

DEVELOPMENT OF INTERACTION CAPABILITY AT LOGISTICS FIRMS

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ABSTRACT

Purpose of the paper and literature addressed:

This study combines industrial network approach and resource-based view in order to examine the impact of inter-firm capability development on logistics innovation. The research purpose of this paper is to investigate interaction capability development at logistics firms and the influence on logistics innovation. The following research question is addressed: how does interaction capability development impact logistics innovation at logistics firms?

Research Method:

This paper applies a qualitative research method and employs multiple case studies. Based on Johnsen and Ford (2006)'s theoretical model of interaction capabilities, seven in-depth case studies comprising thirty three interviews have been conducted.

Research findings:

Interaction capabilities developed by logistics firms enable them to proactively identify customer needs and translate customer requirements into new service offerings. The development of interaction capability guides logistics firms to innovate in the right direction while helps them to overcome barriers in the innovation process.

Main contribution:

This paper is the first attempt to apply the interaction capability development framework in logistics context. This paper offers insights on interaction capabilities developed by logistics firms towards logistics innovation and contributes to existing knowledge on logistics innovation.

Key words: network, competence, resource, service supply chain, interaction

INTRODUCTION

Logistics firms have grown quickly in recent years and have played an important role in modern economy (Lieb and Bentz, 2005). But logistics firms often meet fierce competition in the market place so they have to find their unique ways to survive and grow (Hertz and Alfredsson, 2003). Besides, as a response to customer's changing requirements and market turbulences, logistics firms need to constantly search for new solutions in order to serve their customers better and differentiate themselves from other players in the market. Therefore, innovation is a key issue for logistics firms and their customers. By generating innovation, logistics firms can reap first mover advantage and obtain competitive advantage (Wagner and Franklin, 2008). In addition, according to Wallenburg (2009), proactive improvements can help logistics firms to achieve customer loyalty.

Despite the fact that innovation is critical for logistics firms, there is scant knowledge of innovation in logistics research (Wagner, 2008). A recent literature review has revealed the fact that few studies have specifically addressed logistics innovation and there has been a limited amount of theory-based research conducted on this topic (Grawe, 2009). The existing studies have addressed the antecedents, outcomes and process of logistics innovation while the focus is mainly on the firm level. By contrast, few studies have examined the impact of inter-firm level factors on logistics innovation. Flint et al. (2005) pinpoint the importance of interaction with customers and inter-organizational learning in logistics innovation process. Panayides and So (2005) empirically show that relationship orientation is a crucial driver for logistics innovation. Logistics firms are often dependent on a number of relationships and innovations at logistics firms are embedded in the relationship networks (Chapman *et al.*, 2003). Thus, it is necessary to investigate the relational and inter-firm level factors in logistics innovation research.

This study combines industrial network approach and resource-based view in order to examine the impact of inter-firm capability development on logistics innovation. Based on Johnsen and Ford's (2006) theoretical model, this paper aims to understand the interaction capability development at logistics firms and the influence on logistics innovation. The following research question is addressed: how does interaction capability development impact logistics innovation at logistics firms? This paper is organized in seven sections. Section one serves as an introduction and presents the research purpose. Section two reviews the existing literature and depicts the theoretical framework. Section three demonstrates methodological issues while section four yields empirical findings. Section five provides a discussion towards the findings. Section six draws conclusions and provides managerial implications. Section seven highlights research limitations and future research areas.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Logistics Innovation

There is not a common and consistent understanding of the meaning of logistics innovation (Oke, 2008). According to Oke (2008), logistics innovation should include technological developments, service and service product innovations. By contrast, Wagner and Busse (2008, p.2) define innovation as "a subjective novelty which is the result of a conscious management process and which aims at economic exploitation". Further, logistics innovation should be manageable and serves exploitation purpose (Wagner and Busse, 2008). Flint *et al.* (2005, p.114) treat logistics innovation as "any logistics related service from the basic to the complex that is seen as new and helpful to a particular focal audience". Flint *et al.*'s (2005)

definition highlights the essence and unique characteristics of logistics innovation. Therefore, this article adopts Flint *et al.*'s (2005) definition and supports the idea that logistics firms need to regard imitation as innovation (Wagner and Busse, 2008).

The current logistics innovation research has predominantly focused on the driving forces. In a conceptual paper, Chapman *et al.* (2003) propose that knowledge and technology play an important role in fostering logistics innovation. It is also suggested that relationship networks can lead to logistics service innovation (Chapman *et al.*, 2003). Panayides and So (2005) empirically point out that organizational learning mediates the relationship between relationship orientation and logistics innovation. Soosay and Sloan (2005) find that customer satisfaction and intended continuous improvement are the most important driving forces. Based on empirical analysis, Flint *et al.* (2008) claim that direct antecedents to logistics innovation include the extent of supply chain learning management and the extent of innovation management. Wagner (2008) identifies acquisition of knowledge and training and education as key activities to spur logistics innovation. Last but not the least, Grawe *et al.* (2009) empirically show that customer orientation and competitor orientation positively affect logistics innovation.

Resource Based View

According to the resource-based view (RBV), firms are regarded as bundles of resources (Wernerfelt, 1994). Firms compete on the basis of their resources and capabilities (Barney, 1991). Competitive advantages are derived from the resources and capabilities of the firm but competitive advantages will not accrue to the firm unless these resources and capabilities are valuable, scarce, imperfectly imitable and non-sustainable (Barney, 1991; Schoemaker and Amit, 1994; Teece *et al.*, 1997). Generally speaking, resources can be referred to as physical, financial, individual and organizational capital attributes for a firm and resources only add value when they are transformed into a final product or service offering (Amit and Schoemaker, 1993; Day, 1994).

According to Grant (1991), capabilities are the main source of a firm's competitive advantage while resources are the source of these capabilities. Capabilities are complicated bundles of individual skills, assets and accumulated knowledge that enable firms to coordinate activities and utilize their resources (Amit and Schoemaker, 1993; Day, 1994; Schuzle, 1994). Capabilities differ from other firm resources in the sense that they will be dominated and enhanced by use (Nelson, 1991). Capabilities are developed over time by selecting appropriate path of investments and through complex interactions among the firm's resources (Dierickx and Cool, 1989; Amit and Schoemaker, 1993). In turn, capabilities are manifested in a routine or a group of interactive routines (Nelson and Winter, 1982). Owing to the fact that capabilities are inherently complicated, the creation of new capabilities is a hard and slow process (Dierickx and Cool, 1989).

A large amount of knowledge related to capabilities has been evolved over the years. Many theoretical refinements, such as core capabilities (Prahalad and Hamel, 1990), capability theory (Helfat and Peteraf, 2003) and dynamic capabilities (Teece *et al.*, 1997), have been developed around the resource-based view and have their roots in earlier studies like Penrose (1959). However, the resource-based view has been mainly concerned with the contribution of resources and capabilities to firm's performance and sustainable advantage, rather than how capabilities are developed. Besides, many studies have focused on intra-firm capabilities while inter-firm capabilities have gained less attention. In addition, scholars have highlighted that capability is developed through complex interactions but the existing studies have predominantly focused on intra-firm interactions.

Industrial Network Approach

Håkansson and Snehota (2006) state that no business is an island but depends on interactions embedded in networks of actors, resources and activities. The interaction approach was originally developed by the industrial marketing and purchasing (IMP) group in order to generate a framework for understanding and depicting buyer-seller relationships and interactions (Håkansson, 1982). The interaction approach argues that studies on business markets should focus on the relationship between buyers and sellers (Håkansson, 1982). The relations between firms in a network develop through two types of interaction: exchange processes and adaptation processes (Johansson and Mattsson, 1986). Exchange processes include four elements: product/service, information, financial and social processes (Håkansson, 1982). Through interaction, the involved parties develop mutual bonds such as technical bonds, social bonds, administrative bonds and legal bonds (Håkansson and Johanson, 1990). The interaction approach changes the focus from allocation of the firm's internal resources towards how firms connect themselves to other actor's activities and resources in the external environment (Skjoett-Larsen, 2000).

During the second phase of IMP project, a network model was developed by extending the perspective from the dyad to the dyad embedded in network of other relationships (Axelsson and Easton, 1992). The network model is based on three classes of variables: actors, activities, and resources (Håkansson and Johanson, 2002). The actor-resource-activity (ARA) model suggests that different actors in the business landscape control resources and carry out activities through relationships (Håkansson and Snehota, 1995). The embeddedness is emphasized by the network approach that each business relationship is embedded in a broader network of both social and economic relations (Ford *et al.*, 2003). A business unit is a social unit characterized by specific knowledge about and an ability to work together with certain counterparts (Håkansson and Waluszewski, 2002).

Interaction capability development

The resource-based view of capability development recognizes that the individual firm manipulates and manages the development of its own capabilities. However, capability development can be influenced by external forces while external actors may have a role. The industrial network approach complements the resource-based view of capability development and concentrates on the co-operative aspects of capability development as well as emphasizes the interdependence between firms as a crucial power for creative capability generation (Håkansson and Snehota, 1995). It is argued that capability involves not only competence in handling activities and utilizing resources for one's own interests and benefits. Capability needs to be considered in relation to how activities and resources are linked to critical counterparts (Alajoutsijärvi *et al.*, 1999).

As service providers, logistics firms are connected with various counterparts through multiple relationships. The importance of interaction in TPL-relationships has been emphasized by Gadde and Hulthen (2009). According to Deepen *et al.* (2008), the major drivers of logistics outsourcing performance reside within the relationship with the TPL-provider. This finding highlights the need for understanding the type of capabilities that might be developed by logistics firms to recognize and exploit the opportunities for innovations through their customer relationships. Panayides (2007) takes the discussion one step further and argues that the key issue is to develop relational capabilities. Logistics innovation at logistics firms is a complex social process and it is embedded in the network (Cui *et al.*, 2010). Closer interaction between logistics firms and customers can exert an influence on the innovation process.

Based on Leonard-Barton's (1992) capability framework, Johnsen and Ford (2006) have developed a relational capability framework and applied it to evaluate the types of interaction capabilities developed by small and medium size firms that enable them to cope with larger customers. The capability set comprises four elements: human interaction capability, technological interaction capability, managerial systems interaction capability and cultural interaction capability (Johnsen and Ford, 2006). This research builds on Johnsen and Ford's (2006) work and investigates the influence of interaction capability development on logistics innovation. Figure 2.1 presents the theoretical framework.

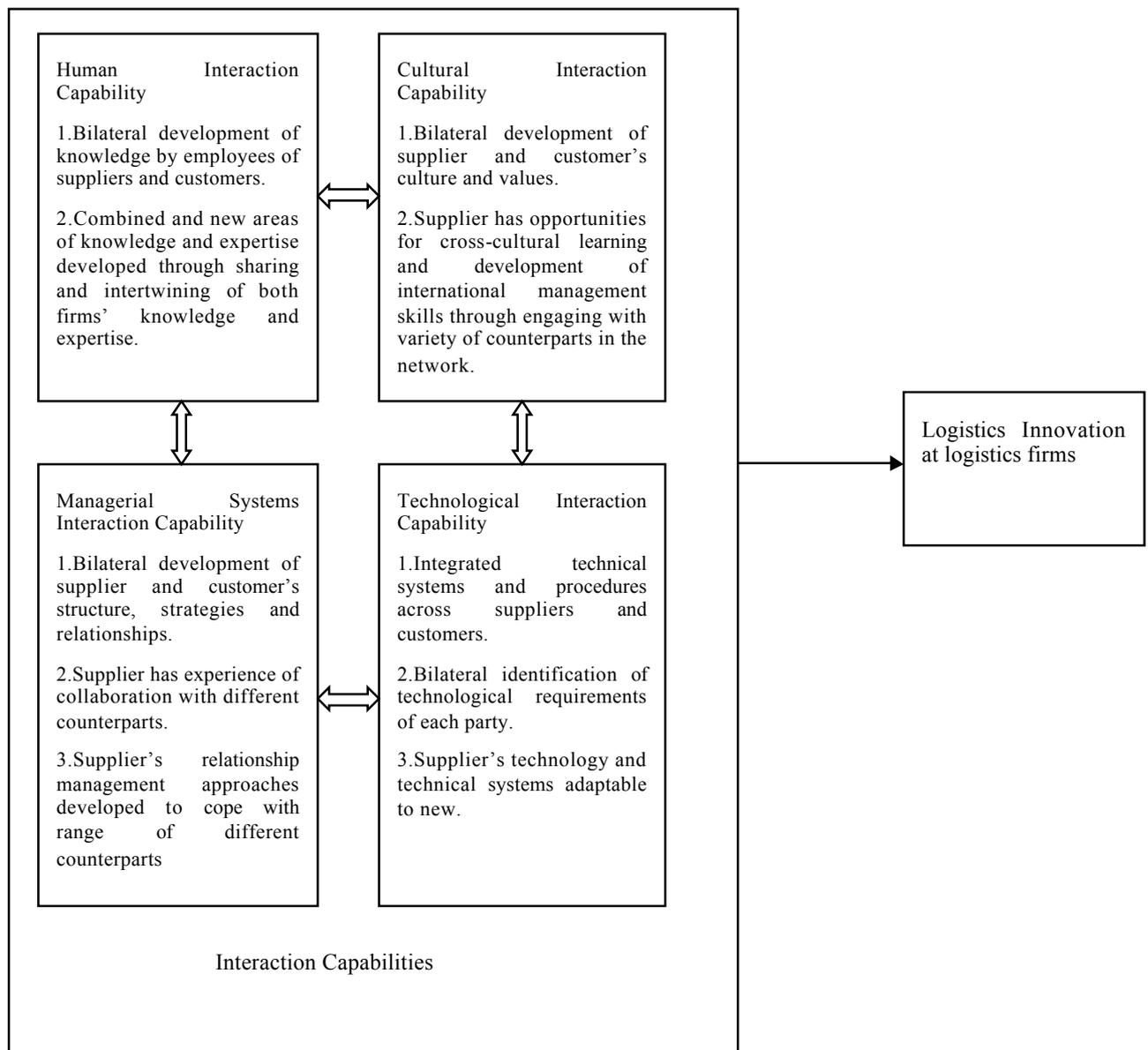


Figure 2.1 Research framework to investigate the impact of interaction capability developments on logistics innovation at logistics firms

Source: Adapted from Johnsen and Ford (2006)

METHODOLOGY

According to Flint et al. (2005), logistics innovation is a complex social process. Investigation of the impact of interaction capability development on logistics innovation requires a research method to enable a holistic examination. Therefore, a qualitative case study approach was applied. The research employed multiple case studies method (Yin, 2003) in order to contrast findings from individual cases and provide data to validate or disconfirm theory. A multiple case studies method is also appropriate to externally validate the findings from a single case (Eisenhart, 1989). However, this study did not intend to generalize in a statistical sense but rather to achieve analytical or theoretical generalization (Yin, 2003).

This research adopted theoretical and purposeful sampling (Yin, 2003). Six logistics firms have been selected and studied. According to Eisenhardt (1989) and Ellram (1996), the total of six cases should be able to provide a solid base for generalizing to theory from case material. The selection criteria included market reputations in logistics innovation, openness to share experience, willingness to participate and the research budgetary constraints. Geographical locations were also taken into consideration in order to explore differences in various markets. All case companies had some common characteristics. They were constantly generating innovative offerings and they were actively interacting with customers. All of them had international clients and they were capable of providing integrated services.

This study collected data through interviews, observations and documentations. In all, 33 interviews have been conducted with 28 respondents. A key informant approach was used to select suitable respondents. All interviews were audio-taped and transcribed for analysis. An interview protocol was first developed and sent to the interviewee prior to the interview in order to facilitate the interview process. The protocol provided interviewees a clear understanding of the research background and the purpose. It also included key questions and interview guidelines. In order to discover as much information as possible, questions were kept open and broad. Each interview took 1.5 hour to 3.0 hours to complete. The researcher also visited multiple sites of the case firms and took field notes through observations obtained from touring facilities, business meetings and sales calls. Besides, secondary data in the form of annual reports, presentation material, internet websites and sales brochures were collected.

All of the empirical data have been analyzed according to the coding process (Miles and Huberman, 1994; Ellram, 1996). Conceptually clustered matrices were used as a framework to break down data and develop categories, make connections among categories, structure and analyze data. An overview of each case was created first to enable with-in case analysis. A comparison across cases was made later to identify patterns and achieve synthesis. Table 3.1 highlights the findings.

Instead of the criteria of internal validity, external validity, and reliability adopted by quantitative research, qualitative research has another set of criteria for ensuring the legitimacy of the findings (Lincoln and Guba, 1985; Halldorsson and Aastrup, 2003; Davis and Mentzer, 2006). As for this research, credibility was met by recording the interview during the process, transcribing and sending back the interview transcription to the interviewee after the interview for comments and feedbacks. Purposeful and theoretical sampling was followed to guarantee transferability. Dependability was obtained by the researcher's continuous observation while conformability was gained by journaling the process through the duration of the study.

Table 3.1 Findings on development of interaction capabilities at logistics firms

Company	Schenker Logistics	Oriental Logistics	Aditro Logistics	King Freight	Geodis Wilson	Bring Logistics	Dimerco Group
Human Interaction Capability	<p>Keep close relationship with customers and proactively discuss with customers</p> <p>Interact with customers globally and transfer knowledge internally</p>	<p>Staff training to enable knowledge exchange with customers</p> <p>Exchange visit to work closely with customers for new idea development and service improvement</p>	<p>Implement a so called industrial methodology to understand customer's business process and constantly improve</p> <p>Open with customers and constantly exchange visits</p>	<p>Being honest and humble with customers. Treating customers like friends to obtain knowledge and learn new skills</p> <p>Provide education to staffs to facilitate interaction with customers</p>	<p>Share knowledge with customers through operation meetings and strategic meetings</p> <p>Develop a mechanism to interact with customers in a structured way</p>	<p>Have close dialogue with customers and work together all the time</p> <p>Rely on the personnel and encourage staffs to learn</p>	<p>Conduct marketing research and customer survey to obtain industry specific knowledge and to foresee the future</p> <p>Organize various types of meetings as well as rotation of staffs within the group in order to transfer knowledge globally</p>
Technological Interaction Capability	<p>Exchange technological knowledge with customers</p> <p>Customized IT solution and cross-fertilize to new customers</p>	<p>Customized and integrated technical systems with customers</p> <p>Use technological knowledge obtained from large customers to develop new technical systems and apply to other customers</p>	<p>Web-based IT system integrates and communicates with customer's system</p> <p>Provide complementary modules to customer's system</p>	<p>Technological knowledge of sales team turns customer's requirements into innovative ideas</p> <p>Purchase IT systems for customers to enhance efficiency and effectiveness</p>	<p>Develop new ways to integrate with customer's business systems</p> <p>Exchange technological knowledge through joint projects</p>	<p>Flexibility in customized service offerings and adapt service to customer needs</p> <p>Gain technological skills from joint programs</p>	<p>Mutual recognition of technological requirements with customers</p> <p>Upgrade IT systems in order to adapt to new customers</p>

Company	Schenker Logistics	Oriental Logistics	Aditro Logistics	King Freight	Geodis Wilson	Bring Logistics	Dimerco Group
Managerial systems interaction capability	<p>Encourage staffs to maintain good relationship with customers and come up with new ideas through incentive mechanisms</p> <p>Development of integrated functions to accommodate customers in different focus industries</p>	<p>Develop a long-term approach to achieve partnership with customers</p> <p>Training staffs to adapt service offerings for different customers</p>	<p>Emphasize on being proactive and communicate with customers actively</p> <p>Apply different relationship management approaches to cope with customers from different countries</p>	<p>Insist on the importance of maintaining good relationships with customers</p> <p>Involve customers in the teamwork of developing new concepts</p>	<p>Regular meetings with customers to achieve better communication</p> <p>Encourage employees to learn new knowledge and share the knowledge internally</p>	<p>Training staffs to be flexible and customer oriented</p> <p>Mutual improvements through joint projects</p>	<p>Arrange in-house representatives and follow customer's developments closely</p> <p>Use various techniques to serve customers from different regions</p>
Cultural interaction capability	<p>Open organizational culture and focus on customized solutions</p> <p>Proactive in learning from partners globally and aim to create value for customers</p>	<p>Proactive attitude and maintain partnership with customers</p> <p>Quality-control oriented culture and development of 'Quality is key' values in relationships</p>	<p>Family-like atmosphere internally and friendship-like relationship with customers</p> <p>Develop and grow together with customers</p>	<p>Adapt to customer's values and culture quickly and globally</p> <p>Learning from customers globally and prompt reactions to market changes</p>	<p>Apply various methods to interact with customers and treat customers as friends</p> <p>Proactive attitude to move customers upward in the value chain and provide customized solutions</p>	<p>Aim at having satisfied customers by finding new solutions</p> <p>Obtain knowledge from partners globally and develop international management skills</p>	<p>Maintain corporate culture and values centrally and mutual development of culture and values locally</p> <p>Being humble to facilitate cross-cultural learning</p>

EMPIRICAL FINDINGS AND DISCUSSIONS

Human Interaction Capability

All case companies have gained great experience of obtaining knowledge from customers. Bilateral development of knowledge between logistics firms and their customers has played a crucial role in forging innovation. In order to generate an appropriate innovation, logistics firms need to develop their knowledge about customer's industry, product characteristics and life cycle, process, position in the supply chain and country of origin. Logistics firms have done so by having constant contacts with their customers and engaging in joint programs. Besides, logistics firms have been trying to understand their customers from a supply chain perspective.

“We have a macro view towards our customers and we collect data from our customers continuously. We frequently meet our customers. Sometimes we visit them and sometimes they visit us so they can see their products in our warehouse by the way. We will update our knowledge regarding our customer's changes and new plans. In addition, we look at our customer's website in order to know what is new. We want to know what services the customers want and their specifications. We investigate their product value and find out their strategy in Hong Kong. For instance, do they have a distribution center in Hong Kong? Do they sell products to end customers in Hong Kong? Besides, we try to know their position in the supply chain. At the same time, we would look at its supply chain and related logistics operation. Then we will conduct some analysis and provide suggestions.” (Oriental Logistics)

“Our marketing department constantly conducts research to find out what is being exported from a specific country and what is coming into the country. Then we will focus on these industries since it is the future. Further, we want to know more about the industries. How much percentage do our customers account in industry A, industry B and industry C? What kind of business are they in? What kind of revenue does it generate? Which destinations do they send to? All of these questions are crucial for us. In order to have a deep understanding of our customer's business, our sales people start talking to our customers and they go to the marketing side to get marketing trend in the market. In addition, we make customer survey to collect various kinds of information.” (Dimerco Group)

Small and medium size logistics firms often focus on certain geographical regions. They usually serve their customers in specific markets. In comparison, global players have a wider coverage and operate in a bigger scale. Thus, obtaining related knowledge globally and transferring the knowledge internally is also crucial.

“We interact with our customers globally. We obtain knowledge from our customers in different countries and transfer the knowledge internally. We also approach higher level of our customers to better understand their global supply chain strategy. This type of knowledge is very valuable. You can't get it from consulting firms.” (Schenker Logistics)

Logistics firms can play a role as ‘pool of knowledge’. They learn from customers and turn their skills into knowledge. Meanwhile, they accumulate the knowledge and transmit their knowledge to other customers through interaction. The ‘pool of knowledge’ can inspire people and trigger innovation.

“We learn a lot from our customers as well. If a particular customer has a supplementary service that works well, we will also offer it to other customers. As a TPL firm, we can use experience learned from one customer and offer a similar thing to another customer. You know some TPL firms don’t tell their customers what other kind of customers they have. But Aditro is very open with telling other customers what sort of customers we have. Our customers can visit us whenever they want.” (Aditro Logistics)

Customers tend to believe that they have a clear understanding of their needs so they can give guidelines to logistics firms. However, customers are not always aware of all possible solutions. Logistics firms can use their ‘pool of knowledge’ and help their customers to develop.

“It is a combination. Many customers know in advance what job they want us to perform but it is also possible to observe under meetings with customers regarding what they would need and we will provide solutions to it. It happens pretty often that customers have not even thought about that such solution exists.” (Bring Logistics)

During the last two decades, a couple of logistics concepts and managerial tools have been introduced. In practice, those concepts and tools can be used in various ways. How to modify and apply these tools in different context becomes a challenge for logistics firms to innovate. Through interaction with different customers in various markets, logistics firms can combine their knowledge and identify new areas.

“VMI, JIS etc. are very common in Europe but they are applied differently in various industries and countries. We see the potential to have the extension of these services in China. We have done a lot of research in our focus industries and we try to redesign the operation for our customer. Meanwhile, we learn from other countries and apply their experience into our operation.” (Schenker Logistics)

Technological interaction capability

Technology interaction capability has a close relationship with human interaction capability. It enables logistics firms to make use of their ‘pool of knowledge’ and translate customer’s requirements into innovative offerings. Logistics firms often have advanced systems which complement customer’s operation systems. Through interactions with customers, logistics firms constantly develop their own IT systems and try to integrate with customer’s systems in a better way.

“Many of our customers are using advanced systems like SAP. But their excellent IT systems usually don’t have the logistics module. Their systems might be good at sales and manufacturing. But their systems usually don’t provide warehousing information or operational information regarding the physical flows. Thus, we modify and customize our systems and integrate with our customer’s IT system. System integration is a two-way integration. Our customers give us handling and receiving guidelines while we provide them with feedback like confirmation and additional information batch number. Both of us benefit from that for saving time and effort.” (Oriental Logistics)

Another crucial aspect of technological interaction capability is bilateral identification of technological requirements of each party as well as joint development of technological solutions. Employees at logistics firms are actively exchanging technological knowledge with customers. Logistics firms also involve IT system suppliers in the development process. Innovative ideas are jointly developed and turned into reality.

“We have our own IT system called ABC which communicates via interface with our client’s own systems. We constantly add new IT functions for our customers. I have an example here.

Company Alpha is selling entertaining products over the internet. We are developing a new distribution solution for them. We involve our IT system partners, our own IT people and our customer's IT department. We all work together to understand our customer's needs and turn them into practice. Our IT people do a lot to gather all business data necessary for this programming.'' (Aditro Logistics)

Logistics firms often have standardized modules and processes. They use their standardized modules and processes as the base for innovative development. Afterwards, they adapt and customize their innovative service offerings to other customers. Adaptation becomes a key issue to transfer the innovative offerings into customer's business.

''E-service is how we provide information to our customers. How do we integrate with our customers on the information flow? How do we receive and send information through EDI? We adapt various methods for different customers and we can work on it in multiple ways.'' (Geodis Wilson Logistics)

Managerial system interaction capability

Managerial system interaction capability helps logistics firms to create and control knowledge. It enables them to capture and exploit opportunities to innovate. Communication has been emphasized as a crucial way of creating and controlling knowledge. Logistics firms apply multiple methods to communicate with customers while face-to-face communication is the dominant method.

''We need to have better communication with our customers. Therefore, we try to set up the agreements with the customer regarding the specific structure and frequency of meetings so we can continuously follow what we are doing to make sure we drive everything forward.'' (Geodis Wilson Logistics)

All case companies have attached great importance to relationship management. Relationship management is regarded as a key area of managerial system interaction capability. Logistics firms often have multiple customers so they need to handle the relationship management task with different approaches. In order to operate effectively in different relationships and identify chances, logistics firms have tried to assimilate approaches and apply the appropriate ones to other relationships.

''We have introduced a customer relationship management program to our staffs. The program helps them to interact with our customers and manage the relationship. We organize internal meetings and transfer the knowledge of relationship management so others can learn. Since we really care about our people and educate them, they will have the ability to apply different relationship management methods to different customers and they can identify as well as exploit chances.'' (Oriental Logistics)

Logistics firms are not always capable of providing everything by themselves. In some cases, logistics firms need to combine their service offerings with other firms in the market and integrate multiple parts. It is essential for logistics firms to follow the logistics service market closely and obtain experience to collaborate with different counterparts in different situations. Involving customers in the teamwork can facilitate collaboration.

''We constantly emphasize the importance of maintaining good relationships with customers to our staffs. We try to involve customers in the teamwork of developing new concepts. Based on customer needs, we check our service portfolio and the new service offerings in the market. Afterwards, we find a way to link our services with others in the market in order to provide an integrated solution to our customers. Our customers do not need to bother about the realization of innovative ideas. They can rely on us.'' (King Freight Logistics)

Building partnership is the most desired way for logistics firms to manage the relationships with customers. However, it is not always easy to establish a long-term relationship with all customers. Different customers can come from different countries and operate in different industries. Logistics firms can customize their approaches in order to fulfill different wishes.

“Even if our customers are quite similar, they all have different wishes and desires. We would like to have partnership with all of them but it is easier to work closer with Swedish firms. We had mainly Swedish firms before but the situation has changed. Nowadays, we have Swiss firms, German firms and French firms. They are operating in different ways than Swedish firms. We therefore developed a logistics-handbook approach. The handbook is developed in cooperation with our customers and both parties will agree upon the contents and working routines in the handbook.” (Aditro Logistics)

“How can we maintain a relationship without working together? It is because we are professional and we are partners. Lots of customers are not talking about the business but their future plans, supply management and globalization in a more macro level. We do not only work on international transport but also help our customers as a consultant. We do not only talk business with you but also the plan and future development for your company. What will the future market look like? What suggestions do I want to make as a professional company, especially on the issues of supply management, material and partnership? How to build a relationship is art. Therefore, even we did not cooperate with our customers this time, they would like to hear some suggestions. Because this is free! However, after these processes, you will depend on me, believe me and will be willing to listen to me. If we can handle the business in the future, you would definitely choose us. Besides, we join so many associations and activities. The reason is that we want a platform. We build a source sharing platform. We have something for our customers and our customers have some resources for us too. For instance, their management skills, future development and market analysis are all important to us. We are familiar with one customer. We like their ideas. Then we can share their experience with other customers in the same field.” (Dimerco Group)

Except Schenker Logistics, the rest of case companies have mentioned that they have advantages for being flexible and adaptive. Flexibility helps them to develop the relationship because customers feel easier to work in such conditions. In turn, customers will return the favor and jointly develop the process with them.

“Bring is very flexible and adaptive to customer’s needs. Bring’s competitors often have their own systems while their customers have to adapt to their systems like IT and timetables. But Bring’s customers don’t do that. They can get exactly what they want. We also work with our customers together. We help our customers to develop and become better while our customers help us to manage our facilities better and give us conditions as good as possible.” (Bring Logistics)

Further, it is found that managerial system interaction capability development helps logistics firms to overcome barriers for innovation. All case companies have pointed out the fact that some employees are not willing to change since they are comfortable with the current practice. As a result, logistics firms have paid attention to training their staffs in order to enhance their understanding of the benefits. Different incentive approaches are also used to overcome human related barriers.

“Some people are not willing to change because they are so much used to the current practice. We need to encourage them to come up with some innovative ideas. We provide them with development programs and we send them aboard to receive training. We will also provide them with resources to develop their ideas. When we review their performance, we

will take these factors into consideration. We also have DB innovation award to credit their efforts.” (Schenker Logistics)

Cultural interaction capability

Cultural interaction capability is seen as a major driving force for logistics firms to innovate. It triggers logistics firms to proactively look for new solutions while it also contributes to growth. All case companies have pointed out that a crucial aspect of their corporate culture is to put customer first and focus on customer's needs. In turn, customer's culture and value have an impact on logistics firms. Logistics firms are trying to fulfill their customer's current needs and future requirements by being proactive and actively participating in customer's development.

“We are always working on being more proactive and giving tips to customers regarding how to work in another way. We want to participate in customer's development and we demand information from them in order to know which direction our customers are moving and what they want us to develop so that we are ready to meet customer's future requirements. Besides, we have a very short decision making time because of our flatter structure. We are a quite big firm but the atmosphere is more like a family enterprise. We also treat our customers like friends so our customers say that we care more.” (Aditro Logistics)

On the other hand, Logistics firms also influence customer's values through cooperation. They innovate in order to show that logistics is not only cost cutting but also value adding. A long-term relationship can facilitate the value adding process.

“We develop our logistics as well as customer's logistics. We cooperate with our customers and keep them in a long-term perspective. Our fundamental objective is to move our customers upwards in the value chain by bringing and adding value in terms of innovative services. We make sure that we constantly bring value and work with development activities.” (Geodis Wilson Logistics)

Further, in order to put customer first, it is not enough to be proactive and form partnership with customers. Logistics firms have to understand that their customers are changing all the time and customer needs are dependent on their partners in the supply chain and the market.

“Each new customer would have its own requirement and need customized services. Even for existing customers, their requirements are changing all the time and we need to fulfil accordingly. We understand that the change of the market or market trend would require our clients to change. For instance, some of our clients used to work with big scale and big batch size. Because of JIT, they need to adapt to a smaller size of order. As a TPL, we also need to adapt in response.” (Oriental Logistics)

Logistics firms can have various kinds of customers. Some of the customers are regional players while some of them are global firms. Logistics firms have their own corporate culture and values but they also need to understand that their customers may come from different regions and they have distinguished culture background as well as values. Thus, how to conduct cross cultural learning becomes a crucial issue.

“We want to maintain the corporate culture centrally and execute a Chinese management style at the headquarter. The managing director acts as the leader behind the curtain to establish the company philosophy and to make sure the company system is implemented. Meanwhile, we attach great importance to our regional offices and our customers worldwide. We try to hire local elites since they understand the local culture and they know how to serve our customers better in the region. For instance, in the US, we prefer to hire American to

manage the local offices. We also organize various kinds of meetings so our managers from different regions can meet and share their knowledge of the local culture. As well, we rotate our staffs internationally to facilitate cross cultural learning and international management. In addition, we respect the fact that different customers from different countries can have unique characteristics. For instance, let us talk about Korean companies like A and B. If you make business with company A, company B won't cooperate with you. Vice versa. In contrast, Chinese customers would think in a different way. If you can handle company D's business, company C would trust you. Their logic is very simple. Because you can satisfy company D then you should be able to handle company C since company C and company D are so similar. Our staffs need to bear these knowledge in mind and develop our regional office culture and values jointly with our customers.” (Dimerco Group)

DISCUSSIONS

The empirical findings have shown that the four elements of the interaction capability set are all necessary for logistics firms to innovate. Human interaction capability enables bilateral development of knowledge between logistics firms and their customers. It is critical for forging logistics innovation through daily operations. Technological interaction capability helps logistics firms to use their knowledge and resources in order to turn customer's requirements into innovative offerings. Managerial system interaction capability triggers logistics firms to catch opportunities and exploit opportunities to conduct innovation. It also helps logistics firms to overcome barriers during the innovation process. Cultural interaction capability drives logistics firms to proactively search for innovative solutions.

Even though all elements of the interaction capability set are necessary for logistics firms to innovate, each single element has played a different role. Human interaction capability is closely related to daily operations and practices. Through human interaction capability development, a pool of knowledge is generated. The pool of knowledge is served as a base for other interaction capabilities to build upon. Technology interaction capability development ties to human interaction capability development in the sense that it enables logistics firms to build on the pool of knowledge and convert customer's requirements into concrete offerings. Managerial system interaction capability impacts logistics innovation at logistics firms on a different level. It relies on human interaction capability as well as technological interaction capability in order to enable logistics firms to capture and exploit opportunities. Managerial system interaction capability also influences organizational routines and practices in terms of creating and controlling knowledge.

Cultural interaction capability is the most critical element of the interaction capability set for logistics firms to innovate along the whole process. It drives logistics firms to proactively come up with new solutions and it guides logistics firms to innovate towards the right direction. Cultural interaction capability is a major driving factor to enhance the capability set and it positively affects other elements of the interaction capability set. However, other elements of the interaction capability set exert an influence on cultural interaction capability development. Cultural interaction capability would not be developed unless human interaction capability, technological interaction capability and managerial system interaction capability were in place.

All of the case companies have reported successful innovations and innovative offerings. The reported innovative offerings contain both of logistics related technological developments and logistics related service product innovations. However, most of the reported innovative offerings are either incremental innovations or imitations. Incremental logistics related technological developments and adoptions of logistics related technologies are mainly

enabled by the technological interaction capability while other elements of the interaction capability set can have an indirect effect. In contrast, each single element does not enable logistics related service product innovations directly. Logistics related service product innovations are enabled by the whole interaction capability set. All of the elements are interacting with each other constantly. Positive developments of the four elements can result in logistics related service product innovations.

CONCLUSION

Based on Johnsen and Ford's (2006) theoretical model, this research is to investigate the influence of interaction capability development on logistics innovation. This study has found out that human interaction capabilities fuels logistics innovation and customized offerings. It helps logistics firms to develop related knowledge and identify customer needs. Technological interaction capability enables logistics firms to translate customer requirements into new service offerings. Managerial systems interaction capability enables logistics firms to capture and exploit opportunity to innovate. It also helps them to overcome barriers. Cultural interaction capability is guiding logistics firms to innovate in the right direction. It also triggers logistics firms to proactively look for new solutions and contributes to growth.

In sum, interaction capabilities developed by logistics firms enable them to proactively identify customer needs and translate customer requirements into new service offerings. The development of interaction capability guides logistics firms to innovate in the right direction while helps them to overcome barriers in the process. Executives at logistics firms need to understand the importance of interaction capability development. They can concentrate on the development of interaction capabilities to capture and exploit opportunities in order to generate innovative offerings.

LIMITATIONS AND FUTURE RESEARCH AREAS

This study has only focused on interaction capability development from the logistics firm perspective. Due to the design of this study, customer perspective is not addressed nor analyzed. Logistics firms and their customers might have different opinions on interaction capability development. Future research can take both the logistics firm and customer perspectives into consideration and analyze the differences.

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