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**ARTICLES**

**Research**

**Understanding the impacts of inter-organizational communication on strategic alliance performance and stability** 735

Liu Wenwen and Liao Baiyu

**Factors influencing trust and partnership in shipper-carrier relationship: How do these affect electronic trading transactions in South Korea?** 741

Seung Man Shin

Full Length Research Paper

# Understanding the impacts of inter-organizational communication on strategic alliance performance and stability

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The purpose of this study is to measure the inter-organizational communication of alliances, and to explain the relationships among communication (communication willingness, commitment, behavior, and quality), alliance performance, and alliance stability. In data from 314 firms in China, communication willingness ( $\beta = .232$ ), communication behavior ( $\beta = .305$ ), and communication quality ( $\beta = .174$ ) had a significant effect on alliance performance, while communication willingness ( $\beta = .232$ ), communication commitment ( $\beta = .158$ ), communication behavior ( $\beta = .134$ ), and communication quality ( $\beta = .333$ ) affected alliance stability. Limitations and future research directions were also discussed.

**Key words:** Inter-organizational communication, alliance performance, alliance stability.

## INTRODUCTION

Although the number of inter-organizational alliances has grown rapidly during last decade, studies have reported very high failure rates. Alliance failure occurs when an alliance fundamentally cannot result in satisfying performance or it unexpectedly discontinues. For this reason, alliance performance and stability are considered as two major indicators of alliance success (Park and Ungson, 2001).

Despite former studies argue that inter-organizational communication has a positive effect on alliance performance and stability, this research remains undeveloped. Firstly, the prior studies overlook the multidimensionality of communication. Furthermore, an in-depth investigation of how sub-factors of inter-

organizational communication facilitate alliance performance and stability is lacking. Consequently, the objective of our paper is to fill this gap by introducing four dimensions of inter-organizational communication. Based on an empirical study of strategic alliances in China, we explore the relationship among inter-organizational communication, alliance performance, and alliance stability. We intend to address the following problems in this paper:

1. Willingness, commitment, behavior and quality, which promotes inter-organizational communication more effectively, thereby contributing to alliance success?
2. What is the relationship between inter-organizational

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communication and alliance performance?

3. What is the relationship between inter-organizational communication and alliance stability?

## LITERATURE REVIEW

Mohr and Nevin (1990) first argued that communication has multidimensional factors and Peng et al. (2010) found the interrelationship between the facets of communication. Both of their studies showed that communication willingness is the most important element as it stands for the starting point of the whole communication process. Communication commitment represents the indicator of success in the communication process. Communication behavior and quality can be considered as two factors improving the communication process. Thus communication behavior and quality enhance the communication commitment. In order to better understand the relationship between inter-organizational communication, alliance performance, and alliance stability, the four dimensions of communication - communication willingness, communication commitment, communication behavior, and communication quality are introduced in this paper.

Communication willingness, defined as the intention to initiate communication, is considered to be central to alliance performance and stability. An alliance partner willing to communicate shows intention to share information with each other, which provides more occasions to understand alliance partners (Maltz and Kohli, 1996), while alliance failure can be minimized by discovering compatibility between partners (Shamdasani and Seth, 1995).

Mohr and Sohi (1995) put forward that communication commitment is positively related to trust in alliance, as it inhibits the necessary information withholding and distorting behavior. Furthermore, communication commitment prevents alliance partner opportunism (Dahlstrom and Nygaard, 1999), and facilitates cooperation and collaboration (Menon et al., 1999). Finally, communication commitment allows alliance partners to join in goal setting and decision making.

Communication behavior is composed of communication frequency and communication media. Frequent communication which represents the closeness between alliance partners can help to encourage exchange of ideas, promote a more cooperative partnership, and bring about harmony between each other (Heide and Miner, 1992; Tucker et al., 1996). Communication media is indicative of the type of relationship. Drawing from media richness theory (Daft et al., 1987), communication channels with high richness can facilitate information transmission which is positively related to communication effectiveness and efficiency. Therefore, alliance partners, through communication behavior can inhibit misunderstandings and conflict and improve alliance performance

and stability. Communication quality including accuracy, timeliness, adequacy, relevance, and credibility of information transferred (Daft and Lengel, 1986) is a particularly critical success factor of alliance partnership. Communication quality is positively associated with alliance satisfaction (Mohr and Spekman, 1994) and goal achievement.

## RESEARCH METHODOLOGY

### Theoretical framework

A path model highlighting associations among communication, alliance performance, and alliance stability is shown in Figure 1. Performance has been a central topic in research on strategic alliances. Scholars found that relationship among alliance partners was significantly related to alliance performance. In this paper we focus on the inter-organizational communication, which is the key success factor of relationship among alliance partners. Inter-organizational communication influences alliance partners to select, negotiate and manage these relationships effectively (Bakker and Knoblen, 2015). While the extant literature has outlined a number of elements that make up inter-organizational communication, the predominant operationalization of the construct has involved four elements: willingness, commitment, behavior and quality. In addition, inter-organizational communication produces a number of benefits for alliance performance. These include facilitating knowledge transfer, execution of alliance strategy, signaling a partner's commitment to alliance objectives, promoting the development of new best practices and helping ensure the successful alliance operation process (Yang et al., 2014). Thus, we propose hypothesis 1:

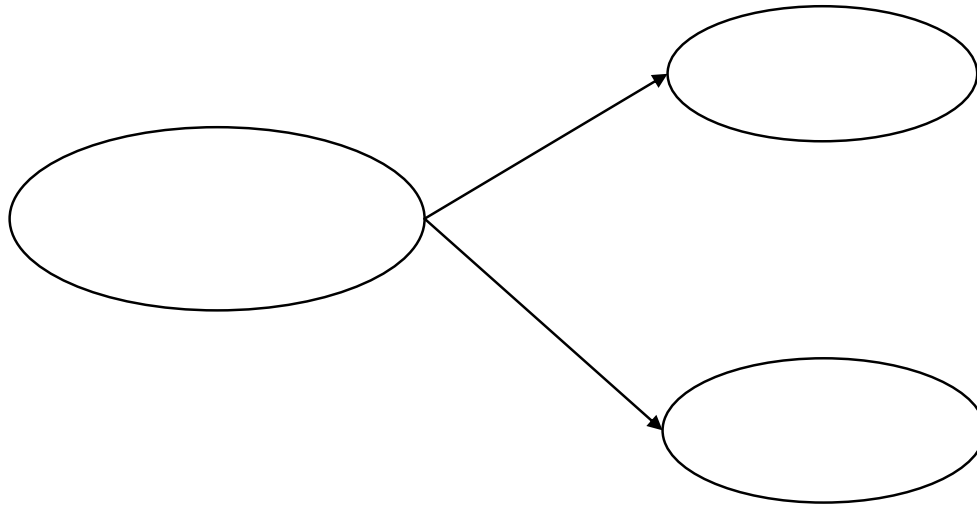
H1. Inter-organizational Communication relates positively to alliance performance.

Scholars believe that the fulfillment of objectives leads to alliance stability and the default of strategies leads to alliance instability (Bengtsson and Kock, 2014). High level of inter-organizational communication between partners can facilitate close cooperative relationship, ensure that partners put more efforts into alliance, and prevent possible opportunistic behaviors, which are beneficial to achieve high goals of alliance (Lin and Darnall, 2015). Besides, high level of inter-organizational communication will also make cooperation flexible and avoid conflicts which negatively affect alliance stability. In short, inter-organizational communication facilitates the cooperation between different parties and also acts as the principle of stabilization of strategic alliance. Therefore we pose hypothesis 2:

H2. Inter-organizational communication relates positively to alliance stability.

### Sample and data

The research randomly selected 500 firms in China. With the help of local governments, we obtained the names, telephone numbers, and e-mail addresses of top managers from the sampled firms. Then, we contacted the managers by e-mail letters or telephone to describe the purpose of the survey and asked whether they would like to assist with the study. In the cases in which a manager reported that his or her firm had been involved in one or more strategic alliances and was also willing to participate in the survey,



**Figure 1.** A path model highlighting associations among communication, alliance performance, and alliance stability .

we noted his or her contact information.

To administer the formal survey, we first called a manager to set up an appointment and also asked him or her to invite another manager to complete the questionnaire independently. After we matched key informants and deleted missing data, the final sample included 314 partner firms.

#### Instrument development

The seven-point Likert scales anchored by (1) strongly disagree to (7) strongly agree is introduced to measure the constructs. All the items applied to measure the constructs are modified from relevant literature. This study examined four dimensions of inter-organizational communication: communication willingness, communication commitment, communication behavior, and communication quality. Each dimension of inter-organizational communication is assessed with 15-item scale, adapted from Ammar (Redza et al., 2012). Alliance performance was measured using 5-item scale, based on Krishnan et al. (2006). Adapted from Saxton's 5-item scale (1997), alliance stability was measured.

## RESULTS

### Convergent validity and reliability analysis

Following Anderson and Gerbing's suggestion (1988), a confirmatory factor analysis is carried out before structural equation modeling (SEM). The remaining items for structural equation modeling are shown in Table 1 with the results of confirmatory factor analysis including convergent validity and reliability.  $\chi^2 = 461.236$  (df = 215,  $p < .001$ ), GFI = .889, NFI = .920, TLI = .947, and RMSEA = .060. Furthermore, all standardized factor loadings exceeded .60, and each indicator t-value exceeded 8.0 ( $p < .001$ ), the average variance extracted are desirable by exceeding .50 (Table 1). According to Churchill (1979),

Cronbach's alpha values ranging from .800 to .945 are acceptable. The means, standard deviations, and correlations are shown in Table 2. While variance extracted values ranging from .575 to .806 go over all squared correlations ranging from .084 to .349, the discriminant validity is acceptable, which suggest that the six factors are distinct and unidimensional.

### Structural equation modeling and hypotheses testing

The structural equation modeling fit is good ( $\chi^2 = 472.276$ ;  $\chi^2/df = 2.186$ ; GFI = .889; CFI=.954; RMSEA=.062). Hypothesis 1a, hypothesis 3a, hypothesis 4a are accepted. Communication willingness ( $\beta=.232$ ), communication behavior ( $\beta=.305$ ), and communication quality ( $\beta=.174$ ) - significantly affect alliance performance; communication commitment ( $\beta= .040$ ) did not. Hypothesis 1b, hypothesis 2b, hypothesis 3b, and hypothesis 4b are supported. Communication willingness ( $\beta=.232$ ), communication commitment ( $\beta=.158$ ), communication behavior ( $\beta=.134$ ), and communication quality ( $\beta=.333$ ) have a significant effect on alliance stability (Table 3).

## DISCUSSION

Inter-organizational communication affects strategic alliance success. Although a single indicator of inter-organizational communication has been largely applied by extant research (Mohr et al., 1996), it does not sufficiently capture the complex nature of inter-organizational communication in the strategic alliance context. Synthesizing current literature, we assessed inter-organizational communication by 15-item Likert-type



**Table 1.** Convergent validity and reliability.

Construct	Standardized factor loadings	t-Value	SMC	Variance Cronbach's alpha	CCR <sup>a</sup> AVE <sup>b</sup>
<b>Communication willingness</b>				5.800%	.852
CW1	.896	Fixed	.803	.922	.806
CW2	.903	23.247***	.815		
CW3	.896	22.178***	.774		
<b>Communication commitment</b>				5.276%	.706
CC1	.790	Fixed	.625	.851	.662
CC2	.919	16.220***	.844		
CC3	.721	13.288***	.519		
<b>Communication behavior</b>				11.948%	.815
CB1	.687	Fixed	.472	.904	.714
CB2	.912	14.590***	.831		
CB3	.885	14.262***	.784		
CB4	.879	14.183***	.773		
<b>Communication quality</b>				40.886%	.891
CQ1	.841	Fixed	.707	.945	.778
CQ2	.905	21.424***	.818		
CQ3	.915	21.894***	.838		
CQ4	.916	21.895***	.838		
CQ5	.832	18.505***	.692		
<b>Alliance performance</b>				6.878%	.734
AP1	.858	Fixed	.736	.800	.575
AP2	.861	17.238***	.740		
AP3	.605	11.191***	.366		
AP4	.678	12.920***	.460		
<b>Alliance stability</b>				7.619%	.822
AT1	.675	Fixed	.456	.835	.685
AT2	.854	13.409***	.790		
AT3	.902	13.970***	.813		
AT4	.864	13.538***	.747		

<sup>a</sup> CCR = composite construct reliability; <sup>b</sup> AVE = average variance extracted.  $\chi^2 = 461.236$  (df = 215)  $p < .001$ ;  $\chi^2/df = 2.145$ ; GFI = .889; NFI = .920; TLI = .947; CFI = .955; RMSEA = .060; cumulative = 78.407%; \*\*\* $p < .001$ .

scale measures into four dimensions, including communication willingness, communication commitment, communication behavior, and communication quality. This research is meaningful because it may suggest varieties of alliance management practices through inter-organizational communication as a strategic approach to increase strategic alliances performance and stability.

Inter-organizational communication has a significantly positive effect on strategic alliance performance (except communication commitment). In particular, communication behavior is determined to be the most important variable affecting communication performance. On one hand, higher communication frequency can reinforce better understanding of partners' expectation, behavior, resources and capability (Kumar and Das, 2007). For another, rich communication media can facilitate communication benefits to alliance performance. This is

in line with the media richness theory (Daft et al., 1987). Another finding was that inter-organizational communication increased strategic alliance stability. To begin with, inter-organizational communication build trust between partners. According to social embeddedness theory (Gulati, 1995; Gulati and Gargiulo, 1999), greater trust (Sivades and Dwyer, 2000) will result in accumulation of ties between increasingly embedded partners (Gulati and Gargiulo, 1999), which can improve the alliance stability. In addition, inter-organizational communication facilitates cooperation and close involvement in decision-making process. As information asymmetry is reduced by inter-organizational communication (Mowery et al., 1996), the perceived likelihood of opportunistic behavior decrease. Thus, a higher level of inter-organizational communication acts as both a signaling and a monitoring mechanism by establishing and building alliance stability.

**Table 2.** Means, standard deviations, and correlation.

Construct	M±SD	1	2	3	4	5	6
1.Communication willingness	4.26±1.33	1	.247 <sup>a</sup>	.131	.285	.174	.277
2.Communication commitment	4.20±1.34	.497 <sup>**</sup>	1	.357	.248	.087	.193
3.Communication behavior	3.88±1.31	.362 <sup>**</sup>	.189 <sup>**</sup>	1	.084	.139	.119
4.Communication quality	4.40±1.31	.534 <sup>**</sup>	.498 <sup>**</sup>	.291 <sup>**</sup>	1	.153	.349
5.Alliance performance	4.18±1.08	.418 <sup>**</sup>	.296 <sup>**</sup>	.374 <sup>**</sup>	.392 <sup>**</sup>	1	.242
6.Alliance stability	3.55±1.20	.527 <sup>**</sup>	.440 <sup>**</sup>	.345 <sup>**</sup>	.591 <sup>**</sup>	.492 <sup>**</sup>	1

<sup>a</sup>r<sup>2</sup>; \*\*p< .01 (two-tailed tests).

**Table 3.** Structural parameter estimates.

Hypothesized path (stated as alternative hypothesis)	Standardized coefficients	path	t-Value	Results
H1: inter-organizational Communication → alliance performance				Partially supported
Communication willingness → alliance performance	.232		2.920 <sup>**</sup>	
Communication commitment→ alliance performance	.040		.536 ns	
Communication behavior → alliance performance	.305		5.043 <sup>***</sup>	
Communication quality → alliance performance	.174		2.443 <sup>*</sup>	
H2: inter-organizational Communication → alliance stability				Supported
Communication willingness → alliance stability	.232		3.216 <sup>**</sup>	
Communication commitment → alliance stability	.158		2.514 <sup>*</sup>	
Communication behavior → alliance stability	.134		2.315 <sup>*</sup>	
Communication quality→ alliance stability	.333		4.948 <sup>***</sup>	
Goodness-of-fit statistics	χ <sup>2</sup> =472.276(p<.001) df=216 χ <sup>2</sup> /df=2.186 GFI=.889 NFI=.954 IFI=.954 RMSEA=.062			

ns = not significant. \*p< .05. \*\*p< .01. \*\*\*p< .001.

**THEORETICAL AND MANAGEMENT IMPLICATIONS**

From a theoretical perspective, we propose four dimensions of inter-organizational communication. This study divides inter-organizational communication into willingness, commitment, behavior and quality. Then we test how different dimensions of inter-organizational communication influence alliance performance and stability. We demonstrate inter-organizational communication has a significantly positive effect on strategic alliance performance (except communication commitment) and alliance stability, which is an empirical remedy in this field.

From a management perspective, this study finds that the inter-organizational communication can enhance alliance performance and stability in the Chinese context. More specifically, inter-organizational communication plays an important role in alliance success. Alliance partners should facilitate inter-organizational

communication by improving communication willingness, commitment, behavior and quality. When the alliance partners have high level of inter-organizational communication, they may easily build the mutual trust mechanisms, expand the breadth and depth of the relationships. It is effective to help achieving objectives of alliance.

**RECOMMENDATIONS FOR FUTURE RESEARCH**

Despite the study’s implications, it had several limitations. First, the sample consisted of strategic alliances in China, which was only a portion of alliances. Therefore, efforts must also be taken in generalizing these findings to other circumstances. Second, this study depended on a survey with a cross-sectional design and therefore may not have clearly reflected a causal relationship between variables of the study model, and the self-reporting measurement

method may have resulted in errors of common method variance. Future researchers should conduct a longitudinal study or obtain samples from several sources. In the end, it may be further enlightening to examine partner selection (Oxley, 1997), which engage as moderator variable of inter-organizational communication.

Although much more work is required to understand how inter-organizational communication can improve strategic alliance performance and stability, this paper is one step toward a greater understanding. In view of the recent rapid growth in strategic alliances, hopefully this research will help guide managers in using inter-organizational communication strategies more effectively.

### Conflict of Interests

The authors have not declared any conflict of interests.

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*Full Length Research Paper*

## Factors influencing trust and partnership in shipper-carrier relationship: How do these affect electronic trading transactions in South Korea?

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In electronic trading transaction, forming trust is very important in business relations due to its anonymity feature or the many non-face-to-face transactions with numerous and unspecified interested parties. This study centered on the importance of trust and partnership in shipper-carrier relationships for the vitalization of electronic trading transactions in South Korea. Thus, this study aimed to identify the characteristics of cooperative relations between interested parties through trust and partnership, focusing on the carriage contract between shipper and carrier under an environment of electronic trading transactions. Specifically, this study drew determinants influencing the trust and partnership between shipper and carrier in electronic trading transactions through an empirical analysis of Korean trading companies. In terms of transaction cost, there may be an impact of transaction frequency on trust. Marketing literature judges that trust is formed when the seller tries to build up a trust relationship and when man-to-man interaction takes place frequently between the buyer and the seller. Also, in terms of the theory of relational contract, there may be significant impact on the formation of trust such as commercial information interchange and human networks, etc. To sum up, cooperation in transactions is influenced by trust in a carriage contract under electronic trading transaction, and trust is influenced by the frequency of transactions with a specific carrier, the specific carrier's capability to provide service, the specific carrier's sincerity, the specific carrier's reputation and the size of the business.

**Key words:** Trust, partnership, e-trade, shipper-carrier relationship.

### INTRODUCTION

With advancement in information communication technology, the existing trading transactions based on papers have changed into the ones using the Internet as a means. With the digitalization of these trading transactions, the parties to a transaction can do trading

activities without any limitations of time and space, enjoying many economic effects. However, in fact, the characteristics of electronic trading bring about unexpected side effects, as well.

In the traditional market, the parties to a transaction

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check and inspect contract requirements face to face, while in electronic trading, with the characteristics of non-face-to-face transactions, its fundamental purpose, contracts are concluded based on trust in the virtual space. In this respect, it is most important to secure trust in electronic trading transactions. Thus, in the virtual space, the absence of trust acts as a factor deteriorating the participation and interest of the parties to a transaction in electronic trading transactions. Of course, in the traditional transactions, too, trust is considered essential as a system of continuous exchange relations based on uncertain situations. Also, in the initial process of transition to the long-term relation, trust may be a very important factor. Therefore, for the long-term transactions, based on the partnership between the shipper and the carrier in electronic trading transactions, trust should precede.

Therefore, this study set up a research model and hypothesis based on the existing literature about marketing and distribution regarding partnership that can maintain continuous business relations between the shipper and carrier with advancements in information communication technology. It drew determinants that influence the trust and partnership between the shipper and carrier in electronic trading transactions through an empirical analysis of trading companies. However, in this study, carrier was defined as the international complex shipping service providing regular shipping service.

## **THEORETICAL BACKGROUND**

### **Study of transaction cost theory**

Transaction is defined as the process of transferring goods and services among technically separated units (Williamson, 1985), and cost required to operate this process is called transaction cost (John, 1984). That is, transaction cost is incurred by bargaining to sign contract, assembling information and monitoring compliance with agreement. In addition, replacement cost from the change of parties in the transaction is also included. Thus, transaction can be conducted without cost if the purchaser and seller have the same amount of information but actual transactions in the market are not conducted this way. The purchaser must search for information for the transaction and manage negotiation and transaction processes. Cost involved in these activities is called transaction cost (Teo and Yu, 2005).

The fundamental reason why the transaction cost takes place is opportunism. Griesinger (1990) maintained that opportunistic attitude is to conceal information which has serious effect on the transaction or not to perform commitment by providing different information. As a party in transaction conducts opportunistic actions, counterpart in the transaction makes efforts to control the party's opportunistic actions (Williamson, 1981). In addition, not only does transaction cost arise in the process of such

efforts but transaction cost also arises in the case of being unable to control opportunism because of relatively disadvantageous transaction. Williamson (1979) explored two kinds of factors affecting transaction. First was the factor related to human behaviors involved in the transaction for which limited rationality and opportunism were assumed. The second was the factor related to characteristics of transaction for which uniqueness of assets, uncertainty and transaction frequency were assumed. Besides, sometimes additional transaction cost is also incurred in electronic commercial transactions due to characteristics such as uncertainty of products and transaction channel (Liang and Huang, 1998).

Coase, an early researcher on the theory of transaction cost, saw uncertainty as the major cause of transaction cost and took as examples of transaction costs the cost to seek out proper price, negotiation cost during the process of contract and cost from lack of flexibility due to long-term contract. With the increase of transaction cost, opportunity cost for investment relatively increases and management's mistake of being unable to use production factors in optimum time and organizational expansion cause increase in supply price of other production factors (John and Weit, 1988). Meanwhile, transaction frequency means the number of transactions between a party in a transaction and its counterpart. In theory of transaction cost, transaction cost takes place according to transaction frequency, which affects transaction structure (Maltz, 1994). Therefore, if transaction frequency increases, transaction cost can be reduced through long-term contract (Teo and Yu, 2005).

### **Study of theory of relational contract**

In general, there are many factors that put through a transaction in everyday life, but they do not necessarily exist on paper. In other words, a contract may be established by many non-contractual factors in a transaction (MacNeil, 1978). Also, as behavioral factors acting as main factors in maintaining a partnership, the term of a transaction contract, specificity, plan risk and sharing responsibility, interdependence and future cooperation, and human relation, etc. have positive effects on the maintenance of continuous business relations in the long-term (MacNeil, 1978).

In the meantime, partnership with a partner is formed through durability of business relations, information exchange of sales activities, business maintenance, the existence of EDI project, company size, business area of the shipper in deciding partnership (Gardner et al., 1994). Also, what is important in a contractual relationship is how to determine trust with the other party to a transaction and to choose a situation in which trust is formed (McGinnies and Ward, 1980). Here, the choice is based on cognition (trust between individuals), and reliability and dependence is surveyed through a measure for trust in the past. When expectations of reliability and dependence

are met, trust moves to an emotional factor including emotional bond like worry or interest. Thus, since the competency of trust is developed from an economic point of view, in electronic trading transaction, economic effects like the reduction of cost and time can be obtained from the correct delivery of the message. Unlike this, if the competency of trust is lacking, the parties to a transaction should reconfirm the accuracy of transactions and invest in training costs and time in order to promote understanding of the parties, so additional incidental expenses incur.

### **Study of trust in electronic trading transaction**

The issue of trust is raised in an electronic trading transaction because of the economic loss between the parties to a transaction and the infringement of privacy of the company. Electronic trading transaction is a non-face-to-face transaction between the parties, so it is difficult to physically identify the quality of goods due to the remote separation between the parties and the goods. Thus, if a problem occurs in the quality of goods, there are much more possibility of claims and problems of the shipment of goods for the buyers as compared to the traditional business transactions (Jarvenpaa et al., 1999).

In addition, the buyers perceive high risks regarding the problem that it is impossible to check goods directly, time and cost on the carriage, damage on passage, and the possibility of the seller's opportunistic behavior with the exposure of corporate information. Consequently, the perception of these risks weakens the intent of sale of goods via the Internet (Koh et al., 2012), which is a significant limitation to the development of electronic trading transaction.

For this reason, the success of electronic trading transaction particularly depends on the security of trust in the buyer between the parties to a transaction; many companies using electronic trading make tremendous efforts and pay costs to build up a trust relationship with buyers. However, since electronic trading transaction based on the Internet is based on an open system structure, it is difficult to develop and maintain trust in this structure. The Internet was developed so that people could cooperate with each other and share information through electronic media (Bhimani, 1996). In other words, the Internet was not designed for commercial purposes.

The Internet was operated in the trust of a single domain so that remote users could access important information on the machine. Thus, security issues, in general, depended on the etiquette between the parties to a transaction and respect for each other, deemed to be appropriate on the networks. In other words, since there was relatively small number of users of the Internet in an early phase, and most users were researchers or scholars, such operating methods were reasonable.

However, as the Internet developed at an alarming speed, and the composition of the users changed, the

Internet, now, became a universal community consisting of people from the various fields and classes. With these changes in the purpose of use of the Internet and the users, the number of security violation accidents because of malicious or simple attack increased, and the public that used the Internet for commercial purposes came to distrust the security and trust on the Internet.

Like this, trust between the parties to a transaction should be built so that the Internet becomes a viable base for electronic trading transaction. Of course, trust has been seriously treated under the traditional business transaction environment and developed continuously through appropriate policies, procedures and practices for the security of transactions. However, security networks have not yet been built sufficiently in electronic trading transactions via the Internet. In addition, as buyers consider insecure communications and a lack of trust in the seller the main reason for not making business transactions via the Internet, many buyers are reluctant to make transactions through electronic trading due to the problems of trust and safety (Furnell and Karweni, 1999).

As the Internet is rapidly growing, there are changes in the demographic variables of Internet users and the Internet develops as the global community, so the actions of collecting information in an intentional or negative way increases, which results in increased distrust. To prevent the formation of this attitude of distrust in electronic trading transactions, trust and security become more emphasized.

Also, trust in electronic trading transactions is a concept including the seller's ability and motivation in terms of trade that the goods with the quality expected by the buyer can be delivered safely and after-sale services can be implemented in accordance with the sales contract and system reliability in technical aspects. Therefore, trust eliminates fear for the other party's opportunistic behavior and as a result, it reduces transaction cost related to electronic exchange (Ratnasingham, 1998).

In spite of such economic effects, the parties to a transaction are reluctant to use electronic trading transactions because there is a lack of trust between the parties on electronic channels and the Web. In other words, they hesitate to use electronic trading transactions because of concerns about privacy and corporate information spill, and perception of risks of the use and reuse by enterprises and resellers. Therefore, the importance of trust under the Internet environment has a much greater meaning than that in the physical environment, and especially, it is a very important factor that allows the parties to a transaction to use electronic trading transactions with an easy mind.

### **Study of partnership**

In the relational contract theory, a contract is established

by many non-contractual factors, and often, the factors establishing transactions do not appear on papers (MacNeil, 1978). In other words, in business relations, the parties form strategic alliances based on trust to jointly cope with inventory and risk management through information sharing. Like this, the relation needed to share threats, concede to maximize mutual profits for the creation of business results is partnership. With internationalization and globalization, modern enterprises accelerate their business strategies through inter-corporate partnership in a variety of ways and make efforts to secure competitive advantage (Sung, 2010).

The formation of partnership means collaboration and integration (Lambert et al., 1996), which is to remove uncertainties in transactions through continuous formation of relations and to create results for all partners by relational characteristics from supply chain perspective rather than individual companies' interests and through improving efficiency and eliminating risk factors.

Partnership is one type of continuous transaction between companies. It refers to long-term and repeated transactions based on mutual profits by the parties' negotiations or communication exchanges instead of intermittent and short-term business relations, through mutual trust and relations of commitment in continuous and normal business relations. Like this, the cooperation between partners in a carriage contract is an essential factor promoting success of relations, and is an act of seeking the mutual performance through the formation of relations based on the cooperation between carriers and shippers. Thus, as the cooperation between carriers and shippers increases, cost effectiveness can be achieved and the result increases, and cooperative relations formed based on mutual trust in the long-term is shipment partnership. Recently, inter-corporate cooperative relations in supply chain relations have smoothed the flows of all materials and information based on share on business, and inter-corporate cooperative relations is deemed to be business sharing relation based on long-term partnership (Gunnar and Russell, 2008).

In the meantime, there have been various studies of the factors forming partnership; and four factors, such as mutual respect, mutual benefit, communication and long-term transaction have been considered as those forming partnership. A company shares core competencies of the partner company in order to create and maintain its own competitiveness (Lee, 2007). Also, in practice areas, trust plays a positive role in forming successful long-term partnership, and understanding the other company, communication, strategic flexibility, cultural structure and the use of information technology have been suggested as factors of partnership (Kim, 2005).

MacNeil (1981) stated that behavioral factors influencing partnership, such as the term of transaction contract, specificity, sharing of the plan risk and responsibility, interdependence, the future cooperative relations and human relationships influence the long-term business

relations. In addition, in deciding a partnership, models of the formation of cooperation between partners based on the factors such as the durability of business relation, commercial information interchange, plan for the duration of business relation, sharing of risks and responsibilities, control factors of cross-business activities, market area, duration of the project, the presence of EDI project, company size and business area of the shipper (Gardner et al., 1994). McAllister (1995) said that, in order to build the cooperation of business relations, it is necessary to choose who to trust and under what situation to trust. However, at this time, choice is based on cognition, and it is a survey of measure for trust in the past, such as reliability and dependence. If reliability and dependence increases for business relations, trust moves to an emotional bond such as worry and anxiety. Thus, since competent trust develops in the economic foundation, the economic impact like savings for cost and time can be obtained through the accurate delivery of trade information in electronic trading transactions. Unlike this, if there is lacking competency of trust, the parties to a transaction should recheck the accuracy of the transaction and invest time in instruction and training, which causes the incurrence of additional costs.

## SETTING RESEARCH MODEL AND HYPOTHESIS

### Developing research model

In order to look into the relations of trust and partnership between the parties to a transaction when a carriage contract is concluded under the electronic trading transaction environment, a research model was developed by selecting the factors influencing partnership and those constituting partnership based on the existing theory of TCE and theory of relational contract. First, one of the factors important for the formation of partnership to maintain continuous business relations may attribute to the issue of trust, so trust was chosen as the parameter that forms partnership.

To build trust in a carriage contract under the electronic trading transaction environment, the Web site and size of the company can be a means of establishing good trust. It is because customers can perceive the size of the enterprise and get information about the ability of suppliers and the integrity of the entire corporation. Also, the ability to provide services trusted at a regular fare level, too, can be an important factor of trust. In addition, in order to build trust between the carrier and the shipper, for the shipper, the personal information of the shipping company can be an important factor.

Keen (1997), also, in a study with general consumers, said that the most important obstacle in the Internet marketing is lack of reliability. Consumer's reliability includes the ability of merchants to satisfy the consumer regarding online order as well as honesty of the merchants. Also, Bory and Jemison (1989) said that the initial development of the trust begins from the normal contractual relationship, but as the transaction changes repeatedly and related information is shared between the parties, high trust is formed.

Some divided the trust factor for the other party into objective trust factor and subjective trust factor, and some describe that the objective trust factor in general, is a social indicator like the uniform of the company's employees. The subjective trust factor is described as personal experience, the parties' goals, skills, expectation from the project and the level of trust between members of the

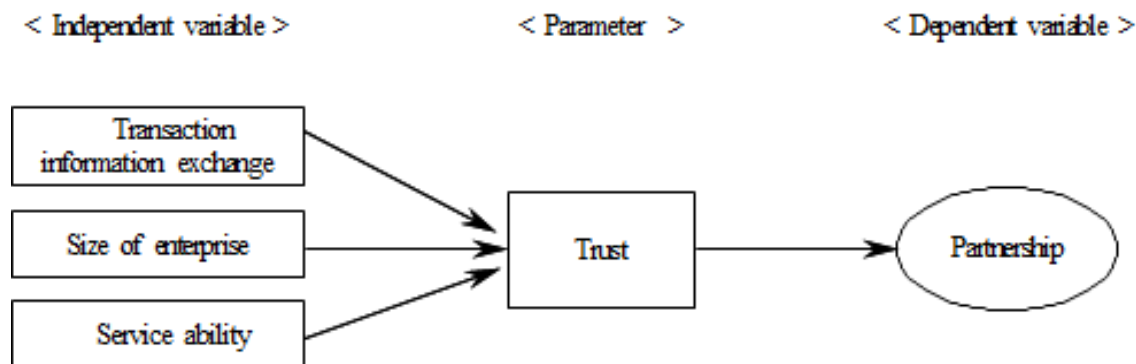


Figure 1. Research model.

other community based on the past experience of trading.

This trust factor may be influenced by transaction frequency in terms of transaction cost. In marketing literature, trust is formed when the seller makes an effort to build a trust relationship and when man-to-man interaction occurs frequently between the buyer and the seller. Also, from the theory of relational contract, commercial information interchange and human networks may have a great impact on the formation of trust.

To sum up, partnership in a carriage contract under the electronic trading transaction is influenced by trust, and trust is influenced by the frequency of transactions with a specific carrier, the specific carrier's capability to provide services, the specific carrier's integrity, the specific carrier's reputation and the size of the enterprise. Thus, the research model to conduct this study was set up as Figure 1.

### Hypothesis setting

The measurement variables used in this study were modified for the formation of trust and partnership between the parties interested in a carriage contract in an electronic trading transaction, which had already been verified in existing studies. For this purpose, questionnaire items were modified, and the adequacy of the questionnaire items was evaluated by experts of electronic trading. After modifying inappropriate items, through preliminary examination, the reliability and validity were tested, and improper questions or ambiguous items were removed to complete a survey. Table 1 summarizes the measuring and operational definitions of the variables used in this study. For each question, a 5-point Likert scale was used.

#### Exchange of trade information and trust

The more the information exchanged between buyers and suppliers, the more the possibility of the parties to a transaction sharing similar norms and values becomes. In other words, shipper and carriers build mutual trust through systematic and accurate information exchange. Doney and Cannon (1997) said that trust is formed when interaction occurs frequently between the buyer and the seller through the construction of an EDI system. Also, Walton and Marucheck (1997) stated that the construction of an EDI system provides good information for the parties to a transaction, which increases the supplier's trust (Doney and Cannon, 1997). In the meantime, the exchange of trade information using the Internet is very helpful for building trust between the parties with low cost and convenient information interchange by resolving the issues of excessive cost due to the EDI and the difficulty in use. Also, transaction information exchange improves the accuracy of

business activities and the reliability of the provider by removing the problem of uncertainty such as renewal and shipment delay through delivering accurate information.

Thus, the shipper's trust in the carrier can improve as the carrier provides the shipper with accurate and rapid shipment information. Therefore, the following hypothesis was set up.

H<sub>1</sub>: The carrier's provision of accurate shipment information would have a significant influence on the shipper's trust.

#### Companies' size and trust

The reliability of a seller is evaluated by the size of the buyer in the traditional marketing path (Doney and Cannon, 1997). Large size of an enterprise means that other buyers trust the company and its business is successfully carried out. Thus, in a carriage contract in electronic trading transactions, too, perceiving that a shipping company is large may be the reason for trust that the company will keep the promise well. Also, large size allows people to perceive that the company may have essential expertise and resources for support systems such as customer support and technical services. The presence of these systems, ultimately, enhances trust (Chow and Holden, 1997).

In addition, based on Jarvenpaa et al. (1999), large size means the ability of risk-taking when an incidental damage occurs in shipment, and accordingly, the company can compensate for the shipper. Also, it can have an ability to control the subsequent carriers, which, in turn, increases trust in the carriers. Therefore, also, in a carriage contract using electronic trading transaction, it would have an influence on trust in the carrier as shown in the existing studies (Leidner, 1999). Therefore, the following hypothesis was set up.

H<sub>2</sub>: The perception that the carrier size is great would have a significant influence on trust.

#### Capability to provide service and trust

Trust is formed based on expectation that the parties to a transaction would do an important and special action to the trustor. For example, when the buyer believes that when the seller has ability and motive to deliver the goods and services with the quality the buyer wants, trust is formed. Thus, through the Web site in an electronic trading transaction, when the information about the carrier's capability to provide services is delivered to the shipper in detail, trust is formed, and an effect on transaction cost can be



**Table 1.** The main parameters for the empirical analysis.

Variable	No of items	Operational definition	Related researches
Exchange of trade information	4	Provision period of information Provision frequency of information Internet (EDI) construction Diversity of provision of information	Doney and Cannon (1997)
Company size	3	Experts' support system Financial capability Systematic networks	Chow and Holden (1997) and Jarvenppaa et al. (2000)
Capability to provide service	5	Real time provision of information Corporate reputation Resilient capability to provide service Offering a wide range of services Geographic scope of services	Hart and Saunders (1998), Jarvenppaa et al. (2000) and Tan and Thoen (2001)
Trust	5	Timely shipping Quality of shipment services Consistency of shipment time Agility of dispute resolution Experience of services offered	Lambert et al. (1996)
Partnership	4	High expectations about relation Voluntary help for difficult situation Solving challenges through negotiations Interdependence	Lambert et al. (1996)

obtained (Hart and Saunders, 1998).

The carrier's services provided through a Web site include related services such as cargo tracking services, traffic information, reservation information and bill of lading information, etc. However, in terms of hardware, since carriage contracts are concluded on general cargoes on the assumption of the shipment forwarder's ability to provide basic airworthiness, except for project cargoes, the hardware aspect does not have a great impact. Therefore, the following hypothesis was set up.

H<sub>3</sub>: The carrier's ability to provide shipment services via Web site would have a significant impact on the shipper's trust.

### **Trust and partnership**

Mayer et al. (1995) define trust as the trustor's voluntary intention toward the other party to a transaction under the expectation of the other party will perform specific behaviors important to the trustor (Mayer et al., 1995). Others define it as the trustor's expectation of the trustee's motives or actions in social psychology or industrial marketing (Jarvenppaa et al., 1999). This trust increases the quality of interactions between both parties of a transaction, increases the level of cooperative relations, and enhances the results positively (Schurr and Ozanne, 1985).

Thus, trust can be said to be a precedence factor for the formation of partnership. The reason why the issue of trust is raised importantly in an electronic trading transaction is that it is difficult to

have belief or conviction that the parties to the transaction would sincerely implement the contract in the electronic virtual space as in the offline market. Therefore, trust that the parties would sincerely fulfill the contract will lead to partnership. Therefore, the following hypothesis was set up.

H<sub>4</sub>: The shipper's trust in the carrier on a carriage contract in an electronic trading transaction would have a significant impact on the formation of partnership.

### **Sampling methods and analysis**

#### **Sample selection**

As the sample of this study, companies registered and operating in e-Marketplace run by Korea International Trade Association (KFTA) were selected. As of August 2014, the number of companies registered in e-Marketplace was 10,344 and questionnaire survey was conducted on 1,000 companies randomly chosen. A total of 116 questionnaires were collected and among them, 103 questionnaires were utilized for analysis except for 13 questionnaires with low reliability. Duration of the survey was from from November 10 to December 10, 2014.

#### **Methods of analysis of data**

In order to look into how appropriately the measuring tool measures

**Table 2.** Result of reliability of variable factors.

Variable	No of item	Alpha coefficients	Standardized alpha coefficient
Exchange of trade information	4	0.8564	0.8584
Company size	3	0.8230	0.8249
Capability to provide service	5	0.8605	0.8604
Trust	5	0.8114	0.8181
Partnership	4	0.9081	0.9083

the concepts, construct validity was set up, and the construct validity of the research variables was verified by factorial analysis in this study. As a statistical method to verify the validity, principal component analysis and varimax were used. For factor extraction, principal component analysis method was used to minimize the loss of information and reduce the number of factors; the factors with eigen value more than one were extracted; and varimax was conducted to bind the factors appropriately.

In addition, in order to verify the internal consistency between measurement items, it was verified through Cronbach's alpha analysis. Reliability, in general, refers to the possibility of getting the same measurement value when measurement is repeated on the same concept, in other words, a method of increasing internal consistency by excluding the items deteriorating reliability when several items are used for measuring the same concept. In general, if Cronbach's alpha value is over 0.7, the reliability of the measurement tool is pretty good, and if it is over 0.6, it is considered fine. And lastly, in order to look into the relationships among the variables, correlation coefficient was used, and in order to verify the hypotheses among the variables, Structural Equation Modeling (SEM) was conducted using LISRE 8.0.

## EMPIRICAL ANALYSIS

### Analysis of reliability and validity of variables

To know how appropriately the measuring tool measures the concepts, construct validity was set up and the construct validity of the research variables was verified by factorial analysis. In order to analyze whether the questionnaire items are measured in the same way as the intent of this study before verifying the model, SPSS 18 was used. As a statistical method to verify the validity, principal component analysis and varimax were used. For factor extraction, principal component analysis method was used to minimize the loss of information and reduce the number of factors; the factors with Eigen value more than one were extracted; and varimax was conducted to bind the factors appropriately. As a result of the factorial analysis, they were bound in five factors; factor loading of most of the factors was over 0.6, and the total variance was 68.5%. The specific data on this is shown in Table 3. In addition, in order to verify the internal consistency between measurement items, the reliability was verified using Cronbach's alpha analysis. Reliability, in general, refers to the possibility of getting the same measurement value when measurement is repeated on the same concept, in other words, a method of increasing internal

consistency by excluding the items deteriorating reliability when several items are used for measuring the same concept. In general, if Cronbach's alpha value is over 0.7, the reliability of the measurement tool is pretty good, and if it is over 0.6, it is considered fine (Nunnally and Bernstein, 1994). As shown in Table 2, as a result of verification of reliability of exchange of trade information, company size, capability to provide service, trust and partnership, Cronbach's alpha value of each variable was over 0.7, so it turned out that the reliability was good.

Table 3 shows the result of verification of the validity of variables. As a result of the verification, three factors were extracted from independent variable, and one factor was extracted respectively from parameter and dependent variable. In general, factor loading of 0.4 is considered a variable with validity, and factor loading more than 0.5 is considered a very important variable. Five independent variables such as capability to provide service, geographical scope of services offered, diversity of services offered, company' reputation, real-time provision of information were included in Factor 1, which was named 'capability to provide service.' Eigen value of the capability to provide service factor is 5.520, which explains 48.656% of the total variance.

Four variables such as provision period of information, provision frequency of information, Internet (EDI) construction and diversity of provision of information were included in Factor 2, which was named 'exchange of trade information.' Eigen value of the exchange of trade information factor is 1.531, which explains 10.415% of the total variance.

Three variables such as expert support system, systematic networks and financial capability were included in Factor 3, which was named 'company size.' Eigen value of the company size factor is 1.143, which explains 9.435% of the total variable.

As shown in Table 4, the factor of parameter was named 'trust,' and four variables, including timely shipment, consistency of shipment time, quality of shipment services, experience of services offered and claims, were included in this factor. Eigen value of the trust factor is 2.902, which explains 68.024% of the total variance.

The factor of dependent variables was named 'partnership,' and four variables, including solving challenges through negotiations, high expectations for business relation, interdependence and voluntary help in difficult situation

**Table 3.** Result of analysis of factors and reliability.

Questionnaire item	Factor name		
	Capability to provide service	Exchange of trade information	Company size
Capability to provide service	0.824	0.209	0.070
Service diversity	0.743	0.331	0.145
Reputation of company	0.691	0.118	0.432
Geographical scope	0.662	0.214	0.242
Real time information	0.639	0.231	0.274
Provision frequency of information	0.172	0.843	0.255
Provision period of information	0.303	0.792	0.010
Internet (EDI) construction	0.271	0.784	0.245
Diversity of provision of information	0.242	0.732	0.245
Expert support system	0.124	0.184	0.835
Systematic networks	0.280	0.256	0.818
Financial capability	0.353	0.153	0.744
Eigen value	5.520	1.531	1.143
Distributed description rate (%)	48.656	10.415	9.435
Cumulative rate (%)	48.656	59.071	68.506

**Table 4.** Result of factorial analysis of parameter and dependent variables.

Variable name	Factor 1	
Parameter	Consistency of shipment time	0.754
	Quality of shipment services	0.857
	Timely shipment = Shipment processing speed	0.763
	Experience of service	0.842
	Claims	0.757
	Eigen value	2.902
	Variance explanation rate (%)	68.024
Dependent variable	Solving challenges through negotiations	0.942
	Voluntary help for difficult situation	0.865
	Interdependence	0.846
	High expectations about business relation	0.753
	Eigen value	1.832
	Variance explanation rate (%)	75.636

difficult situation were included in the factor. Eigen value of the partnership factor is 1.832, which explains 75.636% of the total variance.

As a result of an analysis of the correlations between constructs prior to a model analysis using LISREL, it turned out that a positive (+) relation was formed with the package. The results of goodness-of-fit test are factors influencing trust at significance level of 0.01 (Table 5).

### Hypothesis testing and interpretation

#### *Evaluation of suitability of research model*

In order to verify the hypothesis of the model, this study used structural equation model which utilized LISREL 8.0 presented in Table 6. With goodness-of-fit index of

120.107 ( $p=0.102$ ) and degree of freedom of 46,  $\chi^2/df=2.61$  which is used as one of absolute fit indexes satisfied recommended guideline. P value, value of significance level, also turned out to be statistically significant at 0.01. In addition, goodness-of-fit indexes, AGFI=0.852, GFI=0.903, RMR=0.048 and NFI=0.659 satisfied recommended guideline. Therefore, this study model can be seen as a proper one to explain the relationship among information exchange, scale of companies, capability to provide service, trust and transaction cooperation.

#### *Hypothesis testing*

As a result of a test on hypotheses, as for the impact of

**Table 5.** Result of analysis of the correlations among factors.

Factors name	Exchange of trade information	Companies' size	Service ability	Trust	Partnership
Exchange of trade information	1.000	0.479*	0.387*	0.384*	0.359*
Companies' size	-	1.000	0.480*	0.430*	0.456*
Service ability	-	-	1.000	0.493*	0.503*
Trust	-	-	-	1.000	0.432*
Partnership	-	-	-	-	1.000

**Table 6.** Suitability of research model.

Parameter	Absolute fit index			Incremental fit index		Parsimonious fit index
	$\chi^2$ (p,df)	$\chi^2$ /df	GFI	RMR	NFI	AGFI
Criteria	-	≤3.0	≥0.9	≤0.10	≥0.9	≥0.8
Results	120.017 (0.102, 46)	2.61	0.903	0.048	0.659	0.852

**Table 7.** Result of analysis of research model.

Hypothesis	Path-coefficient	t-value	Significance level (p)	Hypothesis testing
H1 Trust ← exchange of trade information	0.17*	2.80	0.001	Adopted
H2 Trust ← company size	0.26*	2.52	0.004	Adopted
H3 Trust ← capability to provide service	0.46*	4.89	0.000	Adopted
H4 Partnership ← trust	0.33*	3.07	0.000	Adopted

the information the carrier provides the shipper on trust, path-coefficient was 0.17; t value, 2.80; and H1 "The carrier's provision of accurate shipment information would have a significant impact on the shipper's trust" was adopted at significance level of 0.01.

As for the impact of the carrier size on trust, path-coefficient was 0.26; t value, 2.52; and H2 "The perception that the carrier size is great would have a significant influence on trust" was adopted at significance level of 0.01.

As for the impact of the carrier's capability to provide services in electronic trading transactions, path-coefficient was 0.46; t value, 4.89; and H3 "The carrier's ability to provide shipment services via the Internet would have a significant impact on the shipper's trust" was adopted at significance level of 0.01.

Lastly, as for the impact of the shipper's trust in the carrier on partnership, path-coefficient was 0.33; t value, 3.07; and H4 "The shipper's trust in the carrier on a carriage contract in an electronic trading transaction would have a significant impact on the formation of partnership" was adopted at significance level of 0.01 (Table 7).

## IMPLICATIONS OF RESEARCH

This study set up a research model and hypothesis on the above background and conducted a survey with shippers. Based on the analysis results of the study, the following implications were derived.

First, as a carrier provides a shipper with shipment-related information continuously, the shipper's reliability in the carrier increases. Thus, the carrier can maintain the partnership of shipment by keeping a close relationship with the shipper and providing with various and exact information about shipment quickly and continuously. The long-term orientation in the relationship between organizations (Nurmi et al., 2011) reconfirms the importance of information exchange (Ganesan, 1994), including ties.

Second, most Korean shipment companies are small-sized shipment forwarders except several large companies. However, shippers tend to consider the larger the shipment company, the better the expert support system, financial stability and systematic network become. This is consistent with the discussion that the size of organizations affected by the environment affects financial

performance (Simerly and Li, 2000). Thus, large carriers should provide more proactive and expert advice or information about their financial status. Considering the fact that the customers of firms unexpectedly do not know their abilities (Barker, 2008), this effort is even more important. On the other hand, relatively smaller carriers should excavate their own differentiated strategies (Pelham, 2000) or blue ocean areas in the subdivided shipment market (Kim et al., 2008) and make efforts to expand their size based on their reputation.

Third, carriers' capability to provide services is of most importance. In addition to providing conventional services, such as delivery date and quality, as basic services, it is needed to improve the ability to provide additional services (Chen et al., 2009). It is reported that the use of electronic information gradually plays an important role in such differentiation (Yazdanifard et al., 2012). Thus, carriers should be able to provide required information in real-time using electronic information and provide resilient and diverse shipment services using electronic virtual space (Peñaloza et al., 2007). The ability of carriers is consistent with the situation where the reputation and image of firms is linked to performance, which is used in the market of general consumer goods. Similarly, an indirect marketing effect can be obtained in the trading transactions between organizations by providing a good corporate image to a number of unspecified shippers (Blombäck, 2005).

Lastly, unlike the traditional business transactions, in electronic trading carriage contracts, concluded in a non-face-to-face way on the virtual space, trust is of most importance (Ratnasingam, 2005). Trust in shipment can be evaluated by the speed and accuracy of shipment, the quality of the overall services perceived by the shipper, the speed of resolution of claims, and past experience, etc. These factors act most importantly if carriage contracts are concluded in electronic trading transactions. And the formation of the partnership between interested parties with high mutual trust can change it to a long-term carriage contract. Therefore, under the electronic trading environment, in order to promote the partnership between the parties to a carriage contract, trust can be evaluated as the most important factor (Samiee, 2008).

## Conclusion

Advancements in information communication technology have changed the traditional business transactions by papers into ones by electronic documents. In these electronic trading transactions, trust relationships in business relations are very important because of the unique characteristic of the mode of transactions, that is, anonymous or non-face-to-face transactions with many and unspecified interested parties.

This study attempted to identify the characteristics of the cooperative relations between interested parties

focusing on the carriage contracts between shippers and carriers under the electronic trading transaction environment through trust and partnership. However, since there are insufficient preceding studies, this study modified and applied the existing research on marketing and distribution to the partnership between the parties interested in carriage contracts.

Unlike in irregular liners, carriage contracts in regular liners, typically, are concluded repeatedly on a yearly basis. Thus, the term, partnership in a regular carriage contract, too, means the repeated conclusion of the carriage contract for a certain period. Therefore, it is necessary for the carrier to establish an alternative strategy for the repeated conclusion of a carriage contract for a certain period through investigating the shipper's awareness.

## Conflict of interest

The author has not declared any conflict of interest

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