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A Three-Way Collaborative NPD Network between a Large Retailer and Small and Medium-Sized Suppliers: A Case of Win-Win Growth[*]

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Making efforts to break down the barriers between the intra-company departments as well as cooperating with external partners can become the driving force to create a successful innovation in the new product development (NPD) process. This study deals with how the key factors of collaborative innovation success are working in the process of NPD collaboration. Using case analysis of the NPD process, where a large retailer and small and medium-sized suppliers cooperate, we found that the small and medium-sized suppliers achieved greater 'short-term' performances in the collaboration than the large firm, although the long-term performance is not clear. Among the six antecedents of innovation success, relationship-specific investment played a critical role in motivating the supplier's participation in the NPD process. Adopting a 'closed' network in which the two suppliers interact directly with each other and create new knowledge for the NPD process played an important role in producing a quality product in a reduced development time. Unlike previous studies about the retailer-supplier cooperation for NPD in the food industry suggesting that position differences cause communication problems which is a major obstacle to the NPD success. This study suggests that large retailer's initiative role is a critical success factor in the NPD by the cooperation between small and medium-sized suppliers and large retailers.

Keywords *: NPD, Small and Medium-sized Enterprises, Retailer, Case Study, Win-win Growth*

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Ⅰ. Introduction

Many prior studies on the cooperation between businesses in new product development (NPD) have focused on identifying the success factors, especially looking at the processes from the perspective of manufacturers (Steenkamp and Dekimpe, 1997; Hoegl and Wagner, 2005; Lakemond, Berggren, and van Weele, 2006). When retailers and manufacturers cooperate with each other in the NPD process, adjusting conflict and improving communication which were caused by the perspective differences were suggested as important factors for success (Grunert et al., 2005; Olsen and Sallis, 2010). Although NPD collaborations between distributors and suppliers have been studied a number of times, only a few studies have focused on the distributors's role when managing suppliers in NPD projects (Melander and Lakemond, 2014). In addition, most previous studies concentrate on the case of an equal partnership between distributors and manufacturers. However, when distributors are looking for suppliers to work with for an NPD project, they cannot find the right partners all at the proper time. Sometimes they will have no other choices but to choose their partners among small and medium suppliers. There is few research that addresses the role of retailers who are under high uncertainty in the NPD process due to the incompetency of their unsubstitutable partners.

It is important for small suppliers to jointhe collaborative innovation network with large buyers because small suppliers face unique challenges for innovation such as scarcity of resources, complexity of scientific field, coordination of the operative functions of the firm, or access to up-to-date scientific excellence (Abouzeedan, Klofsten, and Hedner, 2013).

The dyadic collaboration process and its outcomes in buyer-supplier relationships are well explained by previous researches (eg. Jap, 1999; Yan and Dooley, 2014). Jap (1999) proposed a comprehensive model including environmental factors, organizational properties, and interpersonal states as antecedents of two different types of dyadic behaviour, coordination effort and idiosyncratic investment, which determine both profit performance and realized competitive advantages of the dyads. Yan and Dooley (2014) introduced a new mediator, buyer-supplier collaboration quality, between four antecedents and firm performance.

When the collaboration occurs among three or more partners, the network structure should be considered before the effectiveness of collaboration is verified (Ahuja, 2000). Although inter-organizational network theory suggests that the optimal structure of inter firm networks are varied across the objectives of the network members, the question of how to organize the collaboration network between SMEs and their partners is not fully answered (Pullen, Weerd-Nederhof, Groen, and Fisscher, 2012).

This study analyzes an NPD case of a Korean retailer in which the retailer as focal firm forms a three-way collaboration network to develop an instant pre-cooked rice product with supplier's brand on the package. From the case analysis, we attempt to explain what was the intention of the retailer and what motivated the participants to cooperate with each other in the NPD process. We apply the models of Yan and Dooley (2014) and Pullen et al. (2012) to analyse the effectiveness of the three- way collaboration. Then we continue to discuss the key factors for innovation success when a large retailer builds an NPD collaboration network with small and medium-sized suppliers.

Ⅱ. Literature Review

Large retailers tend to exercise a strong influence on small and medium suppliers over various aspects and it is not an exception in the NPD processes (Andersen and Munksgaard, 2009). The cooperation between retailers and suppliers for the NPD can be hampered by positional differences such as differences in strengths or educational backgrounds, etc., which may lead to a proj-

ect failure. For instance, generally, a manager of a retailer belongs to marketing department whereas his or her counterpart belongs to the R&D department of the suppliers. This positional difference due in part to different educational backgrounds or different job characteristics makes communications difficult between them (Sherman, Berkowitz, and Souder, 2005; Song and Parry, 1997).

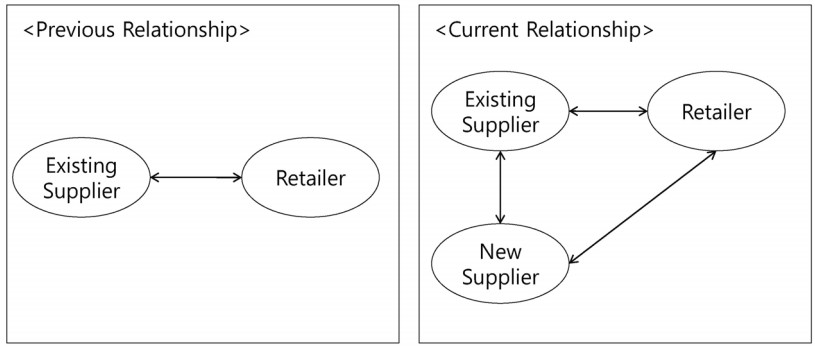
Andersen and Munksgaard (2009) studied intensively about the actors' positional differences in the value network and the collaborative atmosphere, as key determinants of the NPD success between retailers and suppliers in the food industry. Positional differences refer to the problems caused by the differences in knowledge contexts, and the collaborative atmosphere refers to the factors such as balance of power that create a good atmosphere.

However, as in the present case, when the retailers are developing a new product with supplier's brand rather the private brand, major conflicts may arise from inside of the company and the meanings of the actors' positional differences or the collaborative atmosphere will convey different nuance.

For example, the newly developed supplier's brand may in competition with the existing other manufacture brands or private brands in the same store. Therefore, inter-departmental disagreements in the retailer may arise, on whether such an NPD is really necessary to the company as a whole, or which department should take in charge of the project.

Actors' positional differences cause differences in knowledge. Hence, when the retailers cooperate with the suppliers to the supplier who are in lack of market knowledge, their cooperation in the NPD process becomes more complicated (Andersen and Munksgaard, 2009). However, as in this case, in the relationship between the existing supplier and the retailer where the new supplier participates as a customer to the existing supplier rather than as a supplier to the existing supplier, the cooperation problem due to the market knowledge difference will need a different interpretation (see Figure 1). In Figure 1, existing supplier will be in the position of the supplier to the supplier because existing supplier is supplying with raw materials and the new supplier processes them into new products and delivers them to the retailer. When such an NPD partnership is initiated by the retailer, the existing supplier and the new supplier may experience a lot of problems in cooperating and communicating each other because they have no previous relationship. Therefore, the key to the success of the NPD lays on how the retailer motivates the suppliers to cooperate with each other in the process. Studies on NPD collaborations in the previous relationship in Figure 1 has used the buyer-supplier dyad

Figure 1
Collaboration for NPD by Adding new Supplier



as the referent unit of analysis based on the Resource-Based View (RBV) theory (eg, Jap, 1999; Hoegl and Wagner, 2005). However, we should consider the relationship between each firm's position in the network of interfirm NPD collaboration as depicted in the current relationship in Figure 1. Studies on collaboration networks has focused on the effect of network structure on innovation output (eg, Ahuja, 2000; Capaldo, 2007).

Another way of understanding the retailer-driven NPD is to grasp the difference between manufacturer brand and private brand. Since retailers usually don't get in charge of research and development themselves, they prefer simple products of incremental innovation or products similar to the existing ones (Olsen and Sallis, 2010). In addition, compared to the manufacturers who focus on a specific product category, the retailers are interested in keeping store loyalty and pursue harmony between the various product categories. The retailers know very well about which products customers prefer, as they collect information directly from the customers through in-store customer contact. The products with private brand usually go to the market with lower prices than manufacturer brands. Private brands are difficult to succeed when there are powerful manufacturer brands in the same category (Olsen and Sallis, 2010). In such a case, retailers may try to reduce risks by developing a supplier's brand rather than a private brand. In addition, the suppliers are more easily motivated to participate in the NPD process when it is about developing their own brand. They may also expect that the retailer has a good intention and it is trustworthy.

Managing a NPD process is very challenging due to its high levels of dynamism, uncertainty, and equivocality caused by nonroutine, ill-defined and ad hoc decisions and tasks (Wagner, 2012). Involving external suppliers in the process creates further managerial challenges because of the complex resource dependence structure in joint projects (Gerwin, 2004; Koufteros, Vonderembse, and Jayaram, 2005). According to the resource dependence theory, organizations can reduce performance uncertainty by involving critical resource providers in joint actions (Hillman, Withers, and Collins, 2009). Therefore, in a buyer-supplier joint NPD context, both groups can mutually depend on each other for critical resources in order to overcome uncertainty.

Previous researches showed that diverse collaboration networks in NPD increase the positive payoffs of internal innovation capabilities (Branzei and Thornhill, 2006). Furthermore, collaboration among horizontal competitors that have different capabilities is often necessary for the successful commercialization of technology (Teece, 1989). Especially in the field of NPD, networking activity becomes more and more popular as cooperation with other organizations increases the innovation performance of organizations (Pullen et al., 2012).

Buyers can collaborate with suppliers to identify, acquire and exploit critical resources in the NPD process (Pfeffer and Salancik, 1978). Buyer-supplier collaboration quality is important in NPD process, while the extant literature has shown that the interactions are not always effective (Yan and Dooley, 2014). The buyer-supplier collaboration quality is defined as the buyer and supplier synergistically exploit shared resources such as equipment and facilities, technical know-how, human resources and financial assets (Carton and Cummings, 2012), while minimizing waste through interacting during project planning and execution.

Yan and Dooley (2014) tested the mediating role of buyer-supplier collaboration quality in NPD project success based on the resource dependence theory perspective. They examined how well buyer and supplier project members interact at the interfirm and project level influences the performance in co-developing a new product. In more detail, relationship-specific investment and buyer-supplier coordination effort as interfirm antecedents to collaboration quality and also goal congruence and capability complementarity as project-level antecedents were ex-

amined and it was found that they contribute to collaboration quality with the exception of relationship-specific investment. Surprisingly, they found that the relationship-specific investment among those four antecedents had negative influence on collaboration quality. The relationship-specific investment in a long-term relationship could produce negative effects such as low motivation to change existing interactions, low motivation of searching for better alternatives, or opportunistic behaviors due to reduced monitoring. Finally, it was empirically validated that collaboration quality as a latent construct reflected by the five dimensions was positively associated with the two types of project performance, design quality and design efficiency, consistent with their beliefs and as a result confirming the importance of effectively managing resource dependence in improving the quality of buyer-supplier interactions.

Pullen et al. (2012), through an in-depth literature review, indicated that the four network characteristics-goal complementarity, resource complementarity, trust, and network position strength are closely related to innovation performance for Small and Medium-sized Enterprises (SME). They tried to identify an ideal set of network characteristics that yield superior innovation performance for SMEs. According to their results, a closed and focused network rather than a open network yielded better performance for SMEs.

Some of the antecedents in Pullen et al. (2012)'s model are similar to those in Yan and Dooley (2014)'s. Innovation through buyer-supplier collaboration can be well explained by using Yan and Dooley (2014)'s model. However, understanding innovation through networks among three or more partners requires additional analysises on network characteristics. Therefore, considering the models of Yan and Dooley (2014) and Pullen et al. (2012) together will extend our understanding of the nature of the three-way collaboration between large retailer and small suppliers.

Ⅲ. A Three-Way Collaboration For NPD

Because the retailer-initiated NPD with multiple suppliers is a rare case, we adopted a case study methodology to explore the complex process of NPD. In this research, we investigate how important the retailer's willingness is to cooperate with suppliers for NPD in the retailer-initiated NPD with multiple small suppliers. We also investigate the role of retailers to encourage cooperation between suppliers, and how they manage internal conflicts in the process.

We chose the NPD of the instant pre-cooked white rice in plastic packets by Lotte Mart for a case analysis.

3.1 The Three Players

3.1.1 Lotte Mart

Lotte Mart is one of the largest discount stores in South Korea. Its sales revenue in 2014 was about 5.5billion USD, which marked the third-largest discount retailer in Korea following E-mart and Homeplus.

Lotte Mart has been struggling for selling rice products over years because the consumption of rice has been declining for decades in South Korea. According to an A.C. Nielson survey, each Korean consumed about 184grams of rice a day in 2013, which is 20% smaller than 238grams of consumption in 2002. The sharp decrease in rice consumption was in part due to the Westernization of life style. Meanwhile, the market for instant pre-cooked rice has expanded more than seven times for the same period. For these reasons, a rice & grain merchandising manager at Lotte Mart should find a way to increase their sales by diving into the instant rice market.

3.1.2 Seo-Cheon Nonghyup

Seo-Cheon Nonghyup is farmers' cooperative located in Chungnam Province and a major rice & grain supplier of Lotte Mart. Since the rice market opening with tarriffication in South Korea starting Jan. 1st, 2015, the rising rice inventories have been

a headache for the farmers.

3.1.3 Korea Bio Plant Co. LTD

Korea Bio Plant is an SME in Chungnam Province that has developed a new instant rice-cooking technology protected by patents. The market for instant rice-cooking machines has been dominated by Japanese companies in that time. Although the company has acquired HACCP certification, an international certification of food safety equipment, materials, and services, the company was still having trouble selling their machines due to their low reputation.

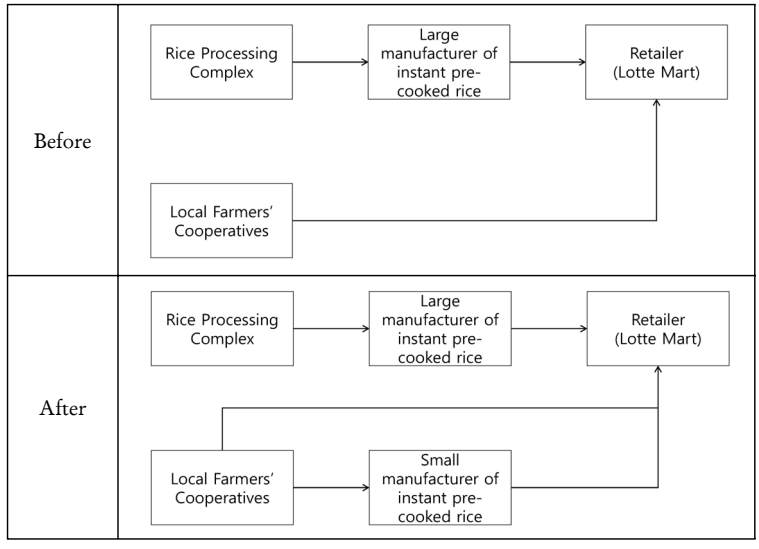
3.2 The Beginning of Three-Way Collaboration

The development of instant pre-cooked white rice at Lotte Mart was initiated by rice & grain merchandising manager rather than by the food merchandising manager. And this is a very unusual thing because the instant pre-cooked white rice has been managed by the food merchandising manager.

The rice & grain merchandising manager came up the idea when she found that the supplier of rice had been struggling with selling their rice. The rice consumption in South Korea has been continuously decline for decades, while Korean rice products are hard to export due to the lack of price competitiveness. The instant pre-cooked rice market has been dominated by a few major manufacturer brands such as CJ and Ottogi. In addition, the consumer was considering instant pre-cooked rice as too expensive that it would not be able to substitute the rice.

The rice & grain merchandising manager wanted to develop a new instant pre-cooked rice that is cheap enough to substitute rice. However, when she started to plan the NPD, the food merchandising manager attempted to prevent the plan. In that time, the CEO of Lotte Mart recognized that the new instant pre-cooked rice can benefit both to the rice supplier and Lotte Mart itself, therefore, he ordered to proceed the project. The rice & grain merchandising manager had no experience of developing manufactured food, therefore, she contacted the manufacturers of major instant pre-cooked rice brands. But her proposals get rejected all the time. After spending many days in searching for the

Figure 2
The Change of Supply Chain before and after the NPD



manufacturer, she found out Korea Bio Plant, a small sized manufacturer of instant rice making equipments. Korea Bio Plant was not interested in manufacturing instant rice at first because its interest lies in selling their equipments. The rice & grain merchandising manager persuaded the manager of Korea Bio Plant by suggesting that Lotte Mart will provide 2 billion KRW with interest-free fund to build an instant rice production factory. Finally, the manager accepted the suggestion because they believed that producing a successful instant pre-cooked rice might promote the sales of their equipments.

The Korea Bio Plant used the fund to build a new factory and to apply for a couple of international patents including "Instant rice producing apparatus and instant rice producing method." Lotte Mart helped to lower the production cost by purchasing rice grain directly from Seo-Cheon Nonghyup and providing it to Korea Bio Plant for production. Owing to its huge buying power, they were able to save 12% of production cost. During the NPD process, Korea Bio Plant and Seo-Cheon Nonghyup have collaborated each other. In order to obtain a better taste, a lot of tests with different degrees of rice polishing had to be implemented and they collaborated with each other during the whole process.

Table 1
Product Concept

	Existing Products	New Product
Product Positioning	A complementary good for home cooked rice	A substitute for home cooked rice
Pricing	More expensive than home cooked rice	Same or similar price to home cooked rice
Geographic origin of rice grain	No information	Provides Information on the package

Figure 3
The Display of Instant Rice

3.3 Marketing Strategies for the New Instant Rice

The price of new instant rice for 210g's was set to be affordable to everyone, 0.5USD, which was 30~60 percents lower than the existing ones. Lotte Mart has been able to reduce production cost by buying rice directly from existing suppliers and provide it to the manufacturer. Finally, the product was launched with supplier's brand along with indicating the geographic origin of the rice grain and harvest time on the package, which might increase customer loyalty to the brand. On the other hand, CJ instant rice, the market leader, has been sourcing rice grain from multiple farmers' cooperatives around countries and they mixed all the grain before polishing. Therefore, CJ couldn't tell the specific geographic origin of the rice grain.

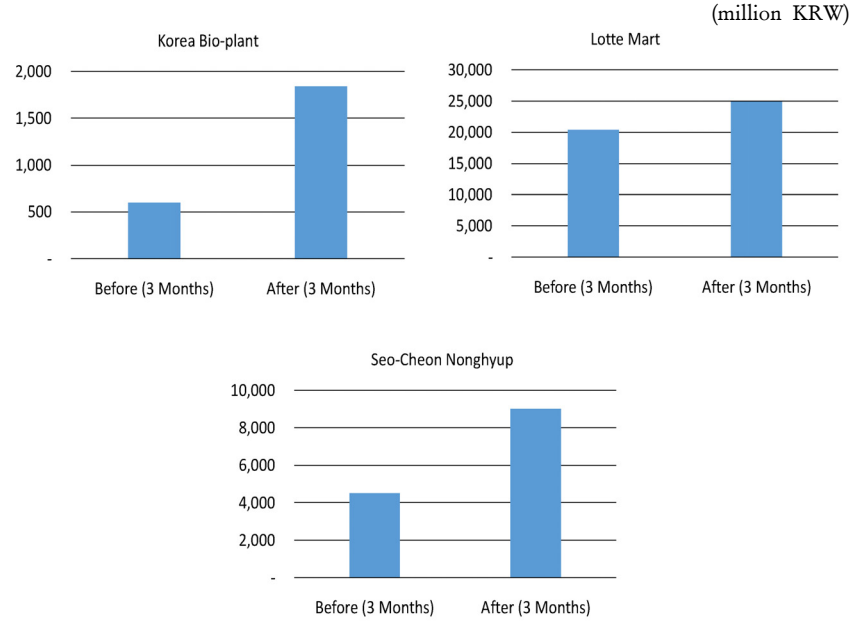
The new instant rice was displayed next to the rice packages in the rice and grain corner urging consumers to believe that they are substitutable products.

3.4 Sales Performance of the New Product

Instant pre-cooked white rice in plastic packets released in April, 2014 and the product was selling more than 10,000 units a day since it was launched. The sales volume was close enough to the CJ instant rice, the market leader. The sales of Korea Bio Plant surged from 800 million KRW to 1,840 million KRW in three months after product launch (See Figure 4). During the same time period the sales of Seo-Cheon Nonghyup has doubled from 4,500 million KRW to 9,000 million KRW. The sales of instant pre-cooked rice and rice grain in Lotte Mart increased from 20,380 million KRW to 24,900 million KRW.

Even the rice & grain merchandizer of Lotte Mart was worried about cannibalization between existing brands and new brand. The sales of existing brands in the instant pre-cooked rice category decreased 250 million KRW while the sales of new brand marked

Figure 4
The Changes of Sales before and after the Product Launch



Source: Lotte Mart.

Table 2
Changes of Related Product Sales in Lotte Mart

(million KRW)

	Instant pre-cooked rice		Rice grain	
	Before (3 Months)	After (3 Months)	Before (3 Months)	After (3 Months)
Existing brands	2,970	2,720	17,410	21,370
New brand	-	810	-	-

Source: Lotte Mart.

810 million KRW. Therefore, cannibalization was not that serious. Interestingly, the sales of rice grain has increased by 3,960 million KRW during the same time period.

IV. Factors On Collaboration Performance

4.1 Goal Congruence

In project level collaborations, Yan and Dooley (2014) based on the resource dependence theory argue that goal congruence is a significant antecedent to the collaboration quality. It is believed that the different project and product performance goals which may exist among the members of a NPD project, which could prevent them to get committed effectively to their tasks. On the contrary, having common and especially congruent goals arguably increases the level of trust and as a result enhances the willingness to support the success of the project and more importantly evokes motivation to share critical resources. In our three-way collaboration case, the goals of the participants were not congruent before the collaboration. The main goal of the small-medium supplier, Korea Bio Plant, was to export its instant rice machinery to the manufacturers overseas as the production of those machines was its actual business before getting part of this cooperation. At the same time Lotte Mart wanted to produce instant rice in low and reasonable prices, because they wanted to change the rice consumption paradigm as the rice consumption was getting reduced and the imported rice was threatening the domestic market. They wanted to find a way to increase the sales of rice grains and rice products which had been staggering for years. For these reasons, Lotte Mart, the focal company, initiated the NPD collaboration. Although the goals of participants were obviously incongruent or at least were not in common, the large retailer managed to persuade the Korea Bio Plant to collaborate for a common goal eventually and thus achieved goal congruence. Through multiple meetings with the managers of Korea Bio Plant, Lotte Mart persuaded them that the production of new instant pre-cooked rice with their own factory should become an excellent reference of the quality of its machine. Finally, Lotte Mart's suggestion of 2 billion KRW interest-free loan had moved the managers mind and finally they accepted to join the project.

4.2 Resource and Capability Complementarity

Resource complementarity is a key determinant of innovation performance in SMEs (Pullen et al., 2012). Similarly, capability complementary also influences collaboration quality in project level by affecting horizontal resource flows (Yan and Dooley, 2014). Through capability interdependence and perceived capability interdependence, each member of the group gets a higher potential to enhance collaboration quality in a joint NPD project. Instead of just trying to achieve the desirable collaboration quality of the product on their own, potentially greater results can be generated by supporting each other. The large retailer and the two small-medium sup-

pliers in our collaborative NPD case depend on each other because they are partners in the same supply chain. Lotte Mart's buying power could help the Korea Bio Plant to lower the production cost and the feedback on product quality was able to improve the product. Instead of sourcing the rice grain from Rice Processing Complex (RPC), a direct sourcing from Seo-Cheon Nong-hyup allowed Lotte Mart to differentiate their instant pre-cooked rice by the region of origin labeling. Seo-Cheon Nong-hyup could provide Korea Bio Plant with rice grains of various degrees of milling so that they could find the best rice polishing ratio for making the instant rice. They contribute different complementary resources such as knowledge, information and special skills. This phenomenon gets more pronounced when equality exists and mutually all the members of the cooperation possess useful complementary strengths. As a result, the three-way cooperation with Lotte Mart, Bio Plant and Seo-Cheon Nong-hyup is a true example which shows that even each of them had some individual capabilities, combining them together enabled brought a better performance in NPD. The large retailer coordinated with the two suppliers in order to maximize the benefits of coworking with a high level of resource complementarity. Although resource complementarity was not high enough in the beginning, they developed it and maximally utilized it.

4.3 Relationship-Specific Investment

Relationship-specific investment influences collaboration quality in buyer-seller joint NPD project by generating trust and increasing the efficiency of resource flows (Yan and Dooley, 2014). Regarding the case in particular, the financial support in the form of an interest-free loan which was provided by the buyer (Lotte Mart) to the seller (Korea Bio Plant), which played a determining role in the embodiment of this three-way cooperation for the NPD project. Although 2 billion KRW was not a large amount of money to Lotte Mart, approving a loan to a small business was not easy for the retailer because of the high risk. With the high expectation of success and optimism, the CEO of Lotte Mart approved the loan. When Korea Bio Plant had access to this financial resource, the supplier was highly motivated to take the big step of cooperation which seemed impossible before. It is important to note that relationship- specific investment should be made before the NPD project kicks off. Also, the supplier provided the large retailer with the necessary equipment for the NPD and with engineering expertise about the product technology, resources that were needed for the cooperation. In addition, relationship- specific investments in NPD increased the relationship quality and trust between the members and supported the realization of innovative NPD.

4.4 Coordination Efforts

Coordination efforts means the regular pattern of similar or complementary activities, often in the form of joint projects, that are tailored to the dyad's needs (Jap, 1999), and such repeated interactions allow the participants to recognize other's resources and to apply them properly in buyer-seller joint NPD project (Yan and Dooley, 2014). In this case, Lotte Mart enhanced the effectiveness of the interactions in NPD with informational and organizational support. With its leadership, the large retailer provided the two suppliers (Bio Plant and Seo-Cheon Nong-hyup) with the right information and knowledge and organized them by advising them the way they should interact with each other. So, the large retailer holding the necessary knowledge about each supplier's expertise and ability brought the two suppliers together and made them interact. In particular, Bio Plant and Seo-Cheon Nong-hyup cooperated under Lotte Mart's advice and managed through many experiments to bring off the rice product with better quality. Thus, the three-way cooperation with the large retailer as a leader achieved to create technical information, the critical resource mentioned

above that none of them possessed.

4.5 Trust

Pullen et al. (2012) suggested that both high fairness and reliability trust are related to high innovations performance. The development of trust is necessary precondition for successful resource sharing (Ahuja, 2000). The Korea Bio Plant had a strong belief that Lotte Mart would buy the product only if it was satisfactory in terms of quality and cost. But this belief was not sufficient for the supplier to build a new factory for the NDP until Lotte Mart offered 2 billion KRW of interest-free loan. This relationship-specific investment led to increased trust.

Furthermore, Lotte Mart did not just wait for the new product to be developed after giving a loan. Instead, Lotte Mart collaborated with the suppliers through out the whole NPD process. Making the two suppliers interact directly with each other also increased mutual trust and thus cooperate with each other for the success of the NPD.

4.6 Network Position Strength

When the three-way collaboration had just begun, the two suppliers of Lotte Mart didn't have any previous relationships and they didn't know each other at all. Lotte Mart was the only member that had direct links with all other members in the network. Such a structural-hole-rich network provides informational benefits compared to a densely interconnected network, but it inhibits trust building among partners (Ahuja, 2000). A typical NPD among members in the supply chain could take the form of open and structural-hole-rich network, but Lotte-Mart chose a closed network for the NPD by making a direct link between the two suppliers. In fact, developing a new instant pre-cooked rice requires more interactions between rice grain suppliers and manufacturers rather than interactions with retailers. After knowing what's critical for NPD success, Lotte Mart made the two suppliers interact directly with each other and create new knowledge for the NPD process as early as possible. The buyer also played a decisive role in making the suppliers acquire technical information by encouraging the suppliers to conduct various experiments together with rice. The whole process was designed and managed by Lotte Mart, the buyer. An open innovation approach depending on a structural-hole-rich network will benefit those with high absorptive capabilities but, to many SMEs that focus on incremental innovation project a closed network with high density may result in better performance (Pullen et al., 2012).

Table 3
Findings from Case Analysis

Factors	Findings
Goal congruence	High goal complementarity among partners
Resource & Capability complementarity	High resource complementarity
Relationship-specific investment	The retailer provides interest-free loan to the supplier
Coordination efforts	The retailer promotes knowledge sharing through making a direct link between the suppliers.
Trust	High trust from the existing dyadic relationship Goodwill trust obtained by providing interest-free loan to the new supplier
Network position strength	High network position strength obtained for suppliers by forming a closed network

V. Discussion

The case was about an NPD collaboration between buyer-supplier and it was also about an innovation network which is consisted of three members. Therefore, we used the models from buyer-supplier collaboration research and those from inter-organizational network theory together for the case analysis. We found that all of the six key success factors-goal congruence, resource & capability complementarity, relationship-specific investment, coordination efforts, trust, and network position strength-were important in this case of three-way NPD collaboration network. We saw that goal congruence and resource & capability complementarity were necessary conditions for choosing the right partners in the early stage of the project. But, relationship-specific investment played a critical role in motivating the supplier's behavior in the process. Still, there are a few questions to be answered about the collaboration.

1) What made the buyer implement the relationship-specific investment?
2) Who should manage the collaboration network?
3) Who will benefit most from this three-way NPD collaboration?
4) Will this kind of collaboration network be a common practice?

First, previous studies suggest that a thorough mutual knowledge is a prerequisite for relationship-specific investments (Capaldo, 2007). In our case, there was no previous transaction relationship between Lotte Mart and Korea Bio Plant, therefore the prerequisite of mutual knowledge couldn't be satisfied. The rice & grain merchandizer of Lotte Mart who initiated the collaboration said that she searched for the internet to find a potential partner. Although she agreed that the decision of relationship-specific investments was not easy to process because of the high risk, it is an exceptional that such a decision was actually made. We think that Lotte Mart had a strong desire to develop a new instant pre-cooked rice in order to reverse the declining sales of rice grains. Furthermore, the Korea Bio Plant already had the technology for the pre-cooked rice although they didn't have any experience of manufacturing the product using the technology. Since the technology for pre-cooked rice was generally at low level, Lotte Mart seemed to have expected a high possibility of success. In addition, Lotte Mart was trying to abide by the Win-Win Growth Policy driven by Korean government, such an investment could bring extra points to Lotte Mart in the government's evaluation of win-win growth activities.

Second, in collaborations between a large firm and an SME, the counterparts of the business are not the CEOs of the firms. More commonly, the CEO of an SME should contact with the team leader of the large firm. The problem is that the goals among different teams in a large firm may conflict each other, which requires intra-firm coordination in case of a conflict. In this NPD case, there was a serious conflict between teams in Lotte Mart because the business of instant pre-cooked rice was overlapped among the teams. In the case, the conflict was controlled after the CEO of Lotte Mart had supported the NPD. But, that has nothing to do with a systematic approach, therefore, the result can be different even if the same case happens next time. Still, the role of CEO in the large firm will be critical in case of collaborating with SMEs, or the large firm needs very well organized rules to resolve intra-firm conflicts. Besides, collaboration capability on the individual, intra-organizational, and inter-organizational level will be necessary for the successful management of the project (Blomqvist and Levy, 2006).

Third, a previous study reports that small and medium-sized firms achieve the greatest performance in a technology collaboration among large firms and SMEs (Nieto and Santamaría, 2010). Specifically, small and medium-sized firms got in product in-

novations than in process innovations. In this NPD case, Korea Bio Plant achieved 200% of sales growth-the greatest rate among the three partners-during the first three months after the new product launch. However, Seo-Cheon Nonghyup achieved the greatest amount of the sales growth. This is only the short-term performance, therefore, it is still hard to say who will be the biggest winner in the long-term. The Korea Bio Plant can expand its customer based by selling its instant rice technology to other retailers beside Lotte Mart. Therefore, we can conclude that the long-term outcome of the three-way NPD collaboration depends more on the individual capabilities rather than on the network capabilities.

Fourth, this kind of three-way NPD collaboration network consisted of a large retailer and two small suppliers is not common around the world. The collaboration seems beautiful because it was possible thanks to the benevolence of large retailer and the passion and commitment of its rice and grain merchandizer. This three-way NPD collaboration is not common even in Lotte Mart because it requires a high level of cross-department collaboration as well as inter-organizational collaboration. Furthermore, initiating the collaboration is very unlikely to small suppliers because they should take much higher risk during the process. Therefore, a government policy encouraging win-win collaboration between large firms and SMEs will be necessary in order to create more cases like this.

VI. Conclusion

This study analysed the case of developing a new instant pre-cooked rice in the three-way collaboration network between a large retailer and two small suppliers in South Korea. Key factors of innovation success were analysed and discussed by using the models of Yan and Dooley (2014) and Pullen et al. (2012). Through the case analysis, we found that small and medium-sized suppliers achieved greater 'short-term'performances in an NPD collaboration than the large firm, although the long-term performance is not clear.

Among the six antecedents of innovation success, relationship-specific investment played a critical role in motivating the supplier's participation in the NPD process. Adopting a 'closed' network in which the two suppliers interact directly with each other and create new knowledge for the NPD process played an important role in producing a quality product in a reduced development time.

In addition, the motivation of the employees and their passion for the work played a critical role in determining whether to build an NPD network and whom to choose as partners. The case of developing new instant rice which is priced 30% lower than the existing brands through the retailer's partnership with local rice supplier and instant rice manufacturer could not be possible if the project was handled by the traditional food merchandising manager. Making efforts to break down the barriers between departments in the firm as well as cooperating with external partners was the driving force to create a successful innovation in the NPD process. The vision, commitment, and leadership of the large retailers are important factors to elicit the cooperation between partners and achieve NPD successfully.

Meanwhile, a large retailer is likely to face intra-department conflicts in the process of NPD collaboration with small suppliers, therefore, intra-organizational collaboration capability will be important when it faces an internal conflict.

Unlike previous studies about the retailer-supplier cooperation for NPD in the food industry suggesting that position differences cause communication problems which is a major obstacle to the NPD success, this study suggests that large retailer's initiative role is a critical success factor in the NPD by the cooperation between small and medium-sized suppliers and large retailers.

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References

Abouzeedan, A., M. Klofsten, and T. Hedner (2013). "Internetization Management as a Facilitator for Managing Innovation in High-Technology Smaller Firms," *Global Business Review* 14(1), 121-136.

Ahuja, G. (2000). "Collaboration networks, structural holes, and innovation: A longitudinal study," *Administrative Science Quarterly* 45(3), 425-455.

Andersen, P. H. and K. B. Munksgaard (2009). "Collaborative product development and situated knowledge contexts," *European Journal of Innovation Management* 12(2), 200-222.

Blomqvist, K. and J. Levy (2006). "Collaboration capability-a focal concept in knowledge creation and collaborative innovation in networks," *International Journal of Management Concepts and Philosophy* 2(1), 31-48.

Branzei, O. and S. Thornhill (2006). "R&D networks and innovation capabilities: a context-contingency perspective," *in Academy Of Management Proceedings 2006* 1, e1-e6.

Capaldo, A. (2007). "Network structure and innovation: The leveraging of a dual network as a distinctive relational capability," *Strategic Management Journal* 28(6), 585-608.

Carton, A. M. and J. N. Cummings (2012). "A theory of subgroups in work teams," *Academy of Management Review* 37(3), 441-470.

Gerwin, D. (2004). "Cordinating new product development in strategic alliances," *Academy of Management Review* 29(2), 241-257.

Grunert, K. G., L. F. Jeppesen, K. R. Jespersen, A. M. Sonne, K. Hansen, T. Trondsen, and J. A. Young (2005). "Market orientation of value chains: a conceptual framework based on four case studies from the food industry," *European Journal of Marketing* 39(5/6), 428-55.

Hillman, A. J., M. C. Withers, and B. J. Collins (2009). "Resource dependence theory: A review," *Journal of Management* 35(6), 1404-1427.

Hoegl, M. and S. M. Wagner (2005). "Buyer-Supplier Collaboration in Product Development Projects," *Journal of Management* 31(4), 530-548.

Jap, S. D. (1999). "Pie-expansion efforts: collaboration processes in buyer-supplier relationships," *Journal of Marketing Research*, 461-475.

Koufteros, X., M. Vonderembse, and J. Jayaram (2005). "Internal and external integration for product development: the contingency effects of uncertainty, equivocality, and platform strategy," *Decision Sciences* 36(1), 97-133.

Lakemond, N., C. Berggren, and A. van Weele (2006). "Coordinating supplier involvement in product development projects: a differentiated coordination typology," *R&D Management* 36(1), 55-66.

Melander, L. and N. Lakemond (2014). "Variation of purchasing's involvement: case studies of supplier collaborations in new product development," *International Journal of Procurement Management* 7(1), 103-118.

Nieto, M. J. and L. Santamaría (2010). "Technological collaboration: Bridging the innovation gap between small and large firms," *Journal of Small Business Management* 48(1), 44-69.

Olsen, V. N. and J. E. Sallis (2010). "Processes and outcomes of distributor brand new product development: An exploratory examination," *International Journal of Retail & Distribution Management* 38(5), 379-395.

Pfeffer, J. and G. R. Salancik (1978), *The external control of organizations: A resource dependence approach*, NY: Harper and Row Publishers.

Pullen, A. J., P. C. Weerd-Nederhof, A. J. Groen, and O. A. Fisscher (2012). "Open innovation in practice: goal complementarity and closed NPD networks to explain

differences in innovation performance for SMEs in the medical devices sector," *Journal of product innovation management* 29(6), 917-934.

Sherman, J. D., D. Berkowitz, and W. E. Souder (2005). "New product development performance and the interaction of cross-functional integration and knowledge management," *Journal of Product Innovation Management* 22(5), 399-411.

Song, M. X. and M. E. Parry (1997). "Teamwork barriers in Japanese high- technology firms: the socio-cultural differences between R&D and marketing managers," *Journal of Product Innovation Management* 14(5), 356-367.

Steenkamp, J.-B.E.M. and M.G. Dekimpe (1997). "The increasing power of store brands: building loyalty and market share," *Long Range Planning* 30(6), 917-930.

Teece, D. J. (1989). "Inter-organizational requirements of the innovation process," *Managerial and Decision Economics* 10 (1), 35-42.

Wagner, S. M. (2012). "Tapping Supplier Innovation," *Journal of Supply Chain Management* 48(2), 37-52.

Yan, T. and K. Dooley (2014). "Buyer-supplier collaboration quality in new product development projects," *Journal of Supply Chain Management* 50(2), 59-83.

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대형소매업체와 중소납품업체들 간 삼자 협력 네트워크에 의한 신제품개발: 대・중・소 동반성장 사례

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신제품 개발 과정에서 성공적인 혁신을 창출하기 위해서는 외부 파트너와의 원활한 협력관계 뿐만 아니라 부서 간 장벽을 허무는 노력도 요구된다. 이 연구는 대중소 기업 간 신제품 개발 협력과정에서 혁신창출의 성공요인들이 어떻게 작용하는지 분석하였다. 대형 소매업체와 두 개의 중소협력사들의 협력관계 구축을 통한 신제품 개발 과정에 대한 사례 분석을 실시한 결과 적어도 단기적으로는 중소협력사들이 매우 큰 성장율을 달성하였음을 발견하였다. 기업 간 협력을 통한 혁신의 성공요소들 가운데, 대기업의 관계 특정적 투자가 중소협력업체의 참여 동기에 결정적 영향을 미쳤음을 발견하였다. 또한 두 개의 중소협력사들이 직접 상호작용하는 이른바 '폐쇄적' 네트워크를 구축하여 신제품 개발에 필요한 지식을 창출함으로써 짧은 시간에 고품질의 상품개발에 성공할 수 있었다. 식품산업에서 소매업체와 공급업체간 협력에 의한 신제품 개발에 관한 기존 연구들이 커뮤니케이션 문제를 야기하는 상호 입장 차이를 성패결정의 핵심요소 중 하나로 보았으나 본 연구에서는 대기업과 중소기업간협력의 경우 대형 소매업체의 주도적 역할이 오히려 핵심적 기능을 한 것으로 나타났다.

주제어 : 신제품개발, 대중소협력, 중소기업, 소매업체, 사례연구, 동반성장

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