

Trust in Online Shopping: The Korean Student Experience

Ji-Seok Yoo

Korea University Business School
jsryu@korea.ac.kr

Jae-Nam Lee

Korea University Business School
isjnlee@korea.ac.kr

Julian Hoffmann

Technical University of Berlin
julian.hoffmann@gmail.com

Abstract

E-commerce has become an important part of business. In South Korea, the market size of online shopping malls was 13,460 billion Korean Won in 2006, and this figure keeps growing. Thus, gaining loyal customers has become a rising concern. In this study, we adopted Lewicki and Bunker's three different types of trust, namely, calculus-based trust, knowledge-based trust, and identification-based trust, in order to investigate their hierarchical relationships in e-commerce and their impacts on customer satisfaction and loyalty. A total of 104 responses from university students were analyzed to test the proposed model and its hypotheses using PLS. The results showed that hierarchical relationships between different types of trust exist in the online environment, and among them, knowledge-based trust has the strongest impact on customer satisfaction. This finding implied that practitioners should focus on developing an appropriate online strategy in terms of how to build up trust-based relationships with online customers.

1. Introduction

Since its inception, the original purpose of which was to assist in US defense operations, the Internet has become an important part of life in the modern society. E-commerce has also become an important part of business transactions. In fact, in South Korea, the market size of cyber shopping malls, excluding B2B and B2G, was 13,460 billion Korean Won (14.3 billion US dollars) in 2006 [29]. This scale is 26% larger as compared to that of the previous year, and this figure keeps growing. Thus, gaining loyal customers has become a rising concern for many vendors in online shopping [24].

Many researchers agree that trust is an important factor in achieving the objective of online business and attracting customers in online transactions [28]. However, trust is quite difficult to handle due to the characteristics of e-commerce like the following as described by Cheung and Lee [10]. First, there is a time gap between online orders and the actual arrival of the ordered products.

Second, customers cannot see or touch the real products, and thus they feel unsafe sending sensitive personal and financial information through the Internet. Lastly, harmful events such as fraud are more damaging than the benefits expected if online transactions are made [10]. In this sense, the nature of online shopping environment is certainly different from that of conventional retailing.

Many empirical studies on trust in the e-commerce context have been conducted. However, they mostly investigated the antecedents and consequences of trust. Gefen [19], for instance, found that familiarity and trust affect intended purchase and intended inquiry for products. Lee et al. [33] concluded that several factors such as comprehensive information, shared value, and communication could affect trust and effectively increase customer loyalty in Internet shopping. Lee and Turban [34] explored the antecedents of consumer trust in Internet shopping. They confirmed that the direct impact of perceived integrity is one of trustworthiness of the Internet merchant on consumer trust in Internet shopping. Kim and Tadisina [27] also claimed that three factors, namely, company profile, supporting organization, and Web site quality, make an impact on initial trust. Cheung and Lee [10] asserted that the trustworthiness of the Internet merchant (i.e., perceived integrity, perceived competence, and perceived security control) and the external environment (i.e., third-party recognition and legal framework) have impacts on consumer trust in Internet shopping.

Although previous studies on online trust were remarkable, they did not deal with the development of trust as time went by. According to Lewicki and Bunker [35], trust evolves over time, and developing one type of trust can lead to the next higher level of trust. Rousseau et al. [48] also mentioned that trust is no longer viewed as a static state. Considering that the concept of trust in e-commerce is similar to that in the real world [8], it is but natural that online shopping customers experience this similar hierarchical development of trust.

In this paper, we are interested in the relationships between different types of trust and their impacts on customer satisfaction and loyalty. More specifically, the objective of this study is not only to validate the

hierarchical relationships of different trust types in e-commerce but also to investigate their impacts on customer satisfaction and loyalty by focusing on Korean students' experience. To do so, we adopted Lewicki and Bunker's [35] framework of classifying trust into three different types: calculus-based trust, knowledge-based trust, and identification-based trust. We then tested the proposed model and its hypotheses using the data collected from university students. We believe that this study will help practitioners determine which type of trust is more contributive to customer loyalty and thus provide them with meaningful guidelines on how to build trust with online consumers.

The rest of the paper is organized as follows. Section 2 provides a review of previous research dealing with trust in order to propose the research hypotheses and develop the research model of the study. Section 3 describes research methodology. Section 4 explains the analysis and results of the study by testing measurement and structural models. Section 5 discusses the results in order to determine their implications as well as limitations. Section 6 summarizes the study and offers recommendations for future research.

2. Theoretical development

2.1. Trust in transaction

Here, we concentrated on Lewicki and Bunker's [35] framework. The basis of the framework, however, was proposed much earlier by others. It is actually the newer version of Shapiro et al.'s [53] work that consisted of deterrence-based trust, knowledge-based trust, and identification-based trust. Furthermore, Shapiro et al.'s [53] work referred to Kelman's [25] work, which consists of compliance, identification, and internationalization, as a source of internationalization typology. Among these closely related frameworks, we decided to choose Lewicki and Bunker's [35] framework because unlike previous studies that focused on the antecedents and consequences of trust, this study intended to investigate the dynamics of trust.

With regard to the concept of trust, this study considers two major perspectives that are closely related to the framework developed by Lewicki and Bunker [35], although the construct of trust has been researched across several different disciplines and from diverse viewpoints [6]. On one hand, according to the economic perspective, trust deals with transaction costs in the exchange of goods. A customer that enters into a market transaction might be confronted with guileful vendors that act with opportunism. According to Greyskens et al. [20], this behavioral uncertainty causes various costs. However, if trust prevails, this uncertainty can be reduced and results in lesser efforts in contracting and monitoring [46].

Additionally, trust can lower customer acquisition and possession costs. When business relations are maintained, established procedures can reduce the need for verifying orders and reconciling invoices and billing statements [9][13]. Hence, acquisition costs are reduced. As for possession costs, trust reduces the delay between order and utilization [40]. Subsequently, this implies savings on inventory, insurance, and storage. More precisely, Williamson [58] suggested that individuals make trust choices based on perceptual costs and benefits. Thus, trust in this perspective has been shown to be based on calculus [58], and it mainly originated from second-hand information (without experience) [2][53] because individuals "attempt to determine the nature of their interdependence, what they will get from the relationship and give to it, and what their risks and vulnerabilities are" [35].

On the other hand, according to the psychological perspective, trust is a highly affective state caused by the actor's ability or inability to reach certain goals [32][41]. As social psychologists view it as an interpersonal phenomenon focusing on the transactions between individuals [10], Rotter [47] and Lewicki and Bunker [35] approached trust as the generalized expectation about the behavior of individuals in a transaction. Similarly, Lewicki et al. [36] and Mayer et al. [38] defined trust as being confident about a positive outcome in a transaction.

In addition, emotions also have a characteristic by which they directly and immediately affect behavior [5][18]. Negative emotions were found to have several effects on transactions. It has been shown that negative emotions augment negative feelings towards other people [56]. It means that the emotion of fear and anger might cause people to withdraw from the transaction and act in a more hostile way towards the person who caused it.

In contrast, some found positive emotions to alleviate hostile attitude [3], enhance concession making [44], and facilitate win-win agreements [22]. Lawler and Yoon [31] claimed that positive emotions strengthen commitment behavior. Salovey et al. [49] pointed to the notion of positive emotions having an impact on promoting persistence in transactions. Kumar [30] showed that especially in situations where sellers' and buyers' behavior are still uncertain, good outcomes produce positive emotions. Likewise, when a transaction leads to a positive outcome, actors exhibit positive emotions as opposed to negative ones in the case of a bad outcome.

Grounded on these studies, it eventually becomes apparent that the key findings of trust in this perspective posit some kind of expectation of good outcomes, that is, knowledge-based trust, as well as positive emotion, that is, identification-based trust. The common point between them is that they are mainly generated from first-hand information through direct interaction and communication between parties [2][35]. However, at the stage of

knowledge-based trust, one party (buyer) generalizes expectancies about another's behavioral predictability as one gathers more information (experience), whereas at the stage of identification-based trust, one party fully internalizes the other's desire and intention through several transactions, which requires not only collected information but also emotional connections [57].

Again, the notion of trust has been examined along different dimensions over the years. Rousseau et al. [48], however, argued that it is necessary not only to classify the different views of trust but also to integrate them. Thus, in order to understand the dynamics of trust, this study proposes their hierarchical relationships and investigates their impacts on customer satisfaction and loyalty.

2.2. A model of trust in transaction

In this study, as mentioned earlier, we adopted Lewicki and Bunker's [35] framework which consists of calculus-based trust, knowledge-based trust, and identification-based trust. As depicted in Figure 1, the research model is designed to study their relationships (hierarchical development) and impacts on customer satisfaction and loyalty.

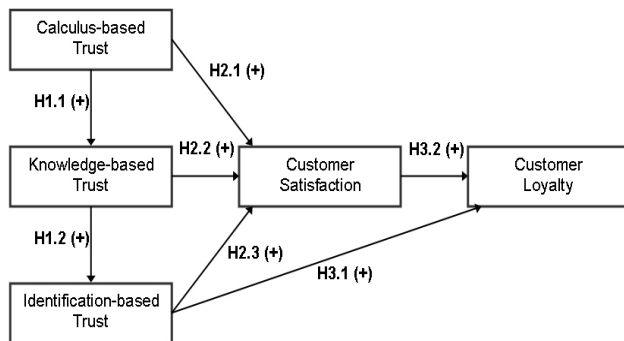


Figure 1. Research model

2.2.1. Three types of trust. It was suggested that trust in the beginning of a business relationship (i.e., initial trust) is often calculus based [2][53]. Lewicki and Bunker [35] defined calculus-based trust as an ongoing economic calculation where benefits and costs are evaluated. As such, based on second-hand information, both parties that engage in a transaction make perceptual rational choices, weighing losses and benefits, before they decide to trust someone or not. As this type of trust is based on economic exchange, in order for deterrence to be an actual threat, the possible loss has to outweigh the estimated gain of the transaction. Obviously, monitoring and reporting have to be implemented so that punishments can actually be imposed.

Moreover, they may become aware of each other as the parties in a transaction come to a deeper

understanding of each other through repeated interactions. This allows trust to grow to a higher and qualitatively different level, and this is called knowledge-based trust [35]. Lewicki and Bunker [35] defined knowledge-based trust as generalized expectancies about the other's behavioral predictability as one gathers more information. As a result, based on first-hand experience, customers could start building this type of trust using positive expectation during frequent engagement in transactions [35]. Hence, we propose the following hypothesis:

H1.1: Calculus-based trust positively affects knowledge-based trust.

Unlike calculus-based trust, knowledge-based trust is based on the expectations of good outcomes from a psychological perspective. However, these two types of trust mentioned previously provide a foundation for an even higher level of trust which is identification based [35]. Lewicki and Bunker [35] defined identification-based trust as a consequence of certain activities like developing a collective identity, geographical proximity, and committing to commonly shared values. As it indicates that both parties understand what the other party really cares about so completely that each party is enabled to act as an agent and assume that one party is fully aware of the other's preference [53], we believe that identification-based trust could be built by providing more internalized and customized services to customers. Accordingly, we hypothesize the following:

H1.2: Knowledge-based trust positively affects identification-based trust.

2.2.2. Customer satisfaction. Oliver [43] defined satisfaction as the perception of pleasurable fulfillment of a service. Insofar as it is generally assumed a significant determinant of repeat sales, this concept has become important for customer-oriented organizations [54]. In addition, it is known that customer satisfaction has also been linked to trust in a relationship [4][26]. Selnes [51] stated that satisfaction and trust are concepts that refer to global evaluations, feelings, or attitudes by one party with respect to another, and although they are different variables, they are related to one another. According to Johnson and Grayson [23], expectations may be linked to intangible questions such as feelings of joy, fear, and anger associated with the service experience or the fulfillment of certain standards.

Thus, the buyer will feel satisfied if he/she perceives the fulfillment of the required level of honesty, benevolence, and trust in the transaction process. With samples from a Web site, Flavian et al. [16] found that satisfaction could act as an instrument to engender greater trust. Although the direct impact of trust on satisfaction has relatively been well investigated, no exact proof was given by prior researchers that there is a relationship

between the three types of trust and satisfaction in real transaction. Thus, we hypothesize the following:

H2.1: Calculus-based trust is positively related to customer satisfaction.

H2.2: Knowledge-based trust is positively related to customer satisfaction.

H2.3: Identification-based trust is positively related to customer satisfaction.

2.2.3. Customer loyalty. As mentioned above, identification-based trust is enhanced by a strong emotional bond between the parties based on a sense of shared goals and values. Hence, in contrast to calculus-based and knowledge-based trust, identification-based trust is a more emotionally driven phenomenon, which is grounded on perceptions of interpersonal care, concern, and mutual satisfaction. As Reichheld and Sasser [45] suggested that personalization is desirable to enhance repeat visits, we believe that sellers can retain customers' loyalty as they internalize customers' desire by providing personalized services. In other words, customers who get more customized and internalized services from online sellers could establish their loyalty to the sellers and repurchase products or services from the same sellers. Thus, we hypothesize the following:

H3.1: Identification-based trust is positively related to customer loyalty.

The definition of customer loyalty implies a deep commitment to the service provider [43]. Before we explore the relationship between customer satisfaction and loyalty, we first have to consider an assertion that the definition of customer loyalty needs to distinguish between attitudinal loyalty (true loyalty) and behavioral loyalty (spurious loyalty) [14]. Behavioral loyalty refers to staying with a seller until a buyer can find a better alternative in the marketplace [14][15]. Attitudinal loyalty, on the other hand, is some commitment to the other party and is not easily swayed by a slightly more attractive alternative [14]. Considering low search cost in the online environment, we believe that it is suitable to focus on attitudinal loyalty in this study.

Although many researchers claimed that satisfaction alone is not a predictor of customer loyalty [55][7][59], many previous studies concentrated on the relationship between them [50][43]. Crosby et al. [12] mentioned that satisfaction is a critical element that affects long-term relationship or customer loyalty. Unlike other studies that examined the relationship with a focus on an offline environment, Shankar et al. [52] studied the relationship with a focus on the online environment and found that satisfaction enhances loyalty. Thus, we hypothesize the following:

H3.2: Customer satisfaction is positively related to customer loyalty.

3. Research methodology

3.1. Measure

In this paper, the following five constructs were involved: calculus-based trust, knowledge-based trust, identification-based trust, customer satisfaction, and customer loyalty. The last two constructs have actually been used in many research approaches so we adopted some of their measures. Specifically, we developed the measures for customer loyalty by adopting the measures used in the work of Zeithaml et al. [63]. For the measures of customer satisfaction, we adopted the measures used in the work of Oliver [42]. After which, we modified and added some measures to make them appropriate for our context. For calculus-based, knowledge-based, and identification-based trust, we developed measures by converting the definitions of the constructs. The questionnaires used five-point Likert scales. They consisted of 29 items which measured the respondents' perceptions (see the Appendix).

3.2. Data collection

After the instrument was completed, we distributed the survey sheets to graduate and undergraduate students in one of the major universities in South Korea. According to a report that researched on experience in Internet shopping by age groups (over age of 12), those Internet users in their 20s recorded the highest experience rate of online transaction (76.6%) followed by users in their 30s (62.0%), teenagers (49.5%), and users in their 40s (34.6%) [39]. Considering this result, the sample from university students may represent the population of actual online shopping users.

Since we personally conducted the survey in classrooms, the number of distributed and received questionnaires was identical. Data gathering took place for 10 days between the 26th of May and the 4th of June in 2007. A total of 108 survey sheets were distributed and returned, but two responses were disregarded due to several missing answers. In addition, two more responses were eliminated due to the absence of experience in online transactions for the last six months. Finally, 104 responses were actually used for the analysis.

The respondents' characteristics such as gender, age, length of experience in online transactions, number of online transactions in the last six months, and amount of money spent for online transaction are summarized in Table 1. The sample consists of 33.7% male and 66.3% female students. Since the participants were university students, most of them were between the age of 21 and

30. Almost 80% of them have used an online shopping mall for over two years and have had from two to ten times of transaction therein for the last six months.

Table 1. Characteristics of the sample

(a) Gender

Gender	Frequency	Percentage
Male	35	33.7%
Female	69	66.3%
Unanswered	0	0%
Total	104	100%

(b) Age

Age	Frequency	Percentage
Under 20	1	1%
21 ~ 30	90	86.5%
31 ~ 40	12	11.5%
41 ~ 50	1	1%
Over 50	0	0%
Unanswered	0	0%
Total	104	100%

(c) Experience of online transaction

Year	Frequency	Percentage
Under 1	6	5.8%
1 ~ 2	15	14.4%
2 ~ 3	33	31.7%
3 ~ 5	30	28.9%
Over 5	18	17.3%
Unanswered	2	1.9%
Total	104	100%

(d) Number of online transaction for last 6 months

Times	Frequency	Percentage
Once	5	4.8%
2 ~ 3	36	34.6%
4 ~ 5	24	23.1%
6 ~ 10	17	16.3%
11 ~ 15	6	5.8%
16 ~ 20	8	7.7%
Over 20	6	5.8%
Unanswered	2	1.9%
Total	104	100%

(e) Amount of money spent for online transaction

Money (KRW)	Frequency	Percentage
Under 10,000	1	1%
10,000 ~ 50,000	14	13.4%
50,000 ~ 100,000	25	24.0%
100,000 ~ 200,000	24	23.1%
200,000 ~ 300,000	11	10.6%
300,000 ~ 400,000	13	12.5%
400,000 ~ 500,000	1	1%
Over 500,000	13	12.5%
Unanswered	2	1.9%
Total	104	100%

4. Analysis and results

4.1. Analysis method

In this study, a confirmatory approach was chosen using Partial Least Squares (hereafter PLS). Thus, PLS-Graph version 3.0 for analyzing measurement and structural models was used. First, PLS considers a structural path which explains the theoretical relationships between latent variables and indicators at the same time. Second, PLS does not assign the same weights to the indicators of a latent variable. It assigns different weights based on the indicators' degree of contribution to the latent variable [37][60][61][62]. Third, PLS does not have strong constraints on the sample size as compared to other SEM techniques like LISREL [11]. In view of the three reasons above, we selected PLS for the data analysis in this study.

4.2. Measurement model

According to the two-stage analytical procedure [1][21], we conducted confirmatory factor analysis first in order to evaluate the measurement model and then we examined the structural model. To assess the reliability and validity of our measurement model, we needed to look at composite reliability and average variance extracted (hereafter AVE) first [21]. The composite reliability for our measurement model ranged from 0.831 to 0.911. Considering an acceptance level of 0.7 [11], the value was very satisfactory. However, AVE in the measurement model ranged from 0.498 to 0.619. Especially for the construct of calculus-based trust, the value was 0.498; hence, it was lower than the recommended level of 0.5 [17].

In addition to this, the discriminant validity of the measurement model turned out to be unsatisfactory. As Fornell and Larcker [17] suggested, we evaluated this by using the square root of the AVE. Unfortunately, it showed that the square root of the AVE for calculus-based trust was smaller than the correlations between it and the other constructs. This meant that the data we gathered were not ready to be analyzed. Therefore, we eliminated items whose loading values were lower than 0.7 [9]. Finally, the following six items were removed: CBT1, CBT2, KBT5, CS5, CL4, and CL5. After this adjustment, we evaluated the measurement model again, and its results are shown in Table 2.

The composite reliability ranges from 0.848 to 0.903, and AVE ranges from 0.595 to 0.675. Furthermore, the square root of the AVE as shown in Table 3 for testing discriminant validity was also greater than the

correlations between it and the other constructs. This meant that we could proceed to the next step of analysis.

Table 2. Results of PLS Confirmatory Factor Analysis

Construct	Item	CR/AVE	Loading	t-value
Calculus-based Trust	CBT3	0.848/0.650	0.7967	10.5925
	CBT4		0.7976	21.2789
	CBT5		0.8247	21.7909
Knowledge-based Trust	KBT1	0.892/0.675	0.8316	26.2733
	KBT2		0.8513	29.0700
	KBT3		0.8627	22.8324
	KBT4		0.7356	14.6286
Identification-based Trust	IBT1	0.880/0.595	0.7187	15.6270
	IBT2		0.7647	11.5002
	IBT3		0.7980	17.1038
	IBT4		0.7025	10.6290
	IBT5		0.8621	35.0711
Customer Satisfaction	CS1	0.903/0.652	0.8708	27.2981
	CS2		0.8539	22.3692
	CS3		0.7598	14.8025
	CS4		0.8259	18.3892
	CS6		0.7153	13.5220
Customer Loyalty	CL1	0.902/0.606	0.8428	19.8855
	CL2		0.7608	10.7318
	CL3		0.7580	14.6596
	CL6		0.8318	27.5621
	CL7		0.7452	16.6567
	CL8		0.7227	13.7941

* CR is Composite Reliability and AVE is Average Variance Extracted.

Table 3. Correlations between Constructs

Construct	1	2	3	4	5
1 CBT	0.806				
2 KBT	0.652	0.822			
3 IBT	0.271	0.488	0.771		
4 CS	0.622	0.754	0.497	0.807	
5 CL	0.497	0.660	0.500	0.727	0.778

* The numbers in shaded cell are square roots of the AVE.

4.3. Structural model

In this section, the proposed hypotheses were tested using PLS. The results of the structural model analysis are described with path coefficients and t-values in Figure 2. The respective significance of all the paths in this model was generated using bootstrap resampling procedure. As can be seen, all the seven hypothesized paths were found to be significant at the 0.01 or 0.05 level.

Calculus-based trust was found to be significantly related to knowledge-based trust ($\beta=0.652$; $t=11.469$; $p<0.01$) and to explain 43 percent of the variance in knowledge-based trust. Knowledge-based trust was also found to be significantly related to identification-based

trust ($\beta=0.488$; $t=7.298$; $p<0.01$) and to explain 24 percent of the variance in identification-based trust. Thus, Hypotheses 1.1 and 1.2 were supported.

For the impact of the three types of trust on customer satisfaction, calculus-based ($\beta=0.242$; $t=3.096$; $p<0.01$), knowledge-based ($\beta=0.506$; $t=5.339$; $p<0.01$), and identification-based trust ($\beta=0.184$; $t=2.418$; $p<0.05$) were found to be significantly related to customer satisfaction. However, it was shown that knowledge-based trust had a much stronger impact than the other two types. Thus, Hypotheses 2.1, 2.2, and 2.3 were supported, and these constructs of trust explained 62 percent of the variance in customer satisfaction.

For the impact on customer loyalty, obviously customer satisfaction was significantly related to the construct ($\beta=0.636$; $t=9.635$; $p<0.01$). Identification-based trust especially had a direct although weak impact on customer loyalty ($\beta=0.184$; $t=2.735$; $p<0.01$). Fifty-six percent (56%) of the variance in customer loyalty can be explained by these two constructs and thus Hypotheses 3.1 and 3.2 were supported based on these results.

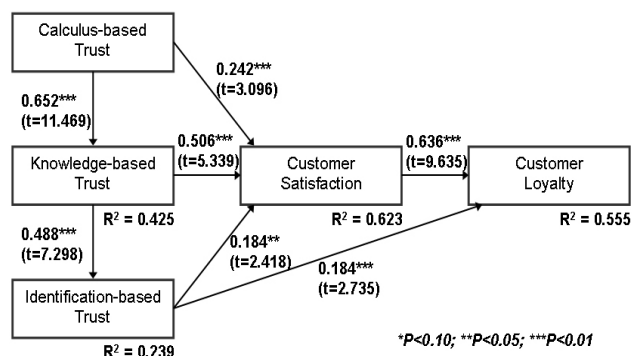


Figure 2. Results of PLS Analysis

5. Discussion and limitations

5.1. Discussion of results

Table 4 summarizes the results of the study. As can be seen, all the hypotheses proposed in this study were supported. First, calculus-based trust contributes to building knowledge-based trust (H1.1), and the knowledge-based trust also contributes to building identification-based trust (H1.2). With respect to their contributions to customer satisfaction (H2.1, H2.2, and H2.3), all three types of trust contribute to building customer satisfaction, but knowledge-based trust has the strongest impact. Lastly, customer loyalty is affected by both identification-based trust (H3.1) and customer satisfaction (H3.2). We believed that successful personalized services from online retailers contribute to retaining customers' loyalty, but the impact of

identification-based trust on customer loyalty is relatively weak as compared to that of customer satisfaction.

Considering these findings, we provide some implications to both researchers and practitioners. For researchers, this study provides evidence that online shopping users also experience hierarchical development of trust, and there is no difference between trust in e-commerce and in the real world. However, identification-based trust, which comes from a strong emotional bond and is the highest level of trust, does not have a strong impact as compared to our earlier expectation. This implies that unlike what happens in the real world, it is difficult for both parties to further develop trust in the e-commerce context. Particularly, it is very difficult for online retailers to meet customers' desire in terms of executing successful personalized services, although customers actually appreciate personalization when it comes to online shopping.

This also allows us to recommend some strategies for practitioners. Based on the findings, customer satisfaction showed great impact on customer loyalty. This means that the existence of e-loyalty emerged from experience. At this moment, we can infer that the experience the customer gained during the first transaction increases the possibility of purchasing in the same online shopping mall again. In addition, customers may tend to stick to the online shopping malls they have had an experience with because online transaction does not allow customers to see the goods before they purchase. Thus, we learn that online shopping malls should focus on increasing the number of transactions of online consumers. Additionally, this can be implemented by offering incentives or promotions to customers. Moreover, we suggest not putting too much effort into personalization, which is an expensive and time-consuming service for customers.

Table 4. Summary of Results

Hypotheses	Results
H1.1: Calculus-based trust will positively affect knowledge-based trust.	Supported
H1.2: Knowledge-based trust will positively affect identification-based trust.	Supported
H2.1: Calculus-based trust will be positively related to customer satisfaction.	Supported
H2.2: Knowledge-based trust will be positively related to customer satisfaction.	Supported
H2.3: Identification-based trust will be positively related to customer satisfaction.	Supported
H3.1: Identification-based trust will be positively related to customer loyalty.	Supported
H3.2: Customer satisfaction will be positively related to customer loyalty.	Supported

5.2. Limitations of the study

As with any other study, there are also some limitations in this study. First, the current study is cross-sectional. The model used is meant for examining causal relationships among trust, satisfaction, and loyalty. As such, the effects might change over time, in which case a longitudinal study would be more suitable. Thus, the responses could be biased. The second limitation is our specific sample. Not only the sample size but also the source of the sample might have weaknesses. Even though we provided the rationale for our choice of the sample in Section 3.2., we had 104 useful responses, and all of them came from a single university. Considering these weaknesses, we have to be careful in interpreting and generalizing the results. For instance, our generalizations are therefore limited only to student consumers.

Furthermore, it is worthwhile to mention that in designing the questionnaire, we focused on the respondents' ability to answer the questions. Since this study asked them about customer satisfaction and loyalty, they had to have enough experiences in online transactions. Although there is no clear criterion for judging the degree of experience, some of the respondents in the survey might not have had enough experience in online transactions. Lastly, we developed questionnaires by converting the definitions of the constructs for the three types of trust. Thus, it is possible that the questionnaires might not have expressed the constructs appropriately enough. Based on the reliability and validity test, however, we feel there is no cause for worries about this issue.

6. Conclusion

This paper investigated the impact of calculus-based, knowledge-based, and identification-based trust on customer satisfaction and loyalty by utilizing PLS for testing the model. Moreover, the proposed hypotheses were designed in order to find whether the different types of trust evolve over time and to assess the direct relationship between identification-based trust and customer loyalty. Thus, we eventually figured out which trust best contributed to retaining customers. The results showed that the most powerful trust emerged from positive customer experiences, while the impacts of identification-based trust on either customer satisfaction or customer loyalty were shown to be less salient.

Finally, we needed to think of how we could improve the survey questionnaires for future research. We asked participants to mention a specific type of product and an online shopping mall they frequently use before answering the questions. If we could gather more data, this might give us a chance to analyze the findings again, by then focusing on specific types of online retailers.

Such findings would enable us to give more differentiated advice to practitioners concerning online business performance.

7. References

- [1] Anderson, J.C. and Gerbing, D.W. "Structural equation modeling in practice: A review and recommended two-step approach." *Psychological Bulletin*, (103:3), 1988, pp. 411-423.
- [2] Ba, S. "Establishing online trust through a community responsibility system." *Decision Support Systems*, (31), 2001, pp. 323-336.
- [3] Baron, R.A. "Environmentally induced positive affect: Its impact on self efficacy, and task performance, negotiation and conflict." *Journal of Applied Social Psychology*, (20), 1990, pp. 368-384.
- [4] Bauer, H., Grether, M., and Leach, M. "Building customer relations over the Internet." *Industrial Marketing Management*, (31), 2002, pp. 155-163.
- [5] Ben Ze'ev, A. *The Subtlety of Emotions*. Cambridge: MIT Press, 2000.
- [6] Bhattacharya, R., Devinney, T., and Pillutla, M. "A formal model of trust based on outcomes." *Academy of Management Review*, (23:3), 1998, pp. 459-472.
- [7] Bloemer, J., and de Ruyter, K. "On the relationship between store image, store satisfaction and store loyalty." *European Journal of Marketing*, (32), 1998, pp. 499-513.
- [8] Bryant, A. and Colledge, B. "Trust in electronic commerce business relationships." *Journal of Electronic Commerce Research*, (3:2), 2002, pp. 32-39.
- [9] Cannon, J.P. and Homburg, C. "Buyer-supplier relationships and customer firm costs." *Journal of Marketing*, (65), 2001, pp. 29-43.
- [10] Cheung, C. and Lee, M.K.O. "Understanding consumer trust in internet shopping: A multidisciplinary approach." *Journal of the American Society for Information Science and Technology*, (57:4), 2006, pp. 479-492.
- [11] Chin, W.W. "The partial least squares approach to structural equation modeling." In G.A. Marcoulides (ed.), *Modern Methods for Business Research*, Lawrence Erlbaum Associates, Mahwah, NJ, 1998, pp. 295-336.
- [12] Crosby, L.A., Evans, K.R., and Cowles, D. "Relationship quality in services selling: An interpersonal influence perspective." *Journal of Marketing*, (54), 1990, pp. 68-81.
- [13] Dahlstrom, R. and Nygaard, A. "An empirical investigation of ex post transaction costs in franchised distribution channels." *Journal of Marketing Research*, (36), 1999, pp. 160-170.
- [14] Day, G.S. "A two-dimensional concept of brand loyalty." *Journal of Advertising Research*, 9(3), 1969, pp. 29-35.
- [15] Dick, A.S., and Basu, K. "Customer loyalty: an integrated conceptual framework." *Journal of Academy of Marketing Science*, (22:2), 1994, pp. 99-113.
- [16] Flavián, C., Guinaliú, M., and Gurrea, R. "The role played by perceived usability, satisfaction and consumer trust on website loyalty." *Information & Management*, (43), 2006, pp. 1-14.
- [17] Fornell, C. and Larcker, D.F. "Structural equation models with unobservable variables and measurement error." *Journal of Marketing Research*, (18:2), 1981, pp. 39-50.
- [18] Frijda, N.H. *The Emotions*. Cambridge University Press, 1986.
- [19] Gefen, D. "E-commerce: the role of familiarity and trust." *Omega: The International Journal of Management Science*, (28:6), 2000, pp. 725-737.
- [20] Geyskens I., Steenkamp, JBEM, Scheer, L., and Kumar, N. "The effects of trust and interdependence on relationship commitment: A trans-Atlantic study." *International Journal of Research in Marketing*, (13:4), 1996, pp. 303-317.
- [21] Hair, J.F., Anderson, R.E., Tatham, R.L., and Black, W.C. *Multivariate Data Analysis with Readings (4th ed.)*. Prentice Hall, NY, 1995.
- [22] Hollingshead, A.B. and Carnevale, P.J., "Positive affect and decision frame in integrative bargaining: A reversal of the frame effect." *Paper presented at the 50th Annual Meeting of the Academy of Management*, San Francisco, 1990.
- [23] Johnson, D. and Grayson, K. "Cognitive and affective trust in service relationships." *Journal of Business Research*, (58), 2005, pp. 500-507.
- [24] Kalakota, R. and Whinston, A. *Electronic Commerce: A Manager's Guide*, Addison Wesley Longman Inc, 1997.
- [25] Kelman, H.C. "Compliance, identification, and internalization: Three processes of attitude change." *Journal of Conflict Resolution*, (2), 1958, pp. 51-60.
- [26] Kennedy, M., Ferrell, L., and LeClair, D. "Consumers' trust of salesperson and manufacturer: An empirical study." *Journal of Business Research*, (51), 2001, pp. 73-86.
- [27] Kim, E., and Tadisina, S. "Factors Impacting Customers' Initial Trust in E-Businesses: An Empirical Study." *Proceedings of the 38th Hawaii International Conference on System Sciences*, January 2005, Computer Society Press, 2005 (10 pages).
- [28] Koehn, D. "Should we trust in trust?" *American Business Law Journal*, (34:2), 1996, pp. 183-203.
- [29] Korea National Statistical Office. *Report of Statistical Annual Research on e-Commerce in 2006*. at [The Journal of Applied Behavioral Science, \(33:1\), 1997, pp. 84-100.](http://www.nso.go.kr/common/CommonAction.do?method=download&attachDir=bm90aWNI&attachName=U1VFQzA2NDQ uaHdw, 2007, Accessed 26 August 2007.</p>
<p>[30] Kumar, R.)
- [31] Lawler, E.J. and Yoon, J. "Power and the emergence of commitment behavior in negotiated exchange." *American Sociological Review*, (58), 1993, pp. 465-481.

- [32] Lazarus, R.S. *Emotion and Adaptation*. New York: Oxford University Press, 1991.
- [33] Lee, J., Kim, J., and Moon, J.Y. "What makes Internet users visit cyber stores again? Key design factors for customer loyalty." In *Proceedings of the Conference on Human Factors in Computing Systems CHI 2000*, ACM, New York, 2000, pp. 305-312.
- [34] Lee, M.K.O. and Turban, E. "A trust model for consumer Internet shopping." *International Journal of Electronic Commerce*, (6:1), 2001, pp. 75-91.
- [35] Lewicki, R.J. and Bunker, B. "Trust in Relationships: A Model of Trust Development and Decline in Conflict." In B.B. Bunker & J. Z. Rubin (eds.), *Conflict, Cooperation, and Justice*, Jossey-Bass, San Francisco, CA, 1995, pp.133-173.
- [36] Lewicki, R.J., McAllister, D.J., and Bies, R.J. "Trust and distrust: New relationships and realities." *Academy of Management Review*, (23:3), 1998, pp. 438-458.
- [37] Lohmöller, J.B. *LVPLS Program Manual: Latent Variables Path Analysis with Partial Least Square Estimation*. Physica-Verlag, Heidelberg, 1989.
- [38] Mayer, R., Davis, J., and Shoorman, F., "An integrative model of organizational trust." *Academy of Management Review*, (20:3), 1995, pp. 709-734.
- [39] Ministry of Information and Communication of Korea and National Internet Development Agency of Korea. *Research on The Actual Condition of Informatization in The Second Half of The Year 2006*. at http://www.mic.go.kr/secureDN.tdf?seq=5132&idx=1&board_id=P_02_02_01, 2007, Accessed 26 August 2007.
- [40] Noordewier, T.G., John, G., and Nevin, J.R. "Performance outcomes of purchasing arrangements in industrial buyer-vendor relationships." *Journal of Marketing*, (54), 1990, pp. 80-93.
- [41] Oatley, K. *Best Laid Schemes: The Psychology of Emotions*. Cambridge University Press, 1992.
- [42] Oliver, R.L. "A cognitive model of the antecedents and consequences of satisfaction decisions." *Journal of Marketing Research*, (17), 1980, pp. 416-469.
- [43] Oliver, R.L. "Whence consumer loyalty?" *Journal of Marketing*, (63), 1999, pp. 33-44.
- [44] Pruitt, D.G. and Carnevale, P.J. *Negotiation in Social Conflict*. Buckingham, UK: Open University Press, 1993.
- [45] Reichheld, F. and Sasser, W. "Zero Defections: Quality Comes to Services." *Harvard Business Review*, 1990(5), pp. 105-111.
- [46] Rindfleisch A. and Heide J.B. "Transaction cost analysis: Past, present, and future applications." *Journal of Marketing*, (61), 1997, pp. 30-54.
- [47] Rotter, J.B. "Generalized expectancies for interpersonal trust." *Amerian Psychologist*, (26), 1971, pp. 443-452.
- [48] Rousseau, D.M., Sitikin S.B., Burt R.S., and Camerer, C. "Not so different after all: Across-discipline view of trust." *Academy of Management Review*, (23), 1998, pp. 393-404.
- [49] Salovey, P., Hsee, C.K., and Mayer, J.D. "Emotional intelligence and the self regulation of affect." In D. M. Wegner & J. W. Pennebaker (eds.), *Handbook of mental control*, Englewood Cliffs, HJ: Prentice Hall, 1994, pp. 258-277.
- [50] Selnes, F. "An examination of the effects of product performance on brand reputation, satisfaction and loyalty." *Journal of Marketing*, (27:9), 1993, pp. 19-35.
- [51] Selnes, F. "Antecedents and consequences of trust and satisfaction in buyer-seller relationships." *European Journal of Marketing*, (32:3/4), 1998, PP. 305-322.
- [52] Shankar, V., Smith, A., and Rangaswamy, A. "Customer satisfaction and loyalty in online and offline environments." *International Journal of Research in Marketing*, (20), June 2003, pp. 153-175.
- [53] Shapiro, D., Sheppard, B.H., and Cheraskin, L. "Business as handshake." *Negotiation Journal*, (8:4), 1992, pp. 365-377.
- [54] Szymanski, D.M. and Henard, D.H. "Customer satisfaction: A meta-analysis of the empirical evidence." *Journal of the Academy of Marketing Science*, (29:1), 2001, pp. 16-35.
- [55] Van Looy, B., Gemmel, P., Desmet, S., Van Dierdonck, R., and Serneels, S. "Dealing with productivity and quality indicators in a service environment: Some field experiences." *International Journal of Service Industry Management*, (9:4), 1998, pp. 359-376.
- [56] Veitch, R. and Griffit, W. "Good news-bad news: Affective and interpersonal affects." *Journal of Applied Social Psychology*, (6), 1976, pp. 69-75.
- [57] Velez, P. "Interpersonal trust between supervisor and subordinate." *Dissertation Abstracts International*, UMI No. 3002301, 2000.
- [58] Williamson, O.E. "Calculativeness, trust, and economic organization." *Journal of Law and Economics*, (34), 1993, pp. 453-502.
- [59] Wilson, A. "Attitudes towards customer satisfaction measurement in the retail sector." *International Journal of Market Research*, (44:2), 2002, pp. 213-248.
- [60] Wold, H. "Introduction to the Second Generation of Multivariate Analysis." *Technical Empiricism*, Pragon House, New York, 1989, pp. 7-11.
- [61] Wold, H. "Partial Least Squares." In *Encyclopedia of Statistical Sciences*, (6), Wiley, New York, 1985, pp. 581-591.
- [62] Wold, H. "Soft Modeling: Intermediate between Traditional Model Building and Data Analysis." *Mathematical Statistics*, (6), 1982, pp. 333-346.
- [63] Zeithaml, V.A., Berry, L.L., and Parasuraman, A. "The behavioral consequences of service quality." *Journal of Marketing*, (60), April 1996, pp. 31-46.

Appendix. Measures used for the constructs

Constructs	Items
Customer Loyalty	1. I'm thinking of using the online shopping mall I currently use among several web sites.
	2. As long as this online shopping mall continues, I would keep using it.
	3. I try to use this online shopping mall whenever I need to make a purchase.
	4. When I need to make a purchase, this online shopping mall is my first choice.
	5. I consider using this online shopping mall frequently.
	6. To me this online shopping mall is the best place to transact with.
	7. This online shopping mall is my favorite retail website.
	8. I'm willing to recommend this online shopping mall to other people.
Customer Satisfaction	1. I'm satisfied with my decision to purchase from the online shopping mall I currently use.
	2. I could achieve the purpose of purchase effectively through this online shopping mall.
	3. The quality of goods/services purchased from this online shopping mall was better than I expected.
	4. My choice to purchase from this online shopping mall was a wise one.
	5. Purchasing from this online shopping mall is enjoyable.
	6. I think it is the best choice to purchase from this online shopping mall.
Calculus-based Trust	1. I know advantages of online shopping mall I currently use.
	2. This online shopping mall provides solutions when problems in transaction occur.
	3. This online shopping mall will not harm me intentionally.
	4. I think that this online shopping mall provides better goods/services compared to others.
	5. I think that risk is not significant while I transact with this online shopping mall.
Knowledge-based Trust	1. Based on experiences, the online shopping mall I currently use is reliable.
	2. Based on experiences, this online shopping mall provides necessary services.
	3. Based on experiences, this online shopping mall will provide reliable goods/services again in the next transaction.
	4. I feel trustworthy towards to information provided by this online shopping mall.
	5. Based on experiences, transaction method of this online shopping mall is safe.
Identification-based Trust	1. The online shopping mall I currently use knows my demands.
	2. This online shopping mall recommends goods I need.
	3. This online shopping mall provides information I want.
	4. This online shopping mall provides services personalized for me.
	5. This online shopping mall provides suitable goods/services for me.