they can increase their innovative capacity by utilizing knowledge and ideas from several countries and from a broader group of scientists (Kafouros, 2006). The greater knowledge of national idiosyncrasies, available to culturally diverse teams, facilitates coordination (Hitt et al., 1997). Internationalization can also advance innovative capacity by improving the process of knowledge accumulation and by increasing organizational learning and provides the opportunity to capture ideas from a greater number of new and different markets, as well as from a wide range of cultural perspectives (Hitt et al., 1997).

Internationalization enables firms to minimize the costs associated with innovation by accessing many

markets around the globe; they can buy materials and R&D inputs from the cheapest available sources, and locate their R&D and other departments in the most productive regions (Kotabe et al., 2002). Internationalization can also improve the ability to innovate by allowing firms to hire better technologists and access skilled technical expertise (Cheng and Bolon, 1993; Mario, 2008), may improve the quality of new products through network mechanisms that enable a continuous flow of information about the changing needs and requirements of customers (Kafouros, 2006), and may allow a company to adapt its technologies to the local market needs, thereby improving its responsiveness (Cheng and Bolon, 1993; Mario, 2008), providing technical support and engaging in local scientific cooperation (von Zedtwitz and Gassmann, 2002; Mario, 2008). Many researches have suggested that multinational companies can establish their facilities in regions where land, capital and scientific talent are cheap (Kotabe et al. 2002; Mario, 2008). Thus, they emphasize, highly international firms can improve their ability to innovate by having greater opportunities to learn (Cheng and Bolon, 1993; Hitt et al., 1997; Kotabe, 2002; Kafouros, 2006; Mario, 2008).

This paper is constructed into three parts of research question.

In the first research question, we are looking for how foreign collaboration without considering types of collaboration affect firm's innovative activities whether innovations are new to firm or new to market. Kotabe and Swan (1995) argued that innovation can be investigated in terms of both newness to the company (the firm-based framework), and newness to the market (the newness to the market framework) (Johannessen, 2001). In the second research question, we therefore, in the first part, we investigate innovation at the firm level which in other word newness to company while in second part, we investigate innovation that is the newness to market. In this part, we examine how cooperation with foreign partners affects Korean manufacturing firms to introduce new product innovation to the market.

Thus, we hypothesize,

Hypothesis 1.1 Foreign collaboration will increase the possibility of product innovation that is new to firm Hypothesis 1.2 Foreign collaboration will increase the possibility of product innovation that is new to market

International horizontal and vertical collaboration

The trend of innovation research highlights the importance of collaborative activities with external resources to innovate efficiently. Organizations usually do not participate alone in innovation activity but they

tend to cooperate with enterprises of demand, enterprises of supply, university, or other organizations for innovation (Kim, 2013). It is critical for managers to identify and understand effective partner selection criteria prior to forming collaboration. Many studies suggested several types of partners for collaborations and their effectiveness (Kotabe and Swan, 1995; George, 2001; Thornhill, 2006; Kim, 2013). Each partnership brings diverse influences to firms, and it is important to identify advantages and disadvantages of each partnership. These studies, however, are somewhat limited. Many studies only focused on domestic partnership with suppliers, rivalry firms, governments, research centers, or others (Hagedoorn, 1993; Saxton, 1997; Stuart, 2000; George, 2001; Oum, 2004). Our paper once again has a significant implication on collaborative activities by extending the range of partners to foreign affiliations.

There are two alliance structures referring to whether an alliance is completed with a firm at the same level of the value chain (horizontal) or at a different level (vertical). Alliance structures, whether horizontal or vertical, are associated with varying degrees of innovativeness (Hagedoorn, 1993; Kotabe and Swan, 1995; Stuart, 2000; Oum, 2004; George, 2001). Horizontal alliance is primarily joint product development arrangements while vertical alliance includes outsourcing of important non-core functions or acquisition of complementary assets needed for innovation. Horizontal relationship gives the firm new knowledge in the design, prototyping, testing, development, and introduction of new products. The breadth of these relationships exposes the high technology firm to multiple and varied sources of ideas and knowledge, which can fuel innovation. On the other hand, vertical relationships can deepen the firm's knowledge of specific fields, while giving it access to the resources and assets necessary to create and develop new products. As this discussion suggests, horizontal and vertical relationships give the firm access to different types of knowledge that go beyond what the firm already has, thereby broadening a firm's potential absorptive capacity (George, 2001).

Therefore, we can presume distinctive purpose of collaborating methods that firms will use horizontal collaboration to extend their market share by utilizing rivalry firms' resources and knowledge while firms will use vertical collaboration to increase supply efficiency, performance, or to save transaction costs. In the study of George (2001), horizontal alliances are positively related to patents (innovative capability, usually measurement of innovation), whereas vertical alliances are negatively related to patents.

Hypothesis 2 Foreign horizontal collaboration will relatively increase the possibility of new product innovation than foreign vertical collaboration

High technology and low technology

High-technology industries are the arenas in which alliance activity has been most intensive in the recent past (Hagedoorn, 1993; Stuart, 2000). Now, we would like to further discover how foreign horizontal collaboration affects differently according to firm's level of research and development intensity. In consumer products industries such as packaged foods and over-the-counter medicines, key resources and skill may be respectively, brand names and consumer marketing capabilities. In contrast, in high-technology industries they are likely to be state-of-the art manufacturing facilities and a leading R&D organization (Stuart, 2000). In high-technology industries where the pace of technical change is high, new products may have to overcome a significant technological hurdle to distinguish themselves from the offerings of competing firms (Thornhill, 2006), and also the percentage of firms introducing national or world-first new products was more than double in the high-technology manufacturing sector, that of low-technology sector (Stuart, 2000).

Industries with greater aggregate levels of R&D intensity are home to higher rates of firm-level innovative activity (Thornhill, 2006). The previous studies on high technology and innovation assert that the effect of the innovativeness of horizontal alliance partners is a highly significant predictor of the patent rate (Stuart, 2000). As Thornhill (2006) suggests, high-technology firms are more motivated to engage in collaborative activities with horizontal alliance partner to survive from pace and magnitude of change is extreme.

Hypothesis 3 Foreign horizontal collaboration will relatively increase the possibility of new product innovation in high-tech industry than in low-tech industry

Data and Method

Data

STEPI is an organization affiliated with the Korean government that has been collecting data on the innovation of Korean organizations since 2002. The main method of collecting data is survey that conforms to the OECD Oslo Manual guideline. The *Oslo Manual* is the foremost international source of guidelines for the collection and use of data on innovation activities in industries. It enables researchers to determine the scale of innovation activities, understand the characteristics of innovative firms as well as the internal and systematic factors that can influence innovation. The guideline is a prerequisite for the pursuit and analysis of policies

aimed at fostering innovation. The latest edition has been updated to take into account the progress made in understanding the innovation process and its economic impact, and the experience gained from recent rounds of innovation surveys in OECD member and non-member countries. For the first time, the Oslo Manual is used to investigate the field of non-innovation and the links between different innovation types. (OECD, 2005)¹

We collected data from STEPI's KIS (Korean Innovation Survey) database 2014 which includes data on Korean organizations from 2011 to 2013. In our sample, 4076 organizations represent the Korean manufacturing industry. KIS differentiates firm size in accordance to their number of employees; organizations with under 100 (1-99) are grouped as small firms and organizations with 100 and over 100 are grouped as medium-large organizations.

Model

In the study of possibility of innovation, we are going to use logistic regression. Logistic regression allows us to test the possibility of dependent variable, and the model sets an organization as an explanatory variable in a function which allows us to infer the possibility of product innovation.

Prob(INNOV=1)=1/[1+e -(α + $\Sigma\beta$ iXi)]

Here, product innovation (INNOV) is a dependent variable which will have a value of either 1 or 0 (if there is product innovation=1, no product innovation=0). Prob is a possibility of a firm to carry out product innovation. X- i is an explanatory variable which can be inferred by the combination of qualitative variables and

continuous variables. α is a constant term while β is an assumed coefficients.

Model:

Prob(INNOV NEW TO Firm/Market=1)= $1/[1+e^{-z}]$

here, $Z = \alpha + \Sigma \beta_{i^2} X_i$

$= \alpha + \beta_1 \text{FOREIGN COLLABORATION} + \beta_2 \text{Firm Size} + \beta_3 \text{Firm Age} + \beta_4 \text{Firm R&D} + \beta_5 \text{Industry}$ R&D + $\beta_6 \text{HHI} + \beta_7 \text{Firm Patent}$

¹ OECD Oslo Manual: The Oslo Manual is the foremost international source of guidelines for the collection and use of data on innovation activities in industry. This latest edition has been updated to take into account the progress made in understanding the innovation process and its economic impact, and the experience gained from recent rounds of innovation surveys in OECD member and non-member countries.

Model 2:

Prob(NEW INNOV=1)= $1/[1+e^{-z}]$

here, $Z = \alpha + \Sigma \beta_{i^2} X_i$

$= \alpha + \beta_1 \text{Horizontal Collaboration} + \beta_2 \text{Vertical Collaboration} + \beta_3 \text{Firm Size} + \beta_4 \text{Firm Age} + \beta_5 \text{Firm } \text{R} \text{\&D} + \beta_6 \text{Industry R} \text{\&D} + \beta_7 \text{HHI} + \beta_8 \text{Firm Patent}$

Variables

Dependent Variable: Product Innovation

Product Innovation: New to firm and new to market

Product innovation is defined in the Oslo Manual as the introduction on the market of "a product whose technological characteristics of intended uses differ significantly from those of previously produced products" or "an existing product whose performance has been significantly enhanced or upgraded" (OECD, 2005a, p.32; Raymond, 2010). KIS defined product innovation as the market introduction of a new or significantly improved good or service with respect to its capabilities, user friendliness, components or sub-systems.²

In our quantitative analysis of product innovation, problematic errors are usually caused by how innovation is measured. Most of previous studies have included R&D expenditure or patents as innovation indices (Bosworth, 1984; Abraham, 2000; Bldwin and Hanel, 2003; Sung, 2005; Becheikh et al., 2006; Raymond, 2010). Although these indices well represent a firm's level of innovation, there still remains limitations; firms do not always patent their product innovations, and even if firms do patent their innovation, they occasionally do not release the new technologies in markets. In addition to issues caused by limitations of patents, R&D expenditure index carries pitfalls as well. For example, firms have a tendency not to reveal their exact values of R&D because of confidential affair issue. Due to these limitations, in our study, we extracted values from KIS 2014 survey data. Our sample includes questionnaire in KIS data which asked whether the firm has had any product innovation in recent three years (2011-2013). For the newness to firm measurement, we extracted data that stating "your enterprise introduced a new or significantly improved product onto your market

² CIS 2014: The Community Innovation Survey (CIS) based innovation statistics are part of the EU science and technology statistics. Surveys are carried out with two years' frequency by EU member states and number of ESS member countries. Compiling CIS data is voluntary to the countries, which means that in different surveys years different countries are involved. The CIS is a survey of innovation activity in enterprises. The harmonised survey is designed to provide information on the innovativeness of sectors by type of enterprises, on the different types of innovation and on various aspects of the development of an innovation, such as the objectives, the sources of information, the public funding, the innovation expenditures etc. The CIS provides statistics broken down by countries, type of innovation, activities and size classes.

before your competitors (it may have already been available in other markets)" For the newness to market measurement, we extracted data that stating "Your enterprise introduced a new or significantly improved product that was already available from your competitors in your market."

If the responding firm answered "Yes," we label it as an innovator and "No" answer led us to label it as a non-innovator. Thus, in our data, innovators are firms with a product innovation value of 1, while noninnovators are those with a value for the dependent variable.

> If there is product innovation new to firm/market (product), INNOV = 1 There is no product innovation new to firm/market (product), INNOV = 0

Product Innovation: New to either firm or market

Our model becomes more articulate in model 2, which is designed to study an organization's possibility coming up with new product innovation that is new to either firm or market level accordingly types of collaboration. In order to measure foreign horizontal and vertical collaboration effect on new product innovation, we combined possibility of innovation data from hypothesis 1.1 and 1.2, thus, if there was either firm level of product innovation or market level of product innovation, we considered the firm as an innovator and if there was neither firm level of product innovation nor market level of product innovation, we considered the firm as an innovator the firm as a non-innovator.

If there is an original innovation new to either firm or market (product), INNOV = 1There is no original innovation new to either firm or market (product), INNOV = 0

Independent variable

Foreign Collaboration

The purpose of our study is to figure out the relationship between collaborative activities and product innovation and how collaborative activities with foreign influence affect Korean organizations' possibility of generating product innovation. Like the dependent variable, we also extracted data from KIS 2014 dataset and distinguished firms with foreign collaboration and non-foreign collaboration; the KIS distinguished foreign collaboration and domestic collaboration; "during the three years 2011 to 2013, did your enterprise co-operate on any of your innovation activities with other enterprises or organizations? Innovation co-operation is active participation with other enterprises or organizations on innovation activities."³

We gave 1 as a value if there was any foreign collaboration and 0 as a value if there was no foreign collaboration.

Foreign horizontal and vertical collaboration

In order to test hypothesis two and three, we distinguished foreign collaboration into more detailed group. KIS data differentiated foreign partners into eight categories⁴ which are other enterprises within your enterprise group, suppliers of equipment, materials, components, or software, clients or customers from the private sector, clients or customers from the public sector, competitors or other enterprises in your sector, consultants or commercial labs, universities or other higher education institutes, and government, public or private research institutes. However, in this paper, we focus on horizontal and vertical foreign collaboration. The benefit of vertical cooperation is that is allows for further exploitation of the firm's existing knowledge (Tsai and Wang, 2009; Park 2014). In addition, through collaboration with the customer, another example of vertical cooperation (Kessler and Chakrabatri, 1996; Brockhoff, 2003). Thus, we include foreign supply provider (Tsai and Wang, 2009; Park 2014), foreign private sector/customer, and foreign public sector/customer as vertical cooperation partners.

Horizontal alliances are defined as voluntary and long-term contractual cooperative agreements between firms in the same industry that do not involve establishing a separate legal organization (Oum, 2004) Thus, we define foreign rivalry firms in the same industry as horizontal cooperation partner.

³ CIS 2014

⁴ KIS 2014

High technology and low technology

In this paper, we differentiated high-technology and low-technology firms accordingly their research and development intensity. We calculated the ratio of investment of R&D to firms' total sales(Sung, 2005). In order to distinguish high-technology and low-technology firm, we set a datum point as an average of every firm's research and development intensity which is 2.65. Thus, a firm's R&D intensity is more than 2.65%, we categorized it as a high-technology or if its R&D intensity is less than 2.65%, we categorized it as a lowtechnology.

Control Variable

Firm Size (Total sales): Firm size is likely to condition toward the innovation activities (Cohen and Klepper, 1996; Huergo, 2004). Researchers have sought to explain why certain firms innovate more than others by identifying determinants of innovation such as firm's size (Fritsch and Meschede, 2001; Raymond, 2010). In this paper, we measured firm's total sale as firm size. Organizations reported their total sales in scales from 2011 to 2013.

Firm Research and Development (RD): Investments in R&D are one of the most important mechanisms in determining the overall level of innovation in a given industry (Baldwin and Hanel, 2003; Raymond, 2010). Determinant of innovation that has received the most attention from researchers is research and development (Becheikh et al., 2006a; Raymond, 2010). The dataset includes whether there was a R&D in the firm from 2011 to 2013.

Firm Patent (PATENT): Patent is used as an index for innovation in business study and their correlations are high (Sung, 2005). Most studies have used patent statistics as a tool to assess the innovation process in a national and international context (Bosworth, 1984; Schiffel and Kitti, 1978; Paci and Sassu, 1997; Abraham, 2000). Patent should be controlled because firms with patent experience have higher chance of product innovation. In our data, we collected the firm's number of patent from 2011 to 2013.

Firm Age (AGE): The probability of introducing innovations according to the age of the firms makes sense because it provides us with insights into a key aspect of the dynamics of industries (Elena, 2004). We subtracted 2013 from the organization's year of establishment for the firm's age. We control organizational age as

organizational innovation capability may be different for organizations with different experience.

HHI: In our paper, we used Hirschman-Herfindahl index which is generally accepted as statistically more significant with organization market share value (Sung, 2005). For the actual value, we used an average of each items in same two digit level. We control market concentration to control firms with high and low market shares.

Industry R&D Intensity (ID_R&D): R&D intensity is a value of a firm's R&D expenditure relative to its total sales. We extracted data from "Scientific Technology Report" provided by the Ministry of Science and Technology and matched industry codes with KIS 2014 industry digit. This is an industry control variable to control technological opportunity across the industry (Sung, 2005). For the actual value, we used an average of each items in same two digit level.

Result

Descriptive Statistics and Correlation Analysis

Table 1 displays the descriptive statistics for the variables used in analysis. The final sample includes 4,075 observations from 2011 to 2013. Each variable is illustrated with variable's minimum and maximum value, average, and standard deviation. Independent variables such as foreign collaboration, foreign horizontal, and foreign vertical collaboration variables are dichotomy variables, and dependent variables such as innovation at firm level and market level are dichotomy variables as well. Firm R&D variable is also a dichotomy variable. We scaled the firm size into six levels, thus it is a scale variable. However, firm patent, age, HHI, and industry R&D variables are continuous variable. Before binary logistics regression to test hypotheses, we implemented correlation analysis among control and independent variables. As a result shown in table 2, except vertical and horizontal correlation coefficients, generally most of correlation coefficients are relatively low, thus we conclude there is no multicollinearity issue among these variables.

Insert ,

Hypothesis Testing

The results of the binary logistics regression are presented in Table 3. Model 1 shows only control variables as its base model. Each model was found to be significant (p<0.001). Model 2 and 3 add foreign collaboration variables, and show the interactions between possibility of introduction of new product that is new

to firm or market and foreign collaboration after these variables add to the base model. Empirical findings (see Model 2 and 3) indicate that a firm with more foreign collaborative activity tends to increase the possibility of firm's product innovation that is new to firm (β =0.432, p<0.1), providing support for H 1.1. Consistent with previous product innovation and collaboration research (Das, 2000; Elche, 2008; Choi, 2013etc), in model 2, the coefficient for the foreign collaboration is significant and positive (Foreign collaboration > 0). While foreign cooperation brings a firm level of product innovation, model 3 illustrates that a market level innovation is hardly carried out from foreign collaborative activity (β =0.522); not providing support for H 1.2. Although the coefficient for foreign collaboration in market level innovation is positive, it is not significant thus, we can imply that foreign collaboration surely positively affects the market level innovation activity but not a significant factor.

Model 4, 5 and 6 add specified foreign collaboration types such as horizontal and vertical collaboration variables. They also show the interactions of foreign collaboration types with introductions of new product that is new to either firm or market. Empirical findings (see model 4, 5, and 6) indicate that a firm with foreign horizontal collaboration does not tend to increase the possibility of product innovation that is either new to firm or market relative to foreign vertical collaboration (β =0.052 < β =0.597); not providing support for H2.

We simultaneously included horizontal and vertical in model 6, however, the coefficient for horizontal is not significant and positive (β =0.052); not providing support for H2. Surprisingly, the coefficient for vertical is significant and positive (β =0.597, p<0.1). Because of the unexpected result, we ran the model with horizontal and vertical separately to see how each collaborative activity has an effect on introduction of new product in model 4 and 5 respectively. However, similar to model 6, in model 4, foreign horizontal collaboration is also not significant with positive coefficient (β =0.411), and in model 5, foreign vertical collaboration is significant with positive coefficient (β =0.608, p<0.1). Therefore, we conclude that to introduce new product that is new to either firm or market, foreign horizontal collaboration is not an important factor rather foreign vertical collaboration is a considerable aspect, and we will elaborate more on this issue in discussion section.

Lastly, Model 7, 8, 9, and 10 add specified foreign collaboration types accordingly firm's research intensity. The models stay consistent with Model 4, 5, and 6, but we only divided the samples accordingly degree of firm's research and development and the datum point is "2.65" which is an average of total samples' research and development intensity. Model 7 and 8 indicate low technology foreign vertical and horizontal

collaboration while model 9 and 10 represent empirical result of high technology firm. Empirical findings (see Model 7, 8, 9, and 10) indicate that a high-technology firm's foreign horizontal collaboration does not tend to increase the possibility of product innovation that is either new to firm or market relative to a low-technology firm's foreign horizontal collaboration (β =0.354>0.311); not providing support for H3. Model 7 and 9 illustrate foreign horizontal collaboration effect on product innovation that is either new to firm or market level. We can imply from these models that foreign horizontal collaboration collaboration in high technology has relatively more influence than in low technology though foreign horizontal collaborative activity itself is not a significant consideration for firm's introduction of new product that is either new to firm or market. Because the foreign horizontal collaboration has no significant impact on both high and low technology, we ran the models with foreign vertical collaboration in model 8 and 10. It was found that in low technology, the coefficient for foreign vertical is not significant and positive, while in high technology is significant and positive. Therefore, we can conclude that foreign horizontal collaboration is not an essential factor for firm to introduce new product that is either new to firm or market but is more influential in high technology industry than in low technology industry.

Insert

Discussion and Conclusion

In this paper, we would like to see patterns of Korean small-and-medium sized enterprises foreign collaboration and how foreign horizontal collaboration which in other words, collaborative activities with foreign competitors would be effective on Korean SME's product innovations. Our result is somewhat surprising that foreign collaboration is not a determinative factor in introduction of new or refined products. We found that firm level of innovation, firm's possibility of product innovation which is new invention to firm itself from foreign collaboration has been found to be effective while foreign collaboration effect in product innovation that is new to market is found to be ineffective. We can learn that foreign collaboration brings firm's introduction of new product that is innovative at firm itself a positive effect, however, firm's introduction of new product that in innovation, we investigated foreign collaboration into more detailed parts; vertical and horizontal collaboration.

Interestingly, foreign vertical collaboration is more effective than foreign horizontal collaboration. We

defined foreign vertical collaboration as a firm having a collaborative activity with foreign supply provider, foreign private sector/customer, and foreign public sector/customer while horizontal collaboration as a firm building a partnership with foreign competitors. Each vertical and horizontal partnership has its own distinctive benefits. Christopher (1992) states that effective management of logistics and supply can become a source of competitive advantage, supporting firms in achieving cost/productivity advantages and "value" advantage. In addition, the high costs and complexity of servicing global markets is forcing organizations into collaborating with their clients, their suppliers and with their competitors in many new ways, and that as a result, many new types of network connections are being created. These connects may extend beyond dyadic relationships to wider networks (Lamming, 1993) where competing firms might share the control over technological, operational and marketing assets, and where companies can share or have access to others' experiences and expertise (Hastings, 1993; Bernal et al., 2002).

Collaboration between competing firms may create favorable conditions for "inter-partner" learning (Dussage et al., 1999), allowing one firm to acquire capabilities that they lack from a partner. Furthermore, when partner firms in a network are also competitors, there may be many opportunities for inter-firm learning (Johnsen and Jonsen, 1999). Competitors may be drawn to collaborate to learn from the experience of others, to forge entry to new markets or to pool their resources to gain greater force and power in their networks (Johnsen and Johnsen, 1999). Networks formed by competitors may therefore offer advantages for learning and widening the prospects of firms, particularly when each partner is located in a different geographic region. The influence of the differences in geographic focus may result in members of the network losing the fear of sharing valued corporate information and knowledge that in other circumstances might threaten their market position if used by competitors (Bernal et al., 2002).

While vertical and horizontal collaboration bring different advantages to firms, it is confirmed in our study, at least in case of Korean small and medium sized firms, that synergy from foreign supply provider, foreign private sector/customer, and foreign public sector/customer are more effective than pooling resources with foreign competitors. This founding may vary accordingly firm size, industry type, innovation type or characteristics of country, however, at least in case of Korean SMEs', we found foreign vertical collaborative activities are much effective to bring product innovation. We lastly explored foreign competitors' effect according to firms' research and development intensity. Both Korean SMEs' high and low degree of research and development do not show necessity of forming collaborations with competitors in abroad.

In this paper, we hoped to expand innovation research to global scope, thus we studied on foreign collaboration effects on Korean SMEs' product innovation. Although the results were found to be unexpected from our predictions that are followed by theories, we contributed in innovation research by specifically compared according to collaboration type and industry type.

Reference

- Abraham, Biju Paul, and Soumyo D. Moitra. "Innovation Assessment through Patent Analysis." *Technovation* 21.4 (2001): 245-52.
- Bernal, Sandra, Caroline Burr, and Rhonae Johnsen. "Competitor Networks: International Competitiveness through Collaboration: The Case of Small Freight Forwarders in High-Tech Forwarder Network." *International Journal of Enterneurial Behaviour and Research* 8 (2002): 239-53.
- Choi, Hyung-Pil and Jae-Ho, Lee. "An Analysis of the Factors that Influence the Choice of R&D Collaboration: Evidence from Korean Manufacturing Companies." *Journal of Technology Innovation* 18.1 (2010).
- Choi, Suk-Bong, and Gui-Ryong Ha. "A Study of Critical Factors for Technological Innovation of Korean Manufacturing Firms." *Korean Industrial Economic Association* 24.1 (2011): 1-24.
- Choi, Yong-Seok, and Ki-Wan Kim. "What Explains Firm's Innovativeness in Korean Manufacturing?: Global Activity and Knowledge Sources." *Korea Development Institute* (2013).
- Chung, Eui-Young, Lee, Ki-Baek and Mun-Kee, Choi. "The Structural Relationship between R&D Resources and Innovation Performance in Manufacturing Industry: With a Special Emphasis on Internal R&D Capability, External R&D Collaboration, and Governmental Support." *POSRI economic and business issues* 13.1 (2013).
- Collis, David J. "A Resource-Based Analysis of Global Competition: The Case of the Bearings Industry." *Strategic Management Journal* 12 (1991): 49-68.
- Dacin, M. Tina, Michael A. Hitt, and Edward Levitas. "Selecting Partners for Successful International Alliances: Examination of U.S. and Korean Firms." *Journal of World Business* 32.1 (1997).
- Das, T. K., and Bing-Sheng Teng. "A Resource-Based Theory of Strategic Alliances." Journal of Management 26.1 (2000): 31-61.
- Elche, Dioni, and Angela Gonzalez. "Influence of Innovation on Performance: Analysis of Spanish Service Firms." *The Service Industries Journal* 28.10 (2008): 1483-499.
- Ettlie, John E., William P. Bridges, and Robert D. O'keefe. "Organization Strategy and Structural Differences for Radical Versus Incremental Innovation." *Management Science* 30.6 (1984): 682-95.
- Gimeno, J. "Competition Within And Between Networks: The Contingent Effect Of Competitive Embeddedness On Alliance Formation." *Academy of Management Journal* 47.6 (2004): 820-42.
- Glaister, Keith, and Peter Buckley. "Strategic Motives For International Alliance Formation." *Journal of Management Studies* 33.3 (1996): 301-32.
- Goerzen, Anthony, and Paul W. Beamish. "The Effect of Alliance Network Diversity on Multinational Enterprise Performance." *Strategic Management Journal* 26 (2005): 333-54.
- Haytornthwaite, Caroline. "Social Network Analysis: An Approach and Technique for the Study of Information Exchange." *Library and Information Science Research* 18.4 (1996): 323-42.
- Huergo, Elena, and Jordi Jaumandreu. "How Does Probability of Innovation Change with Firm Age?" *Small Business Economics* 22.3/4 (2004): 193-207.
- Hwang, Nam-Woong, Lee, Jung-Min and Yeun-Bae, Kim. "Effect of Technological Collaboration on Firm's Product Innovation Output: The Moderating Roles of Appropriability." *Journal of Technology Innovation*

22.1 (2014).

- Johannessen, Jon-Arild, Bjørn Olsen, and G.t. Lumpkin. "Innovation as Newness: What Is New, How New, and New to Whom?" *Euro Jrnl of Inn Mnagmnt European Journal of Innovation Management* 4.1 (2001): 20-31. Web.
- Kam, Wong Poh, and Annette Singh. "The Pattern of Innovation in the Knowledge-intensive Business Services Sector of Singapore." *Singapore Management Review* (2004): 21.
- Kim, Min-Jeong. "How Policy Instruments Improve Business Innovation: The Mediating Role of Organization Networks." *Korean Journal of Management* 21.2 (2013): 115-43.
- Kim, Myung-Kwan, Song, Jong-Kuk, Jung-Won, Lee. "Changing Strategies for Business Innovation and the Implication for S&T Policy." *Science & Technology Policy Institute* (2003): 74-83.
- Kim, Youngok, and Steven Lui. "External Network, Business Group Affiliation, and Firm Innovation: A Longitudinal Study of Korean Firms." *Network and Innovation* (2010).
- Kotabe, M. and Swan, K.S. (1995), "The role of strategic alliances in high technology new product development", Strategic Management Journal, Vol. 16 No. 8, pp. 621-36.
- Lavie, Doven. "The Competitive Advantage of Interconnected Firms: An Extension of the Resource-Based View." *Academy of Management* 31.3 (2006): 638-58.
- Lee, Cassey. "The Determinants of Innovation in the Malaysian Manufacturing Sector: An Econometric Analysis at the Firm Level." *Institute of Southeast Asian Studies* 21.3 (2004): 319-29.
- Mairesse, Jacques, and Pierre Mohnen. "Using Innovations Surveys for Econometric Analysis." *Handbooks in Economics* 02 (2010).
- Narula, Rajneesh. "Choosing Between Internal and Non-internal R&D Activities: Some Technological and Economic Factors." *Technology Analysis & Strategic Management* 13.3 (2001): 365-87.
- Oum, Tae H., Jong-Hun Park, Kwangsoo Kim, and Chunyan Yu. "The Effect of Horizontal Alliances on Firm Productivity and Profitability: Evidence from the Global Airline Industry." *Journal of Business Research* 57.8 (2004): 844-53.
- Park, Sung-Keun and Byung-Keun, Kim. "The effect of incoming knowledge spillover, technological collaborations, and appropriability mechanisms on the Innovation performance of SMEs: moderating effect of patent." *Korean management review* 43.1 (2014).
- Raymond, Louis, and Josée St-Pierre. "R&D as a Determinant of Innovation in Manufacturing SMEs: An Attempt at Empirical Clarification." *Technovation* 30.1 (2010): 48-56.
- Rogers, Mark. "Networks, Firm Size and Innovation." Small Business Economics 22 (2004): 141-53.
- Sáenz, Josune, Nekane Aramburu, and Olga Rivera. "Knowledge Sharing and Innovation Performance." *Jnl of Intellectual Capital Journal of Intellectual Capital* 10.1 (2009): 22-36.
- Saxton, Todd. "The Effects of Partner and Relationship Characteristics on Alliance Outcomes." Academy of Management 40.2 (1997): 443-61.
- Steinle, Claus, and Holger Schiele. "Limits to Global Sourcing? Strategic Consequences of Dependency on International Supplieres: Cluster Theory, Resource-based View and Case Studies." *Journal of Purchasing* and Supply Management 14 (2008): 3-14.

- Stojcic, Nebojsa, and Iraj Hashi. "Firm Productivity and Type of Innovation: Evidence from the Community Innovation Survey 6." *Croatian Economic Survey* 2nd ser. 16 (2014): 121-46.
- Stuart, Toby E. "Interorganizational Alliances and the Performance of Firms: A Study of Growth and Innovation Rates in a High-technology Industry." *Strat. Mgmt. J. Strategic Management Journal* 21.8 (2000): 791-811.
- Sung, Tae-Kyung. "The Determinants of Firm's Innovative Activity: A Comparison of High Technology Industries and Low Technological Industries." *Journal of Industrial Economics and Business* 18.1 (2005): 339-60.
- Sung, Tae-Kyung. "Determinants of Firm's Innovative Output: The Role of External Networks and Firm Size." *Korean journal of Business Administration* (2005): 1767-1788.
- Tether, Bruce. "Who Co-operates for Innovation, and Why An Empirical Analysis." *Research Policy* (2002): 947-67.
- Thornhill, Stewart. "Knowledge, Innovation and Firm Performance in High- and Low-technology Regimes." Journal of Business Venturing 21.5 (2006): 687-703.
- Tsang, Eric W.K. "Motives for Strategic Alliance: A Resource-Based Perspective." Scand. Journal of Management 14.3 (1998): 207-21.
- Utterback, J.M. and Abernathy, W.J. (1975), "A dynamic model of process and product innovation", Omega , Vol. 3 No. 6, pp. 639-56.
- Wong, Poh Kam, and Zi-Lin He. "A Comparative Study of Innovation Behaviour in Singapore's KIBS and Manufacturing Firms." *The Service Industries Journal* 25.1 (2005): 23-42.

	Observation	Min Value	Max Value	Average	SD
Firm Size	4075	1	6	3.062	1.429
New to Market	4075	0	1	.07	.256
New to Firm	4075	0	1	.16	.365
New to Firm/Market	4075	0	1	.18	.387
Foreign	4075	0	1	.02	.127
Collaboration					
Vertical	4075	0	1	.01	.107
Collaboration					
Horizontal	4075	0	1	.00	.064
Collaboration					
Firm Patent	4075	0	300	1.66	9.267
Firm Age	4075	3	89	16.21	11.104
Industry R&D	4075	.34	8.24	2.798	1.916
HHI	4075	.15	4.161	1.102	7.683
Firm R&D	4075	0	1	.27	.444

<Table 1> Descriptive Statistics

<Table 2> Correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8
Firm Size	3.062	1.429								
Foreign Collaboration	0.02	0.127	0.132***							
Vertical Collaboration	0.01	0.107	0.084***	0.835***						
Horizontal Collaboration	0.00	0.064	0.080***	0.501***	0.385***					
Firm Patent	1.66	9.267	0.222***	0.054***	0.031**	0.059***				
Firm Age	16.21	11.104	0.392***	0.076***	0.050***	0.063***	0.094***			
Industry R&D	2.798	1.916	0.040**	0.028*	0.033**	0.011	0.096***	049***		
Firm R&D	0.64	1.150	0.375***	0.186***	0.157***	0.098***	0.226***	0.156***	0.204***	
HHI	1.102	7.683	0.090***	0.047***	0.048***	0.024	0.010	046***	059***	016
Notes: Significance at: *n<0.1. **n<0.05	***n<0.01: sa	mple size =	4075							

Ņ • 5 • 5. • 2 Ign

<table 3=""> The results of t</table>	the binary l	ogistics reg	ression									
	Mo	del 1	Mo	del 2	Σ	odel 3	Mo	del 4	Moc	el 5	Σ	odel 6
Variables	β	Wald	β	Wald	β	Wald	β	Wald	β	Wald	β	Wald
		value		value		value		value		value		value
		11730	221 1		C 7 7		Г <u></u> УГ С	CC0 1 3C	J / L		377 C	
Constant.	111.0-	+0.000	.4.100			00t.010	+07.0-		0.47.0-	010.040	C+1.C-	243.12
CUILIUN VALIAUCS		0.064	0.000	*001 C	1200	*00/ r		200.0	1100	0200	1100	1960
	0.040	106.0	600.0		1 / 0.0	1.7 00	0.042	(06.0	0.041	0.001	0.041	
Firm Age	0.005	(0.044) 1.044	0.008	(0.044) 2.718*	0.009	(cco.o) 2.842*	0.005	1.004	0.005	(++0.0)	0.005	0.974
)		(0.05)		(0.005)		(900:0)		(0.005)		(0.005)		(0.005)
Firm R&D	4.096	815.094** [,]	* 3.945	656.677***	3.707	225.597***	4.093	812.761***	4.079	804.21***	4.079	804.090***
		(0.143)		(0.154)		(0.247)		(0.144)		(0.144)		(0.144)
Firm Patent	0.034	16.964***	0.014	6.168**	0.010	5.722**	0.034	16.704***	0.034	16.943***	0.034	16.880***
		(0.008)		(0.006)		(0.004)		(0.008)		(0.008)		(0.008)
IHH	0.000	2.443*	0.000	0.378	0.000	1.369	0.000	2.515*	0.000	2.989*	0.000	2.989*
		(0000)		(0000)		(0000)		(0000)		(0000)		(0000)
Industry R&D	-0.023	0.736	-0.024	0.849	0.044	1.974*	-0.023	0.726	-0.023	0.741	-0.023	0.740
		(0.027)		(0.026)		(0.031)		(0.027)		(0.027)		(0.027)
Independent Variables												
Foreign Collaboration			0.432	2.394*	0.215	0.522						
				(0.279)		(0.297)						
Foreign-Horizontal							0.411	0.487			0.052	0.007
Collaboration								(0.589)				(0.630)
Foreign-Vertical Collaboration									0.608	2.944*	0.597	2.500*
)										(0.354)		(0.378)
Observation number	4(175	4075		407	5	4075		4075		40	75
Wals	135	3.650	1516.04	8	1776	545	1358.650		1358.65	0	1358	650
Log-likelihood	207	9.483	2052.99	5	1434	235	2078.97(0	2076.31	8	2076	311
Significance of model	0>	.001	<0.001		<0.0(10	< 0.001		<0.00		<0>	001

						•	2	4
	Model /		Model 8		INIOC	lel y	MO	aei iv
Variables	β	Wald	β	Wald	β	Wald	β	Wald
		value		value		value		value
Constant	-3.229	83.076	-3.226	82.979	-4.975	181.926	-4.932	178.527
Control Variables								
Firm Size	0.021	0.126	0.023	0.142	0.084	1.617	0.077	1.329
		(0.060)		(090.0)		(0.066)		(0.066)
Firm Age	0.000	0.000	0.000	0.001	0.00	1.559	0.010	1.799*
		(0.007)		(0.007)		(0.008)		(0.008)
Firm R&D	3.732	453.844***	3.723	448.164***	4.739	271.603***	4.728	269.848***
		(0.175)		(0.176)		(0.288)		(0.288)
Firm Patent	0.087	13.599***	0.087	13.661***	0.024	6.734***	0.024	6.920***
		(0.024)		(0.024)		(600.0)		(600.0)
HHI	0.000	2.774*	0.000	2.905*	0.000	2.903*	0.000	3.080*
		(0.000)		(0000)		(0000)		(0.000)
Industry R&D	-0.016	0.016	-0.014	0.011	0.078	3.106*	0.072	2.640*
		(0.129)		(0.129)		(0.044)		(0.044)
Independent Variables								
Foreign Collaboration								
Foreign-Horizontal	0.311	0.140			0.354	0.170		
Collaboration		(0.831)				(0.859)		
Foreign-Vertical Collaboration			0.298	0.416			0.908	2.471*
				(0.463)				(0.577)
Observation number	2145		1606		19	30	1319	
Wals	766.451		766.451		590	0.215	590.2	15
Log-likelihood	1089.320		1089.039		958	3.395	955.7	33
Significance of model	< 0.001		<0.001		0 ~	.001	< 0.0	01

г

1