

A Trust Model in a Distributor-Supplier e-Partnership: The Mediating Role of Perceived Risk

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Some researches insist that, to participate in an e-partnership, a distributor needs a given level of trust to reduce the perceived risk of an e-partnership to his/her own threshold. However, other researches insist that if a distributor has only a given level of trust in his/her suppliers, irrelevant of the perceived risk level, he/she participates in the e-partnership. Thus, from the perspective of a distributor, this study built a trust model in which these two viewpoints were reflected. And then this study examined whether or not perceived risk mediates an influence of trust to e-partnership. The proposed trust model was tested with 265 questionnaires about a distributor-supplier e-partnership in food wholesale markets. The analysis results indicated that perceived risk partially had a mediating effect between trust and e-partnership intention. That is, of the two risk types, only perceived performance risk mediated an influence from competence trust to e-partnership intention. Relational risk did not play a mediating role between goodwill trust and e-partnership intention. This result implies two managerial meanings. First, a distributor intends to engage in e-partnership with his/her supplier, irrelevant of relational risk's level if goodwill trust level surpasses his/her own threshold. Thus, suppliers should concentrate more effort in developing goodwill trust than in reducing relational risk. To develop goodwill trust, they should endeavor to establish mutual interests and individual trust with their distributor, and to utilize institutional trust bases. Second, a distributor requires a certain competence in his/her suppliers to sufficiently reduce performance risk caused by e-partnership. Thus, to develop competence trust in e-partnership, suppliers should improve on any lack of competence and build a good reputation.

Keywords : Decision Making under Risk and Uncertainty, Trust Model, Goodwill Trust, Competence Trust, Mediating Effect, Perceived Risk, e-Partnership

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1. Introduction

The online market is very competitive, due to low barriers to entry and buyers' bargaining power [Song and Zahedi, 2006]. To survive in a highly competitive context, suppliers should make every possible effort to keep their distributor. As a part of these efforts, suppliers have reacted to this context by developing an e-partnership with their distributor. e-Partnerships take form on a continuum from a simple non-equity form such as a distributor-supplier e-partnership to a fully integrated and shared equity form such as a joint venture [Adober and McMullen, 2002]. In combining two dimensions, contract versus joint venture and the number of partners involved, de Man *et al.* [2002] generated four basic e-partnership forms: e-channel, e-alliance, e-network, and e-market. Among them, the most popular e-partnership form is e-channel which is established by a contract between two partners. This study adopted e-channel as a targeted distributor-supplier e-partnership form because most e-partnerships between a distributor and a supplier were established by a contract, but not by an equity investment.

e-Partnerships are characterized by uncertainty and lack of control that raise risk [Deleue, 2004]. Most non-equity alliance forms, like a distributor-supplier e-partnership, could not have any adequate regulatory control means about a partner's opportunistic behaviors because they rarely invest in alliance-specific resources [Das and Teng, 2001b]. And partners also feel riskier in the e-partnership environment because uncertainty in an online environment is higher than in a traditional environ-

ment due to the non-instantaneous and face-to-screen characteristics of cyber transactions and the unpredictable nature of the Internet technology [Grabner-Kräuter and Kaluscha, 2003; Kim *et al.*, 2008; Lages *et al.*, 2008; Yousafzai *et al.*, 2003].

In inter-organizational relationships like a distributor-supplier e-partnership, it has been demonstrated that trust is a crucial means for dealing with an uncertain and uncontrollable environment which makes partners more perceptive of risks [Chang and Chen, 2008; Kim *et al.*, 2008; Lee and Lim, 2005]. Depending on previous researches, one party is willing to engage in a partnership when he/she trusts the other party or perceives relatively less risk to the other party. Thus, it has been commonly recognized that individual relationships among trust, perceived risk, and behavioral intention were effective in a partnership. For example, Cheung and Lee [2000] and Cho [2006] identified that a relationship between trust and perceived risk was effective. Forsythe and Shi [2003] and Lopez-Nicolas and Molina-Castillo [2008] identified that perceived risk negatively affected behavioral intention. And Bhattacharjee [2002], Gefen [2002], Keh and Xie [2008], and Pavlou and Dimoka [2006] identified that trust affected behavioral intention. These researches showed that only individual relationships among trust, perceived risk, and behavioral intention were effective.

However, previous research has not been concerned over whether or not the establishment of an e-partnership depends only on trust level, or also on perceived risk level. That is, there has not been any research about perceived risk roles between trust and e-partner-

ship establishment. Some researches [Cho, 2006; Keh and Xie, 2008; Lancaster and Lages, 2006; Leisen and Hyman, 2004] insist that a distributor engages in an e-partnership depending only on his/her trust level. That is, if he/she has sufficient trust for his/her partners, he/she engages in an e-partnership with the partners, irrelevant of perceived risk level. But other researches [Chang and Chen, 2008; Das and Teng, 2001b; Kim *et al.*, 2008; Yousafzai *et al.*, 2003] insist that although trust doesn't affect objective risk it can reduce perceived risk. Depending on these arguments, it is expected that trust makes the partners to perceive less e-partnership related risk, and in turn to establish an e-partnership. Depending on the latter, perceived risk plays a mediating role between trust and e-partnership establishment. A mediator is a third variable that links a cause and an effect [Judd *et al.*, 2001; Wu and Zumbo, 2008]. Therefore, a mediating role analysis of perceived risk is important because it explains the mechanism of how trust affects e-partnership establishment.

Many scholars have applied different types of trust when they discussed the need for trust in partnerships. Similarly, they used the term perceived risk in an ambiguous manner, except Das and Teng [2001b] [Gallivan and Depledge, 2003]. Das and Teng [2001b] posited a partnership framework which was composed of complex relationships among two typologies of trust (goodwill trust and competence trust) and perceived risk (relational risk and performance risk). By Das and Teng [2001b]'s framework, Adober and McMullen [2002] logically illustrated that their trust types and perceived risk types were also important in e-partnership

situations. Thus, to investigate whether or not perceived risk mediates an influence of trust to e-partnership, this study followed a trust-risk framework of Das and Teng [2001b]. But Das and Teng's framework did not include a partnership intention construct because it studied the management of an existing partnership. The intention to establish a partnership as well as the management of the existing partnership is important. This study intended to understand how a trust-risk mechanism operates in the partnership establishment stage. By including a partnership intention construct, this study extended Das and Teng's framework, and applied the extended Das and Teng's framework to the online partnership environment.

To identify a mechanism between trust and e-partnership establishment, this study consisted of four sections. Firstly, why a trust mechanism in a distributor-supplier e-partnership was studied was explained in the introduction section. Secondly, in section 2, a research model and its related hypotheses were proposed through explanations of constructs' relationships. Thirdly, data analyses and discussions of the test results were described in section 3. Finally, some summaries and future researches of the study were described in the conclusion section.

II. Theoretical Framework

2.1 Research Model

The constructs examined in this study are trust, perceived risk, and e-partnership intention. These constructs were considered from the perspective of distributors who bought products online. There are different viewpoints

regarding a relationship between trust and perceived risk [Chang and Chen, 2008; Kim *et al.*, 2008]. In the previous literatures, trust has been treated as an antecedent of perceived risk, the same as perceived risk, or a consequence of perceived risk. In Das and Teng's framework, trust precedes perceived risk. The logic of this framework is that if the level of trust in a trustee surpasses a threshold of perceived risk, then the trustor will maintain a risky relationship with the trustee. But trust may not affect all risk types related to behaviors [Kim *et al.*, 2008]. That is, if the level of trust in a trustee surpasses a threshold of trust, trust by itself may make the trustor engage in a risky e-partnership relationship, even though an e-partnership has many kinds of perceived risk. But, it is common to treat behavioral intention or e-partnership intention as a consequence of trust and perceived risk [Gallivan and Depledge, 2003; Kim and Prabhakar, 2000; Stewart, 1999]. Thus, this study extended Das and Teng's framework by adding a direct relationship between trust and e-partnership intention.

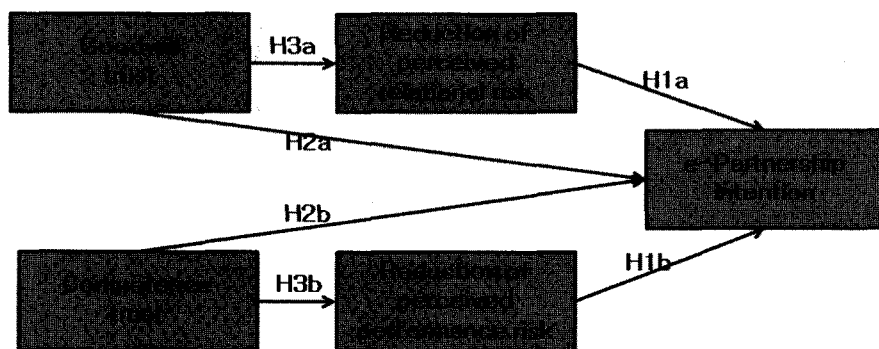
To investigate whether or not perceived risk takes a mediating role, a proposed trust model, consisting of six relationships, was created. As

shown in <Figure 1>, some relationships between trust and e-partnership intention were connected through perceived risk and the others were not connected through perceived risk. Therefore, the proposed model depicts trust (goodwill and competence trusts) as a direct influencer through Hypothesis H2a-b and as an indirect influencer to be mediated by perceived risk (relational and performance risks) through Hypothesis H1a-b and H3a-b.

2.2 Perceived Risk → e-Partnership Intention

Since risk is difficult to capture as an objective reality, previous research has addressed the notion of perceived risk [Pavlou, 2002]. Perceived risk differs from objective risk [Das and Teng, 2001b]. Objective risk is based on the consequences or outcomes of alternatives and their probabilities. Perceived or subjective risk is an estimate of objective risk.

The relationship between perceived risk and e-partnership intention can be explained by theory of planned behavior (TPB) [Pavlou, 2003]. TPB is a model widely used to discuss the effects of the antecedents in behavioral intention



<Figure 1> A Proposed Trust Model

[Ajzen, 1991]. According to TPB, a person's actual behavior in performing a certain action is directly influenced by his or her behavioral intention, and in turn determined by attitude toward performing the behavior [Wu and Chen, 2005]. Behavioral intention is a measure of the strength of one's willingness to perform certain behavior [Kim and Tadisina, 2007]. Attitude affects the feeling of a person's favorable or unfavorable assessment regarding certain behavior. Thus, it is expected that an attitude of perceived risk influences behavioral intention of e-partnership establishment.

Although a newly established firm is often looking for established firms in pursuit of a partnership, he/she should take a prudent attitude in partnerships because partnerships entail substantial risk. For example, a partnership commits a newly established firm to an external relationship that may not work and can lead to the loss of business secrets to competitors. In an e-partnership context, in particular, these challenges may be magnified [Adobor and McMullen, 2002]. It is known that a buyer, who is making an online transaction, is reluctant to transact online if perceived risk from online purchase is overwhelming when compared to traditional purchase [Kim *et al.*, 2008]. Thus, to establish an e-partnership, suppliers should make their distributor feel that the perceived risk from e-partnership establishment is not much more or less than the perceived risk from a traditional partnership establishment. That is, a distributor may have behavioral intention to participate in the e-partnership if perceived risk attitude toward his/her suppliers is weak. Accordingly, it is anticipated that perceived risk (attitude) from e-partnership es-

tablishment negatively affects e-partnership intention (behavioral intention). This relationship was hypothesized as follows:

H1: Reduction of perceived risk positively affects e-partnership intention of a distributor.

2.2.1 Perceived Risk Types: Relational and Performance Risks

Perceived risk from e-partnership is considerably attributed by the fact that the spatial and temporal separation between buyers and sellers and the unpredictability of the Internet infrastructure generate an implicit uncertainty around online transactions [Brynjolfsson and Smith, 2000]. There are two forms of uncertainty that are present in online transactions: behavioral uncertainty and environmental uncertainty [Bensaou and Venkataman, 1996]. When there is high behavioral uncertainty, arising from the possibility of opportunistic behavior, buyers or sellers may perceive relational risk to be high [Langfield-Smith, 2008]. And when environmental uncertainty is high, arising from likely adverse government regulations, market volatility, and a lack of partner competence, they may perceive performance risk to be high.

In deciding whether or not to participate in an e-partnership, therefore, a distributor should take relational risk and performance risk into consideration. According to Das and Teng [2001b], relational risk is unique to partnerships and is defined as "the possibility of having a partner that does not cooperate satisfactorily." This risk arises from the potential of opportunistic behavior such as distorting information, failing to fulfill promises, and appropriation of the

partner firm's resources [Parkhe, 1993]. In strategic partnership literatures, relational risk addresses the consequences of partners not fully committing themselves to joint efforts [Liu *et al.*, 2008]. Commitment to e-partnership is an enduring desire to maintain a valued online relationship. Thus, if a distributor judges their supplier to lack a commitment to e-partnership, he/she feels relational risk which disturbs e-partnership establishment [Hart and Saunders, 1998].

Performance risk is defined as "the possibility that alliance objectives are not achieved [Das and Teng, 2001b]." Despite suppliers' commitment, there is always performance risk that suppliers may fail to perform their responsibilities competently [Adober and McMullen, 2002]. That is, performance risk is not related to relational risk because no matter how much suppliers commit themselves to e-partnership performance risk will always be present [Das and Teng, 2001a]. Performance risk arises from some hazards such as market dynamics and lack of competitive capability [Liu *et al.*, 2008]. According to the partnership goals, a variety of performance risks can be evoked such as commercial risk and R&D risk. Because perceived risk has a negative influence on behavioral intentions [Novak *et al.*, 2000], it is expected that relational risk and performance risk also act on e-partnership intention. Therefore, if perception of relational risk or performance risk from suppliers is reduced, then distributors' e-partnership intention will be increased. In consideration of these facts, Hypothesis H1 was re-hypothesized as follows:

H1: Reduction of perceived risk positively af-

fects e-partnership intention of a distributor.

H1a: Reduction of perceived relational risk positively affects e-partnership intention of a distributor.

H1b: Reduction of perceived performance risk positively affects e-partnership intention of a distributor.

2.3 Trust → Perceived Risk and e-Partnership Intention

In a highly competitive context, distributors and suppliers place an increasing emphasis on building e-partnerships. They want to build e-partnerships because they will get outcomes that exceed what they would achieve if they act solely in their own best interests [Lancastre and Lages, 2006; Moorman *et al.*, 1993; Morgan and Hunt, 1994]. But distributors should prudently establish e-partnerships because the results of e-partnerships may be limited [Adober and McMullen, 2002]. As organizations place greater emphasis on building e-partnerships, trust is expected to play a central role in building e-partnerships because trust is regarded as a main determinant of cooperation in online context [Lancastre and Lages, 2006; Liu *et al.*, 2004]. Previous research [Bhattacharjee, 2002; Gefen, 2000, 2002; McKnight *et al.*, 1998] has shown a direct relationship between trust and behavioral intention. Thus, it is also expected that trust directly and positively influences the intention of a distributor-supplier e-partnership. This expectation was hypothesized as follows:

H2: Trust directly and positively affects e-partnership intention of a distributor.

Ganesan [1994], on the other hand, shows that trust affects partnership through three ways: reduction of perceived risk, resolution of short-term inequities, and reduction of the transaction costs. In this study, only reduction of perceived risk was considered. Due to bounded rationality, it is highly possible that an e-partnership contract between a distributor and a supplier is incomplete. Under incomplete e-partnership contracts, the supplier may behave opportunistically because e-partnership goals are not accomplished easily. The possibility of the supplier's opportunistic behavior causes a distributor to perceive risk. For Luhmann [1988], trust is a key determinant of behavior in a situation in which there is perceived risk of a negative outcome. Also, trust increases behavioral intention indirectly through reduced perceived risk [Jarvenpaa and Tractinsky, 1999; Kim *et al.*, 2008; Kollock, 1999; Wang *et al.*, 2004]. Thus, it is expected that if the level of perceived risk is decreased by trust in a supplier, then a distributor will engage in a risky e-partnership with the supplier. It implies that reduction of perceived risk may mediate an influence of trust to e-partnership intention. Therefore, a mediating role of perceived risk was hypothesized as follows:

H3: Trust indirectly and positively affects e-partnership intention of a distributor through reduction of perceived risk.

2.3.1 Trust Types: Competence and Goodwill Trusts

In the partnership context, Das and Teng [2001b] insisted that trust might concern a

partner's ability to perform something according to agreements or his intention to do so. They called the former competence trust and the latter goodwill trust. This trust typology was suggested by Nooteboom [1996] and has been accepted as particularly relevant to the formation and management of partnerships [Langfield-Smith, 2008]. Ganesan [1994] and Pavlou and Dimoka [2006] referred to these two dimensions as credibility and benevolence. Barber [1983] defines goodwill trust as "the expectation that some others in our social relationship have moral obligations and responsibility to demonstrate a special concern for others' interests above their own." Goodwill trust in a distributor-supplier e-partnership setting relates to the expectation that a supplier will perform in the interest of the relationship, even if it is not directly in the interest of himself/herself. In other words, in the case of goodwill trust, the supplier will abstain from behaving opportunistically. Although goodwill trust is less important in non-equity alliances than in equity alliances, it is still important in partnership establishment [Das and Teng, 2001b], and trust becomes more important in an online context like a distributor-supplier e-partnership [Lancastre and Lages, 2006; Liu *et al.*, 2004]. Thus, if a supplier wants to establish an e-partnership with his/her distributors, he/she should show special concern for their interests above his/her own in order to receive their goodwill trust.

Competence trust focuses on ability and expertise, and is defined as "the expectation of technically competent role performance" [Barber, 1983]. In a partnership context, competence trust relates to a partner's ability to perform

the specified agreement or contract [Langfield-Smith, 2008]. Competence trust is equally important for both partners in a non-equity alliance [Das and Teng, 2001b] because they need to cooperate with each other to achieve the goal. Thus, competence trust for suppliers is required as a prerequisite in a distributor-supplier e-partnership establishment. By including the two trust types, we can hypothesize H2 more precisely as follows:

H2: Trust directly and positively affects e-partnership intention of a distributor.

H2a: Goodwill trust directly and positively affects e-partnership intention of a distributor.

H2b: Competence trust directly and positively affects e-partnership intention of a distributor.

According to Das and Teng [2001b], goodwill trust reduces relational risk because a positive assessment of one's intentions leads to a belief that opportunistic behavior, which affects relational risk, is less likely. In an e-partnership context, goodwill trust for suppliers means that there are good intentions to make an e-partnership work. It implies that a distributor will be less concerned with cooperative problems if he/she feels suppliers have goodwill trust. Thus, it is expected that relational risk from opportunistic behavior is negatively related to goodwill trust [Hart and Saunders, 1998]. Competence trust also reduces performance risk because a partner's competence suggests the high possibility of getting things accomplished successfully, which is tantamount to low performance risk. In an e-partnership

context, competence trust for suppliers gives a distributor a sense of confidence that they can perform given tasks in the e-partnership. In turn, the distributor will perceive performance risk of e-partnership as relatively low. Therefore, in e-partnership establishment, it is expected that there is a relationship between trust (goodwill trust and competence trust) and perceived risk (relational risk and performance risk). However, competence trust is concerned only with performance risk, but not relational risk because competence trust means the ability to do appropriate things, not the intention to do so. Thus, in consideration of Hypothesis H1a-b, H3 was hypothesized more precisely by two trust types as follows:

H3: Trust indirectly and positively affects e-partnership intention of a distributor through reduction of perceived risk.

H3a: Goodwill trust affects reduction of perceived relational risk of a distributor.

H3b: Competence trust affects reduction of perceived performance risk of a distributor.

III. Hypothesis Test

3.1 Instrument Development and Data Collection

Each construct in the proposed model was operationalized as 3 measures. All measures were derived from previous related studies. The measures of the goodwill trust construct were adapted from Liu *et al.* [2008] and Pavlou and Dimoka [2006]. The measures of the competence trust construct were adapted from

Chang and Chen [2008], Cho [2006], and Liu *et al.* [2008]. With regard to the mediating variables, the measures of the relational risk construct were adapted from Das and Teng [2001a] and Liu *et al.* [2008] and the measures of the performance risk construct were adapted from Chang and Chen [2008] and Lancaster and Lages [2006]. Finally, the measures of the e-partnership intention construct were adapted from Cho [2006], Keh and Xie [2008], and McKnight *et al.* [2002]. To ensure content validity of the measures, they were assessed and refined by a panel of experts (an MIS professor and an e-biz consultant). A full list of the final 15 measures is shown in <Appendix A>.

To test the proposed model, a field survey was conducted. Each measure was rated using a 7 point Likert scale, anchored by strongly disagree (1) at one end, to strongly agree (7) at the other. Questionnaires were collected only from distribution firms who were members of food wholesaler associations and ran businesses in Seoul, Korea. The reason that food distribution firms were targeted was the magnitude of food electronic commerce via food eMarketplaces, such as kr.agrotrade.net, www.kfb2b.com, was increasing in Korea. Respondents were usually general managers or owners in distribution firms. The reason to regard them as key informants was that general managers or owners, in the cases of small and micro companies, were generally responsible for e-marketing related decisions such as procurement and sales activities [Shaltoni and West, 2010]. The respondents were required to rate how much they seriously considered the given trust and perceived risk measures when they decided to establish an e-partnership with a

supplier. Questionnaires were distributed to 664 wholesale firms. Among them, a total of 323 questionnaires were returned (response rate = 0.486). Of 323 questionnaires, 45 questionnaires were excluded from data analysis because they had several missing values. Therefore, only 278 questionnaires were used in the data analysis.

3.2 Data Analysis

Before analyzing the proposed model, the initial dataset was assessed by data examination steps. To detect outliers in the initial dataset, Mahalanobis distance values were calculated first. Secondly, the assumption of normality of each measure was examined by the Kolmogorov-Smirnov test. Finally, the internal consistency and construct validity were examined by Cronbach alpha and factor analysis. After examining the data, the structural equation modeling method was used to test a mediating effect of perceived risk.

3.2.1 Data Examination

Possible outliers can be detected by calculating Mahalanobis distance values [Tabachnick and Fidell, 2001]. The Mahalanobis distance values are evaluated as a χ^2 ($p < 0.001$) with degrees of freedom equal to the number of variables. Accordingly, in this study, a case is determined to be an outlier if the Mahalanobis distance value is greater than 37.70 because the degree of freedom is 15. As a result, 13 samples were identified as outliers and deleted from the initial dataset (278 samples), resulting in a dataset size of 265.

To detect violations of the normality assum-

ption of about 15 measures for 5 constructs, the Kolmogorov-Smirnov test was used. As shown in <Table 1>, all measures were significant at $p = 0.000$. Therefore, it was accepted that all measures had distributions approximating the normal distribution. The internal consistency of each construct was tested by Cronbach alphas. All values of Cronbach alpha, as shown in <Table 1>, exceeded the 0.7 criterion [Hair *et al.*, 1998]. Thus, the internal consistency of each construct was also proved. Finally, construct validity was examined by factor analysis. Construct validity is acceptable when all factor loadings are greater than 0.50 [Wixom and Watson, 2001]. As shown in <Table 1>, all factor loadings of the measures were greater than the 0.50 criterion. Thus, construct validity of the dataset was also accepted. Consequently, after examining the data, 265 samples with 15

measures remained in the final dataset.

3.2.2 Analysis of a Mediating Effect of Perceived Risk

To analyze a mediating effect, structural equation modeling is used more frequently than a series of regression models because the structural equation modeling method has major advantages in the problems of tests of all paths, measurement error, and feedback [Baron and Kenny, 1986]. To analyze a mediating role of perceived risk by a structural equation modeling method, Amos S/W (version 4.01) was used. In the structural equation modeling method, model fits should be assessed before path analysis.

If model fit is accepted by overall model fit and measurement model fit assessments, then

<Table 1> Results of Data Examination

Construct and measure		Kolmogorov-Smirnov(d.f. = 265)		Factor loading	Cronbach alpha
		Statistic	Significance level		
Goodwill trust	GT1	0.185	0.000	0.713	0.832
	GT2	0.163	0.000	0.917	
	GT3	0.155	0.000	0.671	
Competence trust	CT1	0.263	0.000	0.835	0.917
	CT2	0.253	0.000	0.883	
	CT3	0.245	0.000	0.874	
Reduction of relational risk	RR1	0.166	0.000	0.888	0.822
	RR2	0.187	0.000	0.884	
	RR3	0.258	0.000	0.795	
Reduction of performance risk	PR1	0.233	0.000	0.814	0.854
	PR2	0.237	0.000	0.896	
	PR3	0.257	0.000	0.919	
e-Partnership intention	PI1	0.155	0.000	0.817	0.834
	PI2	0.204	0.000	0.886	
	PI3	0.173	0.000	0.897	

structural model fit is assessed. Hence, assessments of the overall model fit were done first. There are three types of overall model fit measures including absolute, incremental, and parsimonious fit measures [Hair *et al.*, 1998]. For assessing overall model fit, in this study, two model fit measures by each overall model fit type were selected. Of absolute fit measures, GFI (≥ 0.90 is recommended) and RMSEA (≤ 0.08 recommended) were selected. In this study, GFI had a value of 0.912 and RMSEA had a value of 0.071. Consequently, both absolute fit measures fell within the recommended levels. Of incremental fit measures, TLI (≥ 0.90 recommended) and NFI (≥ 0.90 recommended) were selected. TLI (= 0.943) and NFI (= 0.924) in this study exceeded the recommended levels. And, of parsimonious fit measures, normed χ^2 (< 5 recommended) and PNIF ($0.6 >$ or < 0.9 recommended) was used. Normed χ^2 (= 2.315) and PNIF (= 0.730) also fell within the recommended levels. So, the overall model fit measures of the proposed model showed that the specified measures represented their constructs.

After assessing the overall model fit, the measurement model fit was assessed with composite reliability. Composite reliability was estimated by construct reliability. All values of construct reliability in <Table 2> exceeded the recommended level (0.7). Therefore, composite

reliability of the measurement model was also proved.

If measurement model fit is accepted, then structural model fit is assessed. The most obvious assessment of the structural model is done by estimation of path coefficients. The path coefficients of hypothesized causal relationships were calculated through the maximum likelihood technique. The estimated path coefficients of the structural model were shown in <Table 3>. It was found that reduction of relational risk did not act as a mediator between goodwill trust and e-partnership intention because Hypothesis H1a was not significant. But it was found that reduction of performance risk acted as a mediator between competence trust and e-partnership intention because Hypothesis H1b and H3b were significant.

3.2.3 A Comparison with Previous Research

When compared with previous researches, as shown in <Table 4>, the results of this study have some consistencies and differences from them in the aspects of direct and indirect relationships among the constructs. Firstly, in the aspect of a direct relationship between overall trust and overall perceived risk, the result of this study was approximately consistent with

<Table 2> Results of Model Fit Assessment

Measure	Construct reliability	Overall model fit
Goodwill trust	0.739	GFI(0.912)
Competence trust	0.892	RMSEA(0.071)
Reduction of perceived relational risk	0.809	TLI(0.943)
Reduction of perceived performance risk	0.817	NFI(0.924)
e-Partnership intention	0.733	CMINDF(2.315)
		PNFI(0.730)

<Table 3> Results of Structural Model Assessments

Hypothesis	Path	Standardized path coefficient	Estimate	S.E.	C.R.	P
H1a	Reduction of perceived relational risk → e-partnership intention	0.021	0.019	0.054	0.351	0.726
H1b	Reduction of perceived performance risk → e-partnership intention	0.115	0.102	0.051	1.981	0.048
H2a	Goodwill trust → e-partnership intention	0.527	0.506	0.137	3.685	0.000
H2b	Competence trust → e-partnership intention	0.129	0.12	0.121	0.998	0.318
H3a	Goodwill trust → reduction of perceived relational risk	-0.275	-0.295	0.075	-3.926	0.000
H3b	Competence trust → reduction of perceived performance risk	0.195	0.205	0.069	2.981	0.003

<Table 4> A Comparison with Previous Research

Comparison point	Previous research		This study	Consistency
	Researcher	Significant relationship	Significant relationship	
Direct relationship between overall constructs	Cheung and Lee [2000], Cho [2006]	{Trust → perceived risk}	{Goodwill trust → relational risk}, {Competence trust → performance risk}	Approximate consistency
	Forsythe and Shi [2003], Lopez-Nicolas and Molina-Castillo [2008]	{Perceived risk → e-partnership intention}	{Performance risk → e-partnership intention}	Partial consistency
	Bhattacharjee [2002], Gefen [2002], Keh and Xie [2008], Pavlou and Dimoka [2006]	{Trust → e-partnership intention}	{Goodwill trust → e-partnership intention}	Partial consistency
Direct and indirect relationships between overall constructs	Kim <i>et al.</i> [2008]	{Trust → e-partnership intention}, {Trust → perceived risk → e-partnership intention}	{Goodwill trust → e-partnership intention}, {Competence trust → performance risk → e-partnership intention}	Partial consistency
Direct relationship between separated constructs	Liu <i>et al.</i> [2008]	Guanxi{goodwill trust → relational risk}	{Goodwill trust → relational risk}, {Competence trust → performance risk}	Partial consistency

the results from Cheung and Lee [2000] and Cho [2006]. Although the latter used overall trust and overall perceived risk constructs, they identified that a direct relationship between trust and perceived risk was significant. In the former, both paths between trust types and perceived risk types, {goodwill trust → relational risk} and {competence trust → performance risk}, were significant. Thus, the result of the former was approximately consistent with that of the latter. The results from Forsythe and Shi [2003] and Lopez-Nicolas and Molina-Castillo [2008], which tested a direct relationship between overall perceived risk and e-partnership intention, were partially consistent with those of this study. In two paths of {relational risk → e-partnership intention} and {performance risk → e-partnership intention}, only {performance risk → e-partnership intention} was significant in this study. Although the overall perceived risk construct was used, a relationship between perceived risk and e-partnership intention was significant in Forsythe and Shi [2003] and Lopez-Nicolas and Molina-Castillo [2008]. And, in the aspect of a direct relationship between trust and e-partnership intention, only a path of {goodwill trust → e-partnership intention} was significant in this study. Thus, this result was partially consistent with some previous researches, Bhattacharjee [2002], Gefen [2002], Keh and Xie [2008], and Pavlou and Dimoka [2006], which used an overall trust construct and showed an influence of overall trust to e-partnership intention.

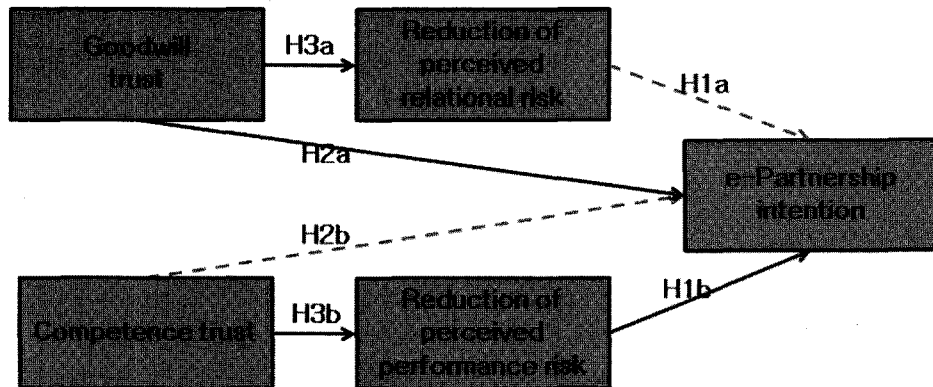
Secondly, this study differed from Kim *et al.* [2008], which studied a direct and an indirect relationship between overall constructs. Kim *et al.* [2008] showed that both direct relationship

and indirect relationship, which were {trust → e-partnership intention} and {trust → perceived risk → e-partnership intention}, were significant. But in this study, only a direct path of {goodwill trust → e-partnership intention} and an indirect path of {competence trust → performance risk → e-partnership intention} were significant. Thus, the other direct path of {competence trust → e-partnership intention} and the other indirect path of {goodwill trust → relational risk → e-partnership intention} were not significant in this study.

Finally, in the aspect of a direct relationship between separated constructs, this study differed from Liu *et al.* [2008], which studied whether or not Guanxi, a kind of cultural variable, moderated influences of goodwill trust and competence trust to relational risk. In Liu *et al.* [2008], competence trust did not have a distinct influence on relational risk. In this study, although Guanxi was not included, all paths between trust types and perceived risk types were significant.

3.3 Discussion

The analysis results of the proposed model were shown in <Figure 2>. According to the results, there were significant relationships between goodwill trust and e-partnership intention (H2a) and between goodwill trust and relational risk (H3a). But the relationship between relational risk and e-partnership intention (H1a) was not significant. That is, relational risk did not play a mediating role between goodwill trust and e-partnership intention. This direct relationship between goodwill trust and e-partnership intention means that if goodwill trust



<Figure 2> Analysis Results about a Mediating Role of Perceived Risk

level of a distributor surpasses his/her own threshold, he/she intends to engage in e-partnership with his/her supplier, irrelevant of relational risk level. This result is attributed to the fact that the distributor-supplier e-partnership form in this study is a non-equity alliance. Non-equity alliance is risky because partners rarely invest alliance-specific resources, and in turn this fact induces the opportunistic behavior of partners [Das and Teng, 2001b]. Partners, who participate in non-equity alliance, implicitly accept the high possibility of opportunistic behavior. Thus, it is expected that a distributor is willing to establish an e-partnership with his/her supplier when goodwill trust for his/her supplier is greater than his/her own threshold of goodwill trust. That is, goodwill trust directly influences e-partnership establishment of a distributor, not indirectly through relational risk.

In e-partnership establishment context, this result gives suppliers a managerial meaning that they should make greater efforts to develop goodwill trust than to reduce relational risk. Goodwill trust in e-partnership could be developed in three major ways: establishing mutual

interests, individual trust, and institutional trust base [Das and Teng, 2001b]. First, establishing mutual interests reduces the possibility of interest conflict, and in turn increases a sense of reliability. Consequently, it is expected that the increased reliability leads to goodwill trust. Thus, to get goodwill trust, suppliers should understand what interests can be shared with a distributor and suggest those interests to him/her. Second, individual trust is useful in developing institutional trust because the former is correlated with the latter [Zaheer *et al.*, 1998]. Therefore, to get goodwill trust, individuals of supplier firms endeavor to develop interpersonal trust from those of distribution firms. Finally, goodwill trust is also developed by institutional trust bases, which are formal social structures. Institutional trust bases include professional associations and regulations. Opportunistic behavior is less likely if distributors and suppliers belong to the same professional association. It is because their reputation can be damaged more easily, due to the possibility of their opportunistic behaviors' speedy spread within the professional association [Zucker, 1986]. It means that a distributor, who intends

to engage in e-partnership, would prefer suppliers who are members of the same professional association as him/her. It is because he/she can easily find information about them through members of the same professional association if he/she wants to ascertain their goodwill trust. Thus, suppliers need to be affiliated with representative professional associations of their industries and to manage their reputation. Also, legal regulations restrict opportunistic behavior. Thus, if the possibility of opportunistic behavior is well eliminated by the existing legal regulations, a distributor will hesitate less to establish e-partnership. But legal regulations cannot prevent all opportunistic behaviors. To establish e-partnership, therefore, suppliers should provide distributors with contract clauses to ensure prevention of possible opportunistic behaviors.

It was identified that the paths between competence trust and performance risk (H3b) and between performance risk and e-partnership intention (H1b) were significant, but the path between competence trust and e-partnership intention (H2b) was not significant. The fact that Hypothesis H3b and H1b were accepted means that there is an indirect relationship between competence trust and e-partnership intention. That is, performance risk plays a mediating role between competence trust and e-partnership intention. This result implies that the minimum competence trust level required to establish e-partnership is the extent to overcome the burden of performance risk. Thus, it gives suppliers a managerial implication that if they want to establish e-partnership, they should not only develop competence trust, but also reduce performance risk.

Competence trust is concerned with the ability to do appropriate things [Das and Teng, 2001b]. And competence trust is based on more objective assessment than goodwill trust through the proactive collection of information about partners' capabilities and experiences [Langfield-Smith, 2008; Cho and Lee, 2006]. Therefore, competence trust in a distributor-supplier e-partnership establishment could be developed in two major methods: to solve a lack of competence and to build a good reputation. First, to solve a lack of competence, suppliers should try to develop their capabilities and to acquire excellent resources and show them to their distributors. Second, a good reputation could be built by advertising, media exposure, and borrowing reputation [Kotha *et al.*, 2001]. Advertising is a means to build reputations because suppliers can send a cue for product quality through advertising. Also, advertising is used to communicate specific information either about the products and/or about their identities to distributors. The media may be used to build a reputation. The media disseminates various information about suppliers' activities. Thus, the media is regarded as an important means in building a reputation. To get a good reputation, suppliers should try to expose positive news about themselves to the media. Finally, the value of reputation derives from the summary and synthesis of the past behaviors. Thus, building a reputation requires much time. The time feature of the reputation entices a new supplier to borrow reputations from others which already have a good reputation. Borrowing reputation is implemented through strategic cooperation such as joint marketing and co-branding with well-known enterprises.

There are many factors that may affect performance risk of a distributor-supplier e-partnership. These factors include intensified rivalry, new entrants, demand fluctuations, changing government policies, a lack of competence of a supplier, and sheer bad luck [Das and Teng, 2001b]. Among these factors, intensified rivalry and new entrants are related only to the supplier side. At the individual firm level, changing government policies and sheer bad luck are not controllable. To reduce performance risk of distributors, therefore, suppliers can focus only on demand fluctuations and their lack of competence. To shrink the negative effects of demand fluctuations felt by distributors, suppliers should reinforce advertisement and promotion functions, resulting in a low level of performance risk.

This study discovered that a reduction of relational risk was negatively related to goodwill trust, and did not significantly relate to e-partnership intention. According to Lewicki *et al.* [1998], unhealthy high trust may evoke high risk because one who strongly trusts may become blind to negative aspects of the other party, resulting in lack of monitoring. Lack of monitoring may make partners behave opportunistically. But when a proper level of distrust enters in a partnership, then one is more attentive to the partners. Attention makes partners not behave opportunistically, resulting in low relational risk. Therefore, McKnight and Chervany [2001] insists that a balance of trust and distrust is important to maintaining healthy relationships. But, at present, it is not possible to conclude whether or not this new result, which goodwill trust negatively affected reduction of relational risk, is due to the uniqueness

of a distributor-supplier e-partnership. It is hoped that future research might be able to answer this new result by a comparative study with surveys across several industries.

IV. Conclusions

This study tested whether or not trust affected e-partnership intention through perceived risk. In previous research, it was found that individual relationships among trust, perceived risk, and e-partnership intention were effective. However, how trust influences e-partnership intention has not been studied in an e-partnership context. That is, there has not been any research about a mediating role of perceived risk between trust and e-partnership intention. To test a mediating role of perceived risk, a field survey was conducted through the distributors of food wholesale markets.

According to this study, there were significant relationships between goodwill trust and e-partnership intention and between goodwill trust and relational risk. But there was not a significant relationship between relational risk and e-partnership intention. That is, it was identified that relational risk did not play a mediating role between goodwill trust and e-partnership intention. But it was found that performance risk played a mediating role between competence trust and e-partnership intention. These results mean that perceived risk partially plays a mediating role between trust and e-partnership intention. For e-partnerships with distributors, therefore, suppliers need to set some strategic policies to reduce performance risk through competence trust and to directly affect e-partnership intention through

goodwill trust improvement.

This study has future research potential. First of all, as described above, this study did not conclude about a negative relationship between competence trust and reduction of relational risk. This finding was an unexpected result. Therefore, we need to investigate this result further to find out whether or not it is valid in a distributor-supplier e-partnership.

Next, we can further study what variables moderate the relationships in the proposed trust model. Usually, relationship strengths of structural models are moderated by several variables, for example, industrial sectors, cultural differences, demographics, and so on. Thus, if the proposed trust model is further analyzed by these moderating variables, its usefulness and elaborateness will further increase.

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(Appendix A) Measures for Constructs

※ Directions: This survey deals with your opinions of e-partnership establishment. Please check the extent to which you think online supplier firms to engage in e-partnership should possess the features described by each statement (Scale format: 1 = strongly disagree, 7 = strongly agree).

Construct	Measure		Reference
Goodwill trust	GT1	Though circumstances change, online suppliers will be willing to offer me assistance and support.	Liu <i>et al.</i> [2008], Pavlou and Dimoka [2006]
	GT2	When making important decisions, online suppliers are concerned about my welfare as well as their own.	
	GT3	If there is a problem with my transaction, I can depend on online suppliers' support.	
Competence trust	CT1	Online suppliers are capable of keeping their promises.	Chang and Chen [2008], Cho [2006], Liu <i>et al.</i> [2008]
	CT2	Online suppliers know how to provide a high quality of sales support.	
	CT3	Online suppliers are very proficient about their products.	
Perceived relational risk [*]	RR1	My business information is at risk of being stolen by online suppliers in the business relationship.	Das and Teng [2001a], Liu <i>et al.</i> [2008]
	RR2	The possible changes of online suppliers will lead to a high risk in the business relationship.	
	RR3	Online suppliers are likely to not fulfill promises completely in the business relationship.	
Perceived performance risk	PR1	Purchases from online suppliers' websites are not risky because the products/services delivered are superior.	Chang and Chen [2008], Lancaster and Lages [2006]
	PR2	Purchases from online suppliers' websites are not risky because the products/services are delivered timely.	
	PR3	Purchases from online suppliers' websites are not risky because they provide me with the support that they are obliged to provide.	
e-Partnership intention	PI1	If online suppliers have the product I need to buy, I intend to buy it from their websites.	Cho [2006], Keh and Xie [2008], McKnight <i>et al.</i> [2002]
	PI2	I will consider online suppliers' websites the first choice from which to buy products/services.	
	PI3	I am willing to remain loyal to online suppliers' websites.	

Note) ^{*}: Reverse coding.

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