Inter-organizational Knowledge Transfer in the Buyer-Supplier Relationship: A Buyer's Perspective

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Abstract

We delineate an integrative view of inter-organizational knowledge transfer (IOKT) in the upstream supply chain relationship from a buyer's perspective. For this purpose, we suggest that the concept of IOKT can be classified into the source and the recipient type of knowledge transfer according to the direction of knowledge flow. A three-stage model (motivation-behaviors-performance) is adopted to examine the relationships between IOKT and its antecedent factors, and, in turn, between IOKT and organizational performance. By analyzing 140 buyer-supplier relationships using the partial least squares (PLS) method, we verify our research hypotheses. The results show that each of these two sub-concepts of knowledge transfer has different motivational and resultant mechanism. In addition, we also consider information sharing as another key construct of IOKT-related behavior, examining its relationship with motivational and resultant factors. Contributions of this research and future research opportunities are also discussed.

1. Introduction

As knowledge management (KM) emerges as the primary management paradigm of the 21st century, firms across the world have competitively implemented KM initiatives. However, the traditional KM approaches have been limited to an intra-organizational scope in that they focus mainly on the internal knowledge exchanges within a single firm. In today's scale-driven and technology-intensive global economy, the new concept of KM initiative transcending organizational boundaries is essential. Thus, the *inter-organizational knowledge network* concept is emerging as the next generation of KM strategy with the growing importance of acquiring and exploiting external knowledge [10, 19]. As knowledge is continuously

changing and evolving, no firm can possess all required knowledge within its formal boundaries [1]. Such evolution may shift the level of competition from between individual firms to between networks of firms [7, 51].

Conceptual and case studies on the *inter-organizational knowledge network* have been conducted occasionally in various settings (e.g., [4, 13, 43]), while empirical studies are rare. These studies, while conceptual or anecdotal in nature, seem to have a rather simple purpose: to sustain competitive advantage by attaining external knowledge through inter-organizational knowledge transfer (henceforth, IOKT). At the same time, empirical studies on the *inter-organizational knowledge network* have partially focused on either the antecedent factors of IOKT (e.g., [26, 40]) or the impacts of IOKT on organizational performance (e.g., [28, 33]). Thus far, there has been little empirical research integrating both antecedent and consequent factors of IOKT simultaneously, although a few empirical KM studies have endeavored to understand the motivational/resultant relationship of knowledge transfer at the inter-unit level (e.g., [42, 49]).

Therefore, in this study, we attempt to identify and examine the relationships among the facilitating/inhibiting factors, IOKT, and organizational performance by introducing an integrative theoretical model and empirically validating it. Since the scope of the *inter-organizational knowledge network* is too wide to enable coverage of every dimension, we focus on the upstream supply chain network, especially the buyer-supplier relationship, which can also belong to the supply chain management (SCM) or supplier development research discipline.

The remainder of this paper is organized as follows. First, the theoretical model and the ensuing hypotheses

are presented. Second, the methodology used to test the posited model and the results of data analysis are provided. Third, the study's findings and implications are discussed. Finally, we conclude with a discussion on this study's limitations and ideas for future research.

2. Theoretical Model and Hypotheses

A three-stage model (motivations-behaviors-performance) is adopted in this study for a comprehensive understanding of IOKT in the buyer-supplier relationship. After briefly reviewing previous research on these three main constructs from the IOKT perspective, the research model and hypotheses are developed. The research model is shown in Figure 1.

2.1. Inter-organizational Knowledge Transfer (IOKT)

The term *knowledge transfer* (henceforth, KT) is usually equated with *knowledge sharing* (henceforth, KS) by many researchers (e.g., [17, 18]). However, there are two noteworthy differences between them. First, KT can be used when the knowledge source and recipient are defined more clearly [26]. According to Szulanski [46], KT is defined as "the dyadic exchange of organizational knowledge between a source and a recipient". Therefore, when we use KT, there is a clear direction of knowledge flow from source to recipient [20]. Second, unlike KS, KT seems more relevant when knowledge is directly exchanged through direct channels such as a face-to-face meeting, a telephone conversation, or an e-mail exchange. In other words, when we just register knowledge through indirect channels such as an open bulletin board or a knowledge repository regardless of the designated recipients' absorption of knowledge, we would rather use the term KS instead of KT, since "merely making knowledge available" is not *knowledge transfer* [12, pp. 101]. Based on such differences, KT appears to be more appropriate when specific knowledge exchange conditions are set, while KS can be used for a general context. We focus on KT in this paper because we are interested in the dyadic relationship between a buyer and a supplier where knowledge flows from source to recipient (e.g., from buyer to supplier or vice versa) at the inter-organizational level.

2.1.1. Knowledge Transfer (KT). As discussed above, since KT flows from source to recipient, there are two sub-constructs that can be considered separately from a buyer's perspective: (1) *knowledge transfer as a source* (KT from buyer to supplier) and (2) *knowledge*

transfer as a recipient (KT from supplier to buyer). According to Krause et al. [29], buyers can sustain their competitive advantage not only by acquiring external knowledge from their suppliers, but also by contributing their own knowledge to them in the supply chain relationship. When a buyer has a serious interest in its suppliers' performance improvement, it may be willing to contribute its own knowledge to its key suppliers.

2.1.2. Information Sharing. In the buyer-supplier relationship context, the participants exchange knowledge for long-term competitiveness, while they share information for relatively short-term operational efficiency [27, 36]. As shared information (e.g., information regarding transaction or market) is also helpful to the participants in the supply chain relationship, we consider *information sharing* as a further key construct of IOKT-related behavior, in addition to the two sub-constructs of KT mentioned above.

2.2. Antecedent Factors of IOKT

The antecedent factors, in this study, are derived from social theories that may provide strong backgrounds to explain IOKT-related behaviors. Unlike economic theories (e.g., transaction cost theory or agent cost theory) that treat each IOKT-related behavior as an independent event; social theories (e.g., social exchange theory, social capital theory, or power-political theory) assume the relatively long-term relationship through the participants' interactive activities [37]. In order to develop a conceptual model for motivational factors of IOKT in the context of buyer-supplier relationship, we, therefore, integrate the following relevant social theoretical concepts from the social viewpoint: (1) social exchange theory, (2) social capital theory, and (3) power-political theory. In addition, drawing on inter-organizational information system research, we consider a buyer's inter-organizational IT competency as a further key factor influencing IOKT. Based on further practical validating process, such as a field interview and a pilot-testing, the following key motivational factors influencing IOKT are identified: (1) *perceived benefit*, (2) *cooperative norm*, (3) *relative power*, and (4) *IT competency*.

2.2.1. Perceived Benefit. *Perceived benefit* refers to the anticipated advantage that an organization can improve its own performance through KT or information sharing behavior. Benefits are both direct and indirect in nature. In the supply chain context,

buyers will see more direct benefits in acquiring knowledge or information from external suppliers than in contributing to them. Thus, unlike *perceived benefit as a recipient* (the buyer's perceived benefit by acquiring knowledge or information), *perceived benefit as a source* (the buyer's perceived benefit by contributing knowledge or information) is mainly supported by social exchange theory [5], which differs from economic exchange theory [23] in that obligations are not clearly specified and there is no clear expectation of exact future returns [21]. Much supplier development-related research also argues that buyers expect long-term or indirect benefits by helping improve their suppliers' performance (e.g., [29, 38, 39]). Knowledge or information contributors may perceive a loss of unique value associated with the knowledge or information they transmit [12, 16]. However, when a source's perceived benefit is great, this barrier will be eliminated. Thus, the expectation of benefits can motivate buyers to contribute their knowledge or information to suppliers in the absence of other motivational factors (Hypothesis 1a and 1c).

On the other hand, *perceived benefit as a recipient* is more direct in that a clear benefit is expected. When a recipient sees the KT or information sharing project as more beneficial, it will have greater motivation to support the transfer than if the project is seen as less significant [11]. The not-invented-here (NIH) syndrome may play a role as a barrier to prevent a recipient from accepting outside knowledge or information [22]. However, when a recipient's perceived benefit is great, this type of barrier will be eliminated. Thus, the expectation of benefits can motivate buyers to acquire knowledge or information from suppliers in the absence of other motivational factors (Hypothesis 1b and 1d). From the discussion above, the following hypotheses are proposed:

Hypothesis 1a: *Perceived benefit as a source will be positively related to the degree of knowledge transfer as a source.*

Hypothesis 1b: *Perceived benefit as a recipient will be positively related to the degree of knowledge transfer as a recipient.*

Hypothesis 1c: *Perceived benefit as a source will be positively related to the degree of information sharing.*

Hypothesis 1d: *Perceived benefit as a recipient will be positively related to the degree of information sharing.*

2.2.2. Cooperative Norm. *Cooperative norm* can be defined as the degree to which a firm can share the same organizational culture and value systems for

exchanging knowledge or information in the dyadic relationship. This term, in our study, is derived from the relational capital that is one of key constituting dimensions in social capital theory [e.g., 41]. This relational capital can be derived from the strong and positive dyadic relationship in the social system. Among other factors that may represent relational capital in various studies mostly conducted at the intra-organizational level (e.g., identification, commitment, sense of obligation, and top management support), *cooperative norm* may also be regarded as a relevant factor for explaining KT or information sharing at the inter-organizational level. When the organizational culture values IOKT with the designated supplier, this behavior can be motivated in the absence of other facilitating factors. This *cooperative norm* for KT or information sharing decreases the level of competitiveness between the knowledge source and recipient, working as a facilitator to exchange knowledge or information [44]. Thus, the following hypotheses are proposed:

Hypothesis 2a: *Cooperative norm will be positively related to the degree of knowledge transfer as a source.*

Hypothesis 2b: *Cooperative norm will be positively related to the degree of knowledge transfer as a recipient.*

Hypothesis 2c: *Cooperative norm will be positively related to the degree of information sharing.*

2.2.3. Relative Power. According to power-political theory, power is defined as "the ability of an organization to influence another's decision making on a particular issue, a potential for influence on another firm's belief and behaviors" [14, pp. 47]. Power is determined by the relative dependence between two actors in an exchange relationship, and the concept of power is only meaningful when compared with that in another organization [3]. Power-political theory relies on the power derived from offering valuable resources that few other sources can provide [34]. When an organization is more powerful, it tends to dominate decision making and puts its own interests above those of its partner. Therefore, the power imbalance may lead to unilateral knowledge flow. When a source has more power, there will be less knowledge contribution, but when a recipient has more power, there will be greater knowledge acquisition. Thus, the following hypotheses are proposed:

Hypothesis 3a: *A source's relative power will be negatively related to the degree of knowledge transfer as a source.*

Hypothesis 3b: *A recipient's relative power will be positively related to the degree of knowledge transfer as a recipient.*

2.2.4. IT Competency. Information technologies (IT) make it possible to coordinate work across time and space boundaries [19]. Due to IT-enhanced connectivity, supply chain partners can more easily exchange their knowledge and information externally, making participants reach a consensus and remain current with regard to relevant issues. Therefore, it is expected that as firms develop inter-organizational IT competency they are likely to enhance their ability to acquire and disseminate knowledge and information by reducing transferring cost [48]. Thus, the following hypotheses are proposed:

Hypothesis 4a: *IT competency will be positively related to the degree of knowledge transfer as a source.*

Hypothesis 4b: *IT competency will be positively related to the degree of knowledge transfer as a recipient.*

Hypothesis 4c: *IT competency will be positively related to the degree of information sharing.*

2.3. Organizational Performance

Lee and Kim [34] have distinguished process-oriented performance (e.g., high trust and commitment, benefit and risk sharing, less conflict, and so on) and outcome-oriented performance (e.g., cost saving, competitive advantage gain, high user satisfaction, and so on) in a study on linking inter-organizational knowledge sharing to organizational performance in the outsourcing relationship context. Lee [33] has further validated the mediating role of process-oriented performance (partnership quality) between inter-organizational knowledge sharing and outcome-oriented performance (outsourcing success). In accordance with this prior research, we classify organizational performance into two types of constructs as resultant factors of IOKT in the upstream supply chain relationship context, *relationship quality* and *supplier performance improvement*.

2.3.1. Relationship Quality. The relationship between the participants cannot progress without any initial exchange of information or knowledge. As presented by Konsynski and McFarlan [27], relationships can be created through the strategic sharing of the organization's key information and knowledge. Lam [30] also argues that closer relationship results from more frequent and relevant information and knowledge exchanges among participants. Therefore, individual

firms, working together over time in the supply chain relationship, are able to sustain more effective relationships by exchanging specialized knowledge and information. Thus, the following hypotheses are proposed:

Hypothesis 5a: *Knowledge transfer as a source will be positively related to the degree of relationship quality.*

Hypothesis 5b: *Knowledge transfer as a recipient will be positively related to the degree of relationship quality.*

Hypothesis 5c: *Information sharing will be positively related to the degree of relationship quality.*

2.3.2. Supplier Performance Improvement. A variety of prior research has focused mainly on the buyer's (as a recipient) performance improvement as a resultant variable of IOKT (e.g., [8, 31, 47]). However, these studies have overlooked an important viewpoint of IOKT. As mentioned above, between the two sub-constructs of KT, they consider solely the recipient part of KT (*knowledge transfer as a recipient*), and measure mostly direct and short-term benefits. However, as most research on the supplier development field argues, buyers may improve their own performance not only directly by acquiring/utilizing external knowledge or information from key suppliers, but also indirectly through *supplier performance improvement* [29]. This relationship between IOKT and *supplier performance improvement* may also be mediated by the *relationship quality* in the upstream supply chain relationship. Thus, we rather use *supplier performance improvement* as an outcome-oriented organizational performance variable instead of buyer performance improvement. Another reason why we choose *supplier performance improvement* is the sample characteristics. Because the firm size of a typical buyer is much larger than that of its dyadic suppliers in our survey sample, the performance improvement of a buyer may not be significantly influenced by only one designated supplier's contribution among plenty of other suppliers. From discussions above, the following hypotheses are proposed:

Hypothesis 6a: *Knowledge transfer as a source will be positively related to the degree of supplier performance improvement.*

Hypothesis 6b: *Information sharing will be positively related to the degree of supplier performance improvement.*

In the buyer-supplier relationship context, suppliers may improve their own performance not only directly,

but also indirectly through the improvement of relationship quality. Thus, the following hypothesis is proposed:

Hypothesis 7: *Relationship quality will be positively related to the degree of supplier performance improvement.*

3. Research Methodology and Analysis

To test the proposed research model, we adopted a survey methodology for data collection, and examined research hypotheses by applying the partial least squares (PLS) method to the collected data. The unit of analysis is an inter-organizational relationship between a buyer and one of its recommended key suppliers. This study focuses on the buyer's perception in the upstream supply chain relationship.

3.1. Measurement

Measurement items were developed based on the relevant theories, previous literature, and comments gathered from the interviews. Adopted constructs and questionnaire items in the extant literature were converted into the revised forms which can be more suitable in the buyer-supplier relationship context. Specifically, the items measuring KT were adopted from Lee's [33] research, and the items for measuring information sharing were adopted from previous information system (IS) and SCM studies [24, 32, 50]. KT was measured by the degree to which a buyer actually exchange its explicit (e.g., reports, manuals, or official documents) or implicit (e.g., experience, know-how, or expertise) knowledge with the designated suppliers, while information sharing was measured by the degree to which a buyer actually exchange its transactional or market-related information with the designated supplier. In developing the measurement, a multiple-item method based on a five-point Likert scale from 'strongly disagree' to 'strongly agree' was used. To assess the face validity, a series of personal interviews with five experts in the academic and business fields was conducted. The instrument was further pilot-tested with ten buyer-supplier relationships of a selected buyer, which is one of the largest mobile phone manufacturing companies in Korea.

3.2. Data Collection

To make a sample frame, a list of 577 organizations belonging to the manufacturing industry was created

out of the 1,337 organizations that have enrolled their employees or executives in KM education programs or communities at a leading Korean business school. After randomly selecting 87 firms (about 15 percent of a sample frame) from the list, we either e-mailed or called the executives or managers of the KM teams to ascertain their interest and willingness to participate in the survey. Among the organizations contacted, 44 organizations expressed willingness to receive our survey questionnaire, providing names and addresses of managers directly responsible for the respective firms' supply relations. The managers-in-charge were asked to recommend more than five key suppliers and let their subordinates in charge of each recommended key supplier respond to all questions with respect to his/her own firm's relationship with the designated key supplier. In order to increase internal validity, the recommended key suppliers were limited to meet the following requirements: (1) first-tier, (2) domestic, (3) autonomous (no equity related), and (4) having more than a two-year relationship with the focal buyer in order to ensure adequate time to assess organizational performance [28].

After three rounds of follow-up e-mails and phone calls, a total of 18 firms responded to the surveys related to the respective 170 upstream supply chain relationships, while 30 responses were discarded due to incomplete data. Finally, 140 responses from 18 buyers could be used for analysis with a response rate of 20.7 percent of the original sample or 40.9 percent of those who were identified to participate (7.78 supplier relationships per buyer with an 11.8-year average relationship duration). The test for non-response bias [2] and common method bias (e.g., [45]) showed no significant evidence of response bias in the sample. A descriptive profile of the respondent firms and their relationships are shown in Table 1.

3.3. Data Analysis and Results

PLS [6] is considered as a powerful method of analysis compared to traditional statistical method (e.g., regression and path analysis) and other structural equation modeling (SEM) techniques (e.g., LISREL, EQS, and AMOS). PLS can be used not only for a confirmatory study of a theory, but also for an exploratory study examining where relationships may or may not exist among constructs [15]. This study used PLS-Graph Version 3.00 for analyzing both the measurement and structural models.

3.3.1. Measurement Model. In order to validate the measurement model, internal consistency and three

types of validity were assessed: (1) content validity, (2) convergent validity, and (3) discriminant validity. Content validity was confirmed by interviewing experts in the academic and business fields and by pilot-testing the instrument. Internal consistency and convergent validity were assessed by examining composite reliability (CR) and average variance extracted (AVE) from the measures. All values of CR and AVE were greater than the threshold recommended in prior research (0.7 for CR and 0.5 for AVE) [6]. Finally, the discriminant validity was confirmed by looking at the square root of the AVE for each construct to determine whether it was greater than the inter-construct correlations. Table 2 shows that descriptive statistics, CR, AVE, square root of AVE (shaded numbers in the diagonal), and correlation between constructs. In addition, we also checked for multicollinearity due to the relatively high correlations among some variables (e.g., 0.627 between *knowledge transfer as a source* and *knowledge transfer as a recipient*). However, the resultant variance inflation factor (VIF) values for all of the constructs were less than 1.663, which indicates there was no significant evidence of multicollinearity.

3.3.2. Structural Model. The posited hypotheses were tested with PLS. The results of the analysis are depicted in Figure 2. Among the hypotheses linking antecedent factors to IOKT (H1~H4), H1a, H1b, H2a, H2c, H3b, and H4c were supported. Among the hypotheses linking IOKT to organizational performance (H5~H6), H5b, H5c, and H6a were supported. Finally, the hypothesis between relationship quality and supplier performance improvement (H7) was strongly supported. The interpretation of the data analysis result will be discussed in the next section.

4. Discussion

Based on the results of data analysis, the two major sets of findings deserve further discussion. First, in linking motivational factors to IOKT, the findings are summarized as follows: (1) a buyer's knowledge contributing behavior is mainly motivated by its perceived benefit and cooperative norm, (2) a buyer's knowledge acquiring behavior is strongly motivated by its perceived benefit and relative power, and (3) a buyer's information sharing behavior is mainly motivated by its IT competency and cooperative norm. These findings suggest that each type of IOKT-related behavior has its own motivational mechanism. Interestingly, a buyer's relative power is considered as an important factor in the acquisition of the supplier's

knowledge (H3b), but not in the contribution of the buyer's knowledge. Being in a more powerful situation in a dyadic relationship, a buyer may be able to use its power either in a coercive or collaborative way [36]. Accordingly, the negative effect of a buyer's relative power on KT as a source may be mixed up when the buyer is a collaborative type. Future research could further examine whether a buyer's type influences the IOKT-related behaviors more clearly. Another interesting finding is that IT competency only has an impact on information sharing behavior. As Kim et al. stated "knowledge should be distinguished from information" [25, pp. 298], knowledge cannot be exchanged with the help of IT itself due to the difference in information by origin (i.e., sticky and tacit characteristics). Second, in linking IOKT to organizational performance, the findings are summarized as follows: (1) relationship quality can be motivated by information sharing and a buyer's knowledge acquiring behavior and (2) the supplier's performance can be improved directly by the contribution of the buyer's knowledge and indirectly through an increase in the relationship quality. These results also suggest that research on IOKT can be advanced by studying how each IOKT-related behavior affects different types of organizational performance. However, the asymmetrical knowledge transfer and information flow can potentially cause instability in this relationship quality [30]. Future studies covering various factors influencing this asymmetry in IOKT-related behaviors (e.g., participants' differing absorptive capacity [9]) could shed much light on the various issues underlying IOKT. Moreover, although the buyer's performance was not measured in this paper, it is likely that the buyer's performance may be attained not only from the collective performance improvement of the suppliers but also from the result of long-term collaborative relationships [35].

The results of this study may provide some implications for research and practice. For researchers, there are three major contributions. First, the concept of the *inter-organizational knowledge network* was introduced as the next paradigm of KM. Second, the concept of IOKT was classified by introducing the directional aspect of knowledge flow with a clear definition of knowledge transfer, which differs from knowledge sharing or information sharing in the upstream supply chain context. This attempt may advance the research on IOKT by showing not only how each IOKT-related behavior is influenced by different types of motivational factors but also how it affects different types of organizational performance. Third, the integrative and multidisciplinary view of

IOKT was provided by adopting a three-stage model (motivations-behaviors-performance) and by merging the KM and SCM research disciplines. For practical managers, we suggested that they should regard the *inter-organizational knowledge network* as a future KM strategy for more comprehensive performance improvement. In order to improve organizational performance, they should understand the underlying mechanisms of IOKT and try to maintain an optimal balance between knowledge contribution and acquisition behaviors in addition to information sharing. From a buyer's perspective, a buyer should exchange knowledge with key suppliers to improve organizational performance, which may result in a win-win situation for both sides of the supply chain relationship.

5. Limitations and Future Directions

Limitations of this study include the fact that we only surveyed on the buyer's side of the inter-organizational dyads. Future studies should collect data from both firms involved in a dyadic relationship to ensure a more balanced view. Second, the measures of all constructs were gathered at the same point in time and through the use of the same instrument. Given that a single response reflected each buyer-supplier relationship, our findings may well be vulnerable to the threat of single-source bias despite the strict instruction offered for objective assessments and the finding that there was no significant bias in the test of common method bias. Moreover, due to the cross-sectional nature of the study, causality and bidirectional (feedback) effects cannot be clearly explored. Third, since the data collection was restricted to Korea and a convenience sampling method was used, our findings may have a sampling bias and may not be wholly applicable to firms in different cultures. Future studies covering different cultures with a more rigorous research design may attract the interest of future researchers and managers. Finally, we could not consider some of important candidate antecedent factors (e.g., physical proximity, security issues) or control variables affecting organizational performance (e.g., firm size, relationship duration) due to the complexity of research model. These factors also remain for future study.

6. References

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Figure 1. Research Model

Figure 2. Results of PLS Analysis

Table 1. Profile of Companies Surveyed

(a) Industry Type					
Industry Type	# of Focal Firms (Buyers)	Percent	# of Relationships (Suppliers)	Percent	
Automotive	2	11.1%	26	18.6%	
Chemical / Pharmaceutical	3	16.7%	22	15.7%	
Electricity / Gas	2	11.1%	14	10.0%	
Electronic	4	22.2%	27	19.3%	
Food	2	11.1%	19	13.6%	
Metal Processing	1	5.6%	9	6.4%	
Others	4	22.2%	23	16.4%	
Total	18	100%	140	100%	

(b) Firm Size (Number of Employees)			(c) Relationship Duration (Year)		
# of Employees	Buyer		Rel. Duration	# of Rel.	Per-cent
	# of Firms	Percent			
Less than 100	0	0%	Less than 2	0	0%
101 – 500	2	11.1%	20 – 25	7	5.0%
501 – 1000	4	22.2%	25 – 30	12	8.6%
1001 - 5000	8	44.4%	30 and above	3	2.1%
5001 and above	4	22.2%	10 – 15	25	17.9%
Total	18	100%	15 – 20	24	17.1%
			Total	140	100%

Table 2. Descriptive Statistics, CR, AVE, and Correlation between Constructs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
PBB2S (1)	0.745									
PBS2B (2)	0.432	0.832								
CN (3)	0.438	0.500	0.842							
RP (4)	0.094	0.083	0.096	0.754						
ITC (5)	0.327	0.241	0.372	0.254	0.815					
KTB2S (6)	0.435	0.382	0.377	0.145	0.349	0.823				
KTS2B (7)	0.231	0.427	0.296	0.233	0.326	0.627	0.827			
IS (8)	0.193	0.153	0.277	0.042	0.295	0.192	0.188	0.828		
RQ (9)	0.336	0.215	0.200	0.190	0.356	0.264	0.291	0.275	0.816	
SPI (10)	0.239	0.338	0.301	0.257	0.375	0.352	0.417	0.190	0.433	0.794
# of Items	5	5	4	3	8	7	7	4	5	5
Mean	3.903	3.781	3.857	3.667	3.761	3.176	3.129	4.041	3.909	3.559
SD	0.710	0.817	0.736	0.762	0.868	0.879	0.909	0.823	0.679	0.729
CR	0.862	0.918	0.907	0.789	0.941	0.936	0.938	0.896	0.909	0.895
AVE	0.555	0.692	0.709	0.568	0.664	0.678	0.684	0.686	0.666	0.631

Note: PBB2S: Perceived Benefit as a Source
 CN: Cooperative Norm
 ITC: IT Competency
 KTS2B: Knowledge Transfer as a Recipient
 RQ: Relationship Quality
 SD: Standard Deviation
 AVE: Average Variance Extracted

PBS2B: Perceived Benefit as a Recipient
 RP: Relative Power
 KTB2S: Knowledge Transfer as a Source
 IS: Information Sharing
 SPI: Supplier Performance Improvement
 CR: Composite Reliability

* The shaded numbers in the diagonal row are square roots of the average variance extracted.