# The Impact of Multi-dimensional Trust for Customer Satisfaction

# Jaewon Choi\*

Techno-Management Research Institute, Korea Advanced Institute of Science and Technology KAIST Business School, 207-43, Cheongryangri2-Dong, Dongdaemun-Gu, Seoul, 130-722, Korea

### Changsoo Sohn

Department of Business Computer Information Systems, G.R.Herberger College of Business, Saint Cloud State University, 720 Fourth Avenue South, St. Cloud, MN, 56301-4498, USA

# Hong Joo Lee

Department of Business Administration, The Catholic University of Korea 43-1, Yeokgok 2-dong, Wonmi-gu, Bucheon, Gyeonggi-do, 420-743, Korea

(Received: March 15, 2008 / Revised: December 10, 2009 / Accepted: December 20, 2009)

#### **ABSTRACT**

Trust is one of the most important aspects of the relationship between retailers and consumers in e-commerce. Users may have concerns about transaction security or personal information leakage when they engage in transactions over the Internet. It can be difficult to attract customers if the retailers or service providers cannot establish trust with their customers. There have been many studies of trust-building mechanisms between customers and e-storefronts. However, little work has been done on identifying the relationships between customer satisfaction, purchase intention, and trust. In addition, trust building occurs in the pre- and post-purchase phases of an e-commerce transaction, as well as gradually over repeated transactions. Thus we distinguish between cue-based trust and experience-based trust.

The objective of this study was to explain the impact of trust on customer satisfaction and purchase intention in relation to e-commerce sites from the perspective of a multi-dimensional concept of trust. We surveyed 350 undergraduate students and obtained 331 responses for analysis. The result of our analysis showed that cue-based trust has a positive relationship with trust based on experience. Although the two concepts of trust have positive relationships with satisfaction, the path coefficient of trust based on experience was higher than that of cue-based trust. In addition, the purchase intention mediates the relationship between cue-based trust and experience-based trust.

Keywords: Cue-based Trust, Experience-based Trust, Trust, Satisfaction, Purchase Intention, e-Commerce

<sup>\*</sup> Corresponding author, E-mail: jaewonchoi@business.kaist.ac.kr

#### 1. Introduction

The extensive range and use of the Internet and the development of information technology have led to many changes taking place in the overall operation of many companies. This is especially true of e-commerce. In rapidly developing e-commerce environments, establishing trust is important for attracting business [27]. Trust is an important condition and one of the most key concepts in the relationship between sellers and buyers [39]. In fact, trust building in e-commerce can be even more important than in other contexts because the risk to personal information may be greater than in existing traditional transactions.

A competitive advantage for online sellers or service providers can be achieved through the building of trust with customers. Trust-building at the initial encounter stage is necessary before customers purchase products or provide personal information by registering with e-storefronts [40]. Trust in the early stages of online shopping can be considered as different to overall trust [38, 40]. The trust that a customer has in an online provider of goods or services is based on various cues from online stores, and this initial level of trust affects the customer's behavior in the early stages of online shopping. For example, cues such as the privacy policy, the site design, awards, and third-party seals or approval are visible to the customer in online shopping sites. Those cues affect the formation of customer trust in relation to the sites before customers actually purchase products [40]. Studies refer to this initial trust, built on the basis of cues from an e-storefront, as *cue-based trust* [40].

As well as cue-based trust in the initial stages, a separate concept of *experience-based trust* may help to explain customer purchase behavior. In e-commerce, customers will tend to repurchase from the same provider if they are satisfied with their previous transactions with that providers [7]. Previous studies have shown that customers tend to build relationships with providers of goods and services through repeated transactions [17-19]. Many studies on trust in e-commerce have identified relationships between customer satisfaction and customer transaction experience [11, 17, 18]. Experience-based trust is most important in the overall transaction process, although cue-based trust is positively related to customer behavior.

There have been relatively few investigations into explaining customer satisfaction in terms of trust and purchase intention. Multi-dimensional studies are necessary

to distinguish between cue-based and experience-based trust in explaining customer satisfaction. Thus, the objective of this study was to identify multi-dimensional trust building mechanisms in e-commerce, and relationships between satisfaction and trust. We separate overall trust into cue-based trust and experience-based trust to investigate integrated trust building mechanisms in the overall purchase procedure. We also examine the relationships between cue-based trust, experience-based trust, customer satisfaction, and the mediation effects of purchase intention.

We review the existing literature in section 2 and explain our research model and study hypotheses in section 3. In section 4, we address the collected data and present the result of our analysis. In section 5 we present some discussion of our results, and our conclusion is in section 6.

#### 2. Literature Review

Trust has become a critical factor in stimulating purchases and transactions in online environments. This has generated many studies on trust. Given that trust can be a rather vague concept [28], we have examined existing studies and have defined trust as the process of gaining mutual loyalty through cooperative behavior and belief in each other on the basis of a third-party guarantee and the promise of privacy and safety. The literature on trust explains the formation of trust, its organizational impacts, and trust-building processes. Trust is established through various complex structures. In addition, trust involves a tendency for affection, and a perception of size and reputation. As a result, it influences satisfaction and attitudinal loyalty [13].

Gefen *et al.* [16] classified the concepts of trust in existing research into four categories: (1) a set of specific beliefs regarding the integrity, benevolence, and ability of another party, (2) a general belief that another party can be trusted, (3) affect reflected in 'feelings' of confidence and security in the caring response of the other party, and (4) a combination of these elements [18]. Table 1 summarizes various studies and their conceptualization of trust in e-commerce. According to Kim and Prabhakar [24], regardless of the underlying discipline of research, confident expectations and a willingness to be vulnerable are critical components of all definitions of trust [24, 36].

Study	Trust Conceptualization		
Gefen [16], Gefen and Straub [17, 19]	A consumer's assessment that the vendor is trustworthy		
Jarvenpaa and Tractinsky [43]	Willingness to rely on the other, given the presence of vulnerability		
Jarvenpaa et al. [20]	A trustor's expectations about the motives and behaviors of a trustee		
Kim and Prabhakar [24]	The willingness of a party to be vulnerable in relation to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party		
McKnight et al. [28]	Trusting beliefs associated with benevolence, competence, honesty, and predictability that lead to a condition of trust with regard to intention to act		

Table 1. Conceptualization of Trust in the Context of e-Commerce

Trust has been conceptualized as a one-dimensional construct for an e-vendor that results in certain behavioral intentions on the part of consumers [18, 19]. However, trust is a multidimensional factor, depending on the underlying context [25]. Rousseau et al. [36] identified three different forms of trust: calculus-based trust, relational trust, and institutional trust. Calculus-based trust emerges from "a calculated weighing of perceived gains and losses" [24]. Relational trust can be built up from repeated interactions, and institutional trust derives from "institutional factors that can act as broad supports for the critical mass of trust" [24]. According to Rousseau et al. [36], calculus-based trust and institutional trust would be more relevant during initial trust building, whereas relational trust would be formulated during the later stages of trust development. Kim et al. [22] classified the dimensions of trust as the consumer-behavioral, institutional, information content, product, transaction, and technology dimension [22]. Wang et al. [40] classified trust as cue-based trust and experience-based trust [40]. Experience-based trust, similar to relational trust, is developed over time and is based on exchange experience [40]. The Wang et al. [40]'s definition of cue-based trust is as follows:

"The (cue-based) trust consumers form based on cues received from an initial encounter with a stimulus. It invokes consumers' beliefs that his or her vulnerabilities will not be exploited."

Wang *et al.* [40] investigated the effects of diverse cues in relation to providing personal information, and discovered that security disclosures and awards from neutral sources have positive effects on formulating cue-based trust [40]. Jarvenpaa *et al.* [20] also considered the perceived size and reputation of e-stores, as factors evoking consumer trust [20]. Kim and Prabhakar [24] identified propensity-to-trust, structural assurances, and relational content as significant predictors of initial trust in the electronic context [24]. Kim [23] divided trust antecedents in the e-commerce context as self-perception-based (security protection, privacy concern, and system reliability) and transference-based trust (third-party seal of approval and referral) [23].

Study	Cues
Jarvenpaa et al. [20]	Perceived size and perceived reputation of an e-vendor
Kim [23]	Self-perception-based: security protection, privacy concern, system reliability Transference-based: third-party seal of approval, referral
Kim and Prabhakar [24]	Propensity-to-trust, structural assurances, relational content (referral)
Wang et al. [40]	Security disclosures, awards from neutral sources

Table 2. Cues Invoking Initial Trust

In addition, some studies on trust have considered trust formation as a cognitive process [11, 22]. Doney and Cannon [11] identified five distinct cognitive processes for developing trust in a business context [11]. Kim *et al.* [22] proposed a process-oriented multidimensional trust formation model to explain the complex dynamics of various elements and forces in a business-to-consumer online exchange [22]. The trust-building process is a cumulative and interactive process [22]. It is cumulative in the sense that the level of trust in the early stages has a bearing on the trust level in later stages [22]. Elements that have effects on trust building are also interactive as one element may restrict other elements and can interact with other dimensions [22].

# 3. Research Model and Hypotheses

In some studies on the nature of trust, trust-building processes are classified as preencounter and post-encounter between the trustee and the trustor [38]. The customer who uses e-commerce may develop initial cue-based trust, based on various cues from websites. This cue-based trust will influence the purchase intention of customers. For that reason, cue-based trust can be a precursor to experience-based trust or ongoing trust. Also in previous studies, trust in online service providers was measured by distinguishing between pre- and post-encounter, which is similar to distinguishing between cue-based trust and experience-based trust [40]. Customers usually perceive certain degrees of risk in purchasing products or services, especially in online situations. Customers will not be able to touch the product directly nor test it before they purchase. In addition, customers may perceive the risk of information exposure during the payment transaction. Consequently, customers often perceive high degrees of risk in online transaction [12]. Building on that previous work, this study defines experience-based trust as the trust that customers acquire through repeated transactions with an online store.

Figure 1 shows our research model. This model analyzes the routes to customer satisfaction due to cue-based trust and/or experience-based trust with or without purchase intention.

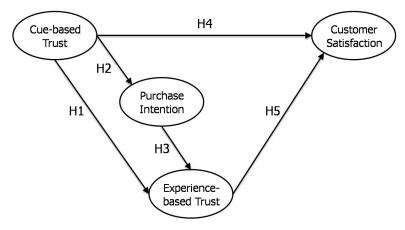


Figure 1. Research Model

Customers who use online stores acquire cue-based trust through various cues before they make transactions. Once cue-based trust is built, customers build experience-based trust through the experience of dealing with online stores. For this reason, cue-based trust precedes experience-based trust. Therefore, each trust construct will be different in terms of timing, and cue-based trust will be ahead of experience-based trust. Thus we established a hypothesis regarding the relationship between cue-based and experience-based trust as follows.

H1: Cue-based trust is positively related to experience-based trust.

Trust is the concept that influences purchase intention [19]. In the online environment, trust acts as the mediating variant for the formation of purchase intention [19]. The theory of reasoned action and the theory of planned behavior presume that volitional behavior is determined by intentions to act. One major determinant of intentions is the actor's attitude towards the behavior [4]. If the buyer believes that a seller is benevolent, competent, honest, and predictable, the buyer is likely to develop a purchase intention with regard to an online store. Trust involves a willingness to accept vulnerability, based on positive expectations of the intention or behavior of another [36]. Also, trust involves a willingness to rely on an exchange partner in whom one has confidence [31]. Therefore, trusting beliefs will impact positively on purchase intention. Thus we established hypotheses regarding the relationship of purchase intention, cue-based trust, and experience-based trust as follows.

H2: Cue-based trust is positively related to purchase intention.

H3: Purchase intention is positively related to experience-based trust.

According to many related studies, trust is related to customer loyalty or satisfaction [1, 10, 15, 40]. In addition, a customer's post-purchase behavior to a brand develops through a match between expectations and perceived performance [10]. Anderson, Fornell, and Lehmann [1] defined satisfaction as "an overall evaluation based on the total purchase and consumption experience with a good or service over time" [1]. Customer satisfaction can be assumed to be formed through trust. Since trust can be measured on the basis of cue-based trust and experience-based trust in relation to the pre-encounter and post-encounter with a seller, respectively, cue-based and experience-based trust can therefore affect overall customer satisfaction [40]. Also, trust is the core component of the relationship-marketing field, and we can assume that trust is required to satisfy customers [15]. Therefore, this study suggests that customer evaluations before transactions will have a direct influence on customer satisfaction. In the same way, experience-based trust after transactions will have a direct influence on customer satisfaction. Hypothesis 4 and 5 are stated as follows.

*H4:* Cue-based trust is positively related to user satisfaction.

*H5: Experience-based trust is positively related to user satisfaction.* 

# 4. Research Methodology

This research used a survey for testing our hypotheses. Questionnaires were composed of 30 items and used 7-point Likert scales. Each item in the questionnaires was derived from existing literature (see Table 3). The collected data were analyzed using exploratory factor analysis (EFA) to check each dimension, and then the convergent and discriminant validity were evaluated through confirmatory factor analysis (CFA). After testing the validity, reliability testing was conducted with an internal consistency test (Cronbach's  $\alpha$ ). Finally, we conducted a structural equation modeling analysis to verify the proposed research hypotheses.

Number Dimensions Sources of items 3 Cue-based trust Wang et al. [40] Gefen and Straub [17, 18], Corbitt et al. [9], Gefen [16], Experience-based 7 Doney and Cannon [11], Garnesan [14], Morgan and trust Hunt [32] Purchase Intention 3 Gefen and Straub [19], Jarvenpaa et al. [21] 5 Satisfaction Oliver [33], Garbarino and Johnson [15] Demographics 12

Table 3. Sources for Questionnaire Items

The test population was composed of customers with online purchasing experience, and a sample of 350 undergraduates was randomly selected. Before starting the main survey, we conducted a pilot test with 30 samples. The survey material was revised to improve reliability and validity based on the results of this pilot test. Of the 350 questionnaires distributed, 347 were returned. Of these, 16 questionnaires were excluded because they contained invalid responses; this left 331 questionnaires for the analysis.

This study checked the validity for each dimension of cue-based trust, experience-based trust, purchase intention, and satisfaction in two stages. The first stage was implemented to check the construct validity using EFA, and the second stage was implemented to confirm the identified factors using CFA by checking convergent

and discriminant validity. Table 4 summarizes the EFA result and shows that this study has construct validity. After the EFA, two items in the experience-based trust and satisfaction items were deleted because they were difficult to explain, due to incorrect loading. The questionnaires of this study were reliable because they had Cronbach's  $\alpha$  values of at least 0.8.

Table 4. Proposed Dimensions and Extracted Dimensions of measure

Proposed Dimensions		Extracted Dimensions		
Dimensions	Items	Factor Loading	Factor	Cronbach's $\alpha$
Cue-based Trust	Shopping mall retailers can be trusted completely.	.865		
	Shopping mall retailers can be counted on to do what is right.	.903	Ctrust	0.888
	Shopping mall retailers can be relied upon.	.831		
	I think that shopping mall retailers are honest.	.646	Extrust	0.860
Experience- based Trust	I expect I can count on retailers of this shopping mall to consider how its actions affect me.	.702		
	I expect that the intentions of the retailers of this shopping mall are benevolent.	.768		
	This shopping mall knows how to provide excellent service.	.715		
	I am quite certain what this shopping mall will do.	.652		
	I think that shopping mall is trustworthy.	.678		
Purchase Intention	I am highly likely to buy products from this shopping mall.	.620		
	I will provide my private information willingly.	.881	Intent	0.802
	I never hesitate to provide my information to shopping malls.	.865		
Satisfaction	I am satisfied with my decision about purchasing in this shopping mall.	.773		
	Purchasing in this shopping mall was a wise selection.	.868	SAT	0.904
	I feel that my purchase in this shopping mall was a good thing.	.879	3A1	0.704
	I am happy because I bought in the shopping mall.	.741		

Figure 2 shows the CFA result for checking convergent validity and discriminant validity. The  $\chi^2$  for the CFA model was 240.058 (d/f = 98). The Q-value of the model of 2.45 of (less than 3) shows that this model is significant [40]. Also, most model fit measures were significant (GFI = 0.911, AGFI = 0.877, NFI = 0.928, RMSEA = 0.066, CFI = 0.956).

Items are loaded significantly on their intended constructs, suggesting convergent validity. Covariances between each construct were not included in confidence interval ( $\Phi \pm 2S.E$ ) as suggested on Table 5 [2]. As a result, discriminant validity was also supported between each construct.

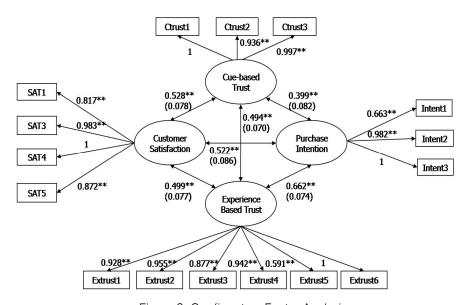


Figure 2. Confirmatory Factor Analysis

Covariance Path	Estimate	Standard Error (S.E)
Extrust ↔ Intent	.499	.077
Ctrust ↔ Extrust	.494	.070
Ctrust ↔ Intent	.339	.082
SAT ↔ Intent	.522	.086
Ctrust ↔ SAT	.528	.078
Extrust ↔ SAT	.662	.074

Table 5. Covariance between constructs

The result of the proposed research model is shown in Figure 3. The fit measures of the proposed model are acceptable. The  $\chi^2$  value of the proposed model is 244.635 and d/f is 99. Since the Q-value ( $\chi^2$ /d.f.) is 2.471 (less than 3), we can accept that model is suitable [41]. The other fit measures are also acceptable (GFI = 0.912, AGFI = 0.878, NFI = 0.926, RMSEA = 0.06, CFI = 0.955).

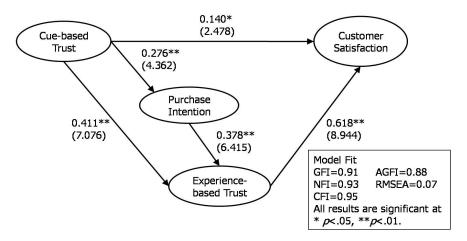


Figure 3. Results for Proposed Model
Table 6. Summary of Results

Hypothesis	Model Path	Coefficient (t-value)	Result
H1: Cue-based trust is positively related to experience-based trust.	Cue-based Trust → Experience-based Trust	0.411 (7.076)	Supported
H2: Cue-based trust is positively related to purchase intention for online store users.	Cue-based Trust → Purchase Intention	0.276 (4.362)	Supported
H3: Purchase intention for online store users is positively related to experience-based trust.	Purchase Intention → Experience-based Trust	0.378 (6.415)	Supported
H4: Cue-based trust is positively related to user satisfaction.	Cue-based Trust → Satisfaction	0.140 (2.478)	Supported
H5: Experience-based trust is positively related to user satisfaction.	Experience-based Trust → Satisfaction	0.618 (8.944)	Supported

Since the path coefficient of H1 is appeared as 0.411 (p =.000), H1(*Cue-based trust is positively related to experience-based trust*) is supported. The path coefficient of H2 is

estimated to be 0.276 (p = .000). The relationship between purchase intention and experience-based trust (H3) is supported because the path coefficient is 0.378 (p = .000).

Customer satisfaction through cue-based trust (H4) is supported, and estimated to be 0.140 (p = .013). Customer satisfaction through experience-based trust (H5) is also supported (0.618, p = .000). Thus, we can say that experience-based trust has a stronger effect on customer satisfaction than cue-based trust. Table 6 summarizes the results of the hypothesis tests.

#### 5. Discussion

Many related studies have investigated trust in a one-dimensional manner, such as from the perspective of overall trust, without considering the trust-building process. This study divides trust into two categories: cue-based trust and experience-based trust. Cue-based trust affected experience-based trust building, as there was a positive significant coefficient in H1. Therefore, dividing trust into cue-based and experience-based trust is more reasonable than using the traditional concept of overall trust, as has been the case in previous studies. The manner of distinguishing cue-based trust and experience-based trust is important.

This is because the result can appear to be different depending on the definition of the two concepts of trust. In this study, we define the differences with respect to the two concepts on the basis of timing between cue-based trust (before purchase) and experience-based trust (after purchase). Based on these definitions, we conclude that a difference exists between cue-based trust and experience-based trust, and that cue-based trust has a positive relationship with experience-based trust.

Also, Cue-based trust can be considered that cue-based trust affects intention of customer by various factors. When customers enter a website, there are some initial stages by many stimulus from the website such as size of the website, reputation for web site and refund policy [8]. If a company suggests these features to their customer as cues for their web store, customer will have purchase intention or satisfaction to web store such as initial evaluation for web store, order cancellation, and so on.

Like cue-based trust, experienced trust has antecedents in customer behavior in web [8]. The factors have effects on experienced trust are navigation functionality, interactivity, and information usefulness [8]. These factors are almost related to the transaction between the customers and web store directly. Once customers have a purchase intention to buy goods by building cue-based trust to web store, they will consider site function such as getting and searching product information they want, delivery status, paying function, Solving process for A/S, and etc. These factors can affect experienced trust, and experienced trust will affect customer satisfaction in time for service to be completed.

This study shows that trust formed from cues acquired before the customer is involved in transactions will probably result in satisfaction. As shown in the results of H4 and H5, each trust concept affects customer satisfaction. In addition, experience-based trust affects customer satisfaction more strongly since its path coefficient is higher than that of cue-based trust. We also identified the mediating role of purchase intention between cue-based trust and experience-based trust in the results of H3 and H4. Therefore, cue-based trust affects experience-based trust through purchase intention and also directly affects customer satisfaction.

Also, purchase intention of customer moderates among cue-based trust and experienced trust. In the web site, customers were stimulated by various cues in web site and made trusting belief to the website. Thus, customer could make purchase intention in their mind by building cue-based trust, and the intention for purchasing affects building experienced trust. Therefore, the role of purchase intention in building process of trust is important as purchase intention can moderate between each trust, and this process can affect customer satisfaction in website context.

#### 6. Conclusion

This study investigated the effects of trust on customer satisfaction and purchase intention in relation to online stores. Trust study has been conducted various forms by many researchers. In previous studies, concepts of trust were suggested trust consist of many concepts for user behavior. In addition, literatures have suggested trust need to be divided by customer behavior and process of making purchase (Wang *et al.* [40], Singh and Sirdeshmukh [38]). The results of this research indicated that building cuebased trust is necessary before transactions take place. Cue-based trust has positive

relationships with experience-based trust, purchase intention, and satisfaction. It is clear that cue-based trust has a precursor role in fostering two important factors of estorefronts. The first is that of impressing new customers with the trustability of the online stores they are navigating; this is important with regard to convincing them to follow through with a purchase. The second is that experience-based trust strongly affects the satisfaction of online customers, and to a greater extent than cue-based trust. Though cue-based trust has a precursor role in building experience-based trust, the overall satisfaction is mainly a result of the service experience.

This study has some theoretical implications. First, this study presented the trust-building process in relation to online stores by dividing trust into cue-based and experience-based trust. Second, the analysis results for cue-based trust showed that it has a precursor role in building experience-based trust, and in increasing purchase intention and satisfaction empirically. Thereby, this study presented a theoretical framework that confirms detached trust dimensions of cue-based and experienced trust and this is different from uni-dimensional trust concept presented in preceding studies.

This study has two main limitations. First, customers in the sample were limited to one age group and location. This makes the results difficult to generalize to other online environments. Second, though this study investigated trust in relation to estorefronts, the survey was paper-based and not done in an online environment.

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