BUILDING BUYER TRUST IN C2C ONLINE AUCTIONS: A TRIANGULAR TRUST

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ABSTRACT

Trust has been identified as a key component in many studies of electronic commerce. However, studies on trust have so far focused on Internet shopping malls and have scarcely looked at trust in C2C Internet auction sites, where trust may in fact be more important, in that transactions occur between a buyer and a seller who have never met before and are unknown to each other. The purpose of this research is to determine which factors play a major role in building trust in C2C Internet auction environments, and to examine how the built-up trust affects consumer participation in Internet auctions. We propose a causal model of trust and its behavioral consequences for C2C Internet auctions. The research model is empirically tested by means of an online survey.

Key words: *Electronic Commerce*, *C2C Online Auction, Trust, Trust Transfer*

Introduction

The Internet promises to revolutionize the shopping and information-gathering choices available to consumers. The Internet auction, one of the most popular types of Internet business model, has gained tremendous popularity since its inception in 1995. As a new type of economic exchange mechanism, it has attracted a great deal of attention from both the mass media and the academy.

The Internet auction is a new form of online exchange in which most transactions occur among entities that have never met. As in traditional exchanges, trust has been considered crucial in the online transaction process—perhaps more crucial, given the impersonality of the online auction environment. The lean nature of the electronic environment, relative to the traditional face-to-face auction, leads to transaction risks rooted in uncertainty about the identity of online trading parties. Another problem for buyers in Internet auctions is uncertainty about product quality. In traditional auctions, prospective buyers can determine the quality of a product by physical inspection, but when bidders view a product listing at an online auction site, they may not have easy access to information regarding the product's quality, and therefore may be unable to judge quality prior to purchase. Buyers in an

Internet auction, lacking the ability to inspect the product physically and relying exclusively on electronic information, thus become vulnerable to additional risks, because of potentially incomplete or distorted information provided by sellers (Lee, 1998).

The difference between the information buyers and sellers possess is referred to as information asymmetry. Information asymmetry may give rise to opportunistic behavior, such as misrepresentation of product quality, which may in turn lead to mistrust or even market failure (Akerlof, 1970). Opportunism in Internet auctions has the potential to erode the foundation of electronic marketplaces and jeopardize the spread of online exchanges. In other words, trust is a catalyst in Internet auctions, and a lack of trust can deter consumer participation in them. Internet auction sites must act purposefully to build trust and thereby overcome consumer perceptions of uncertainty and risk. Understanding the nature and antecedents of trust is, therefore, of central importance for Internet auction businesses.

In fact, trust has been identified as crucial in a great deal of marketing and e-commerce literature (Jarvenpaa et al., 1998; Jarvenpaa & Tractinsky, 1999; Kim & Prabhakar, 2000; Lee & Turban 2001; Pavlou, 2003; Stewart, 1999, Tan & Thoen, 2000). However, studies on trust have so far focused on Internet shopping(Jarvenpaa et al., 1998; Jarvenpaa & Tractinsky, 1999; Lee & Turban 2001; Pavlou, 2003; Stewart, 1999, Tan & Thoen, 2000) or Internet banking (Kim & Prabhakar, 2000; Suh & Han, 2003) in general, and have not by and large looked specifically at trust in Internet auction sites. In fact, trust may be more important in Internet auctions than in general online shopping, where consumers deal with business firms with recognizable brand names, such as Amazon.com. Transactions in C2C auctions often occur between a buyer and a seller who have never met before and are furthermore unknown to each other. Thus it is crucial for Internet auction sites to establish trust among participants. While the trust relationship in Internet shopping is generally dyadic (between a seller and a buyer), in the Internet auction it is triadic (among a seller, a buyer, and an auction site).

Moreover, prior studies have not looked at the relation between trust in the auction site and trust in sellers (suppliers). Specifically, neither the mechanism underlying "trust transfer" from the auction site to its sellers, nor the effect of this transfer on buyer participation in Internet auctions, has been closely examined. Our research focuses on buyer trust in Internet auction sites as well as buyer trust in sellers, and investigates whether trust built by C2C Internet auction sites is transferable to participating sellers.

The purpose of this research is to determine which factors play a major role in building buyer trust in C2C Internet auctions, and to examine how this built-up trust affects consumer participation in the auction. We develop a conceptual model that incorporates the direct effect of trust on trusting behavior (auction participation) as well as the mediation effect of trust between antecedents and trusting behavior. The research model further posits that trust built up by an Internet auction site can be transferred to sellers who post their products in the

auction. We test this research model empirically by means of survey data gathered from consumers with experience of Internet auctions.

Literature Review

Internet Auctions

Progress in information technology, as well as a proliferation of Internet users, has enabled the spread of Internet auctions, which facilitate communications between participants more efficiently than traditional auctions. By separating information from the movement of physical goods, the Internet auction has significantly reduced the cost and increased the speed of trading(Kambil & Van Heck, 1998; Lee, 1998; Van Heck et al., 1997).

Internet auctions can also be classified according to the participating entities: business-to-business (B2B), business-to-consumer (B2C), and consumer-to-consumer (C2C). Since these two venues differ significantly in consumer type and auction rules, the inherent structural differences between B2C and C2C auction will now be articulated. Structural differences are apparently the factor that makes C2C auctions bear a much higher risk of the buyer than B2C counterparts (Oh, 2002). Our research focuses mainly on C2C auctions, where trust is more important than in B2C or B2B auctions. In C2C auctions, trust may help consumers overcome concerns about uncertainty and engage in trust-related behaviors with unknown individuals.

The concept of Trust

The term "trust" requires careful definition because it is so confusing (Shapiro, 1987) and broad (Williamson, 1993). Doney and Cannon (1997) define "trust" in buyer-seller relationships as the perception by a prospective buyer of credibility and benevolence in the target of trust. Jarvenpaa and Tractions (1999) define "trust" as a consumer's willingness to rely on the seller in an online environment and take action in circumstances where such action makes the consumer vulnerable to the seller. McKnight et al. (1998) define "trust" as an individual's beliefs about the extent to which a target is likely to behave in a way that is "benevolent," "competent," "honest," or "predictable" in a given situation.

Lee and Turban (2001) argue that trust is an especially important factor under conditions of uncertainty and risk. Shin (1999) suggests there are three conditions necessary for the building of trust: (1) the welfare of ego influenced by behavior of alters; (2) the trustee cannot control related other; (3) if the trustee betrays, the trustor suffers a heavier loss than the trustee.

Trust is "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other performs a particular action important to the trustor,

irrespective of the ability to monitor or control that other party (Mayer et al., 1995; Jarvenpaa & Tractinsky, 1999)." This definition neatly incorporates characteristics of the electronic commerce environment, and thus is suitable for our research into the Internet auction.

Trust in Internet Auctions

Akerlof (1970) has established the information asymmetry that may give rise to opportunistic behavior. Opportunism is the exploitation of information asymmetry to ones own advantage (Tan & Thoen, 2000). In online auctions, opportunism may also take the form of unjustifiable delay in product delivery, receipt of payment without delivery of the product, and other forms of illegal activity or fraud. Fear of such opportunistic behavior may result in buyer mistrust of online products and services, jeopardizing online auctions. To promote buyer participation in online auctions, trust should be built up so that buyers can comfortably engage in transactions without perceiving risk and/or experiencing uncertainty.

Information asymmetry, which results from uncertainty about product quality and about the identity of trading partners, can increase transaction costs and thus act as a barrier to buyer participation in online auctions. The function of trust in an Internet auction, however, is more complex than in general electronic commerce, because the trust relationship exists among three players: buyers, sellers, and auction sites. Klein and O'Keefe (1999) divide the forms of trust in Internet auctions into two categories: the primary trust relationship between a buyer and a seller, and the secondary trust relationship between an auctioneer and the trading partners. One interesting phenomenon here is that trust can be transferred from one target to another. Specifically, once trust is built up by an Internet auction site, the trust can be transferred to the trading partners, particularly to sellers who post their products in the auction site.

Antecedent Factors of Trust

Our research focuses on initial trust, which is trust by a trustor in an unfamiliar trustee, in a relationship in which actors do not yet have credible, meaningful information about, or affective bonds with, each other (McKnight et al., 1998). We concentrate on initial trust because Internet auction firms need to engender sufficient trust to persuade first-time consumers to transact on their sites. In initial relationships, consumers use whatever information they have to make trust inferences (e.g., the reputation of an Internet auction site).

McKnight et al. (1998) state that three primary factors enable consumers to trust e-channels: propensity-to-trust, word-of-mouth referrals, and institutional characteristics. Initial trust between parties is not based on any kind of experience with counterparts. Without firsthand knowledge of the other party, propensity-to-trust is likely to have a significant effect on a person's initial trust. Menon et al. (1999) investigated the relationship

between trust and intention to use brokerage services, and propose that various factors affect investor beliefs about the trustworthiness of brokerages: investor characteristics (e.g., trust propensity, institutional trust), perceived broker characteristics (e.g., size, reputation), and transaction characteristics (e.g., medium feature). Based on these prior studies, we adopt the following factors as antecedents of trust in Internet auctions.

Propensity-to-Trust *Propensity-to-Trust* is the extent of a person's willingness to depend on others across a broad spectrum of situations and persons (McKnight et al., 2002). Initial trust between parties is generally based on an individual's propensity-to-trust, because initial trust excludes experiential process. Consumers with a high propensity-to-trust assume others are usually upright, well meaning, and dependable. Propensity-to-trust can influence an individual's beliefs and intentions towards Internet auctions and is, therefore, an important feature of our model.

Institutional Characteristics *Institutional Characteristics* are structural assurances offered by an institution—for instance, promises, contracts, regulations, and guarantees—of safety and security in transactions. One example of an institutional characteristic of an Internet auction site is a feedback forum, where users can comment on their buying experiences and share evaluations of the sellers with whom they transact. Institutional characteristics are influential in the initial trust relationship, when information about the trading partners is incomplete (McKnight et al., 1998).

Perceived Reputation and Size Perceived reputation and size are the factors most frequently suggested as contributors to consumer trust (Anderson & Weitz, 1989; Doney & Cannon, 1997). *Perceived Reputation* is the extent to which buyers believe that the selling organization is honest and concerned about its customers (Doney & Cannon, 1997). Reputation requires a long-term investment of resources, effort, and attention to customer relationships. *Perceived Size* is simply how large buyers believe a selling organization to be. Consumers may believe that large Internet auction sites have significant resources invested in business, and thus have much to lose by acting in an untrustworthy way. Reputation and size provide assurance of an Internet auction firm's ability, integrity, and goodwill, thus helping to increase trust, particularly when consumers have not interacted before and hence do not have firsthand knowledge of the auction site (McKnight et al., 1998).

Perceived Benefit A favorable attitude leads in turn to an intention to use the information system, and to the eventual acceptance of the IS technology (Davis, 1986; Davis et al., 1989; Venkatesh & Davis, 2000). In their measures of trust in electronic channels, McKnight et al. (2001) describe "trusting beliefs" as the attitudes of individuals, and "trusting intentions" as the resulting behaviors. Thus we believe that *Perceived Benefit*, which is similar to the perceived usefulness described in TAM, can influence user attitudes (trust) as well as user behaviors (participation in online auctions). Consequently, our research model

proposes that perceived benefit is likely to have an important effect on the intention of a user to participate in online auctions, and also on a consumer's trust in an auction site.

In sum, our research model proposes five antecedent factors for trust in C2C Internet auctions: *Propensity-to-Trust, Institutional Characteristics, Perceived Reputation, Perceived Size, and Perceived Benefit*. These variables include personality-based factors, institution-based factors, and reputation-based factors.

Research Framework

Research Model

This study investigates factors that influence trust—trust in Internet auction sites themselves, and trust in sellers who list products on these sites. Thus our research model involves two types of trust: buyer trust in Internet auction sites, and buyer trust in sellers on these sites. Our research is also designed to investigate how a buyer's level of trust influences his or her intention to participate in online auctions. Based on social network theory and trust theory, our research model proposes the following factors as antecedent variables for trust (see Figure 1). The model also examines "trust transfer" from the Internet auction sites to sellers. Our suggestion is that sellers will realize a trust premium if they post their products on more trustworthy auction sites.

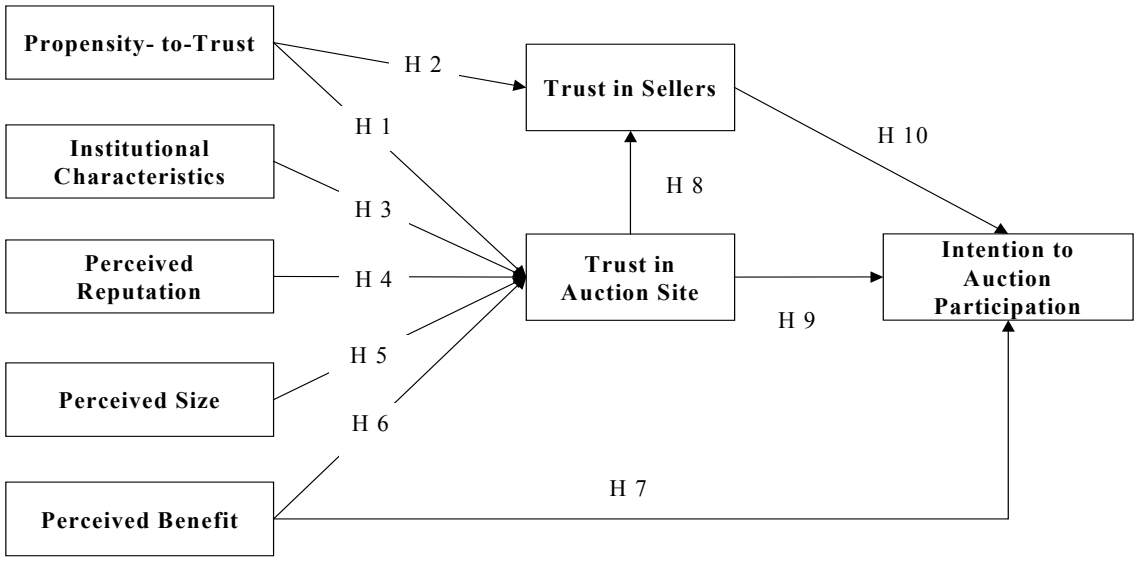

Figure 1. Research model

Variable Construction

The research instrument used in this study includes five constructs that capture antecedent (independent) variables for trust. Our research model includes Intention to Participate in Auction as a dependent variable. Two variables (Trust in Auction Site and Trust

in Sellers) play a mediating role between antecedent (independent) variables and the dependent variable. Appendix 1. summaries the operational definitions of these constructs and identifies their sources.

Data Collection

In order to test our research model and hypotheses, we conducted an online (web-based HTML) survey whose subjects were experienced users of C2C Internet auctions. The questions used in the instrument were borrowed from prior studies in which their validity and reliability had been proven. Because the English-language questions had been translated into Korean, we conducted a pretest with 20 full-time MBA students at Yonsei University to assure the content validity of the questionnaire. Through the pretest, we examined the translated questionnaire to correct obscure or misleading expressions, and confirmed that the final questionnaire appropriately expressed constructs relevant to trust in Internet auctions. A total of 164 people responded to the questionnaire. After data filtering to eliminate problematic responses, 155 effective responses were selected for the analysis.

Research Methods and Results

Measurement Model: Exploratory Factor Analysis

For our data analysis we used a two-step estimation approach, in which the first step analyzes the measurement model and the second estimates a structural model. After completing estimation of the measurement model through an exploratory factor analysis, we conducted a path analysis using LISREL 8.50.

The results of the factor analysis are shown in Appendix 2. As shown in Appendix 2, the questions converged well into the eight factors, verifying that each question measuring one of the five constructs faithfully represents the corresponding concept. We conclude that the questions used in our study achieved convergent validity.

As shown in Appendix 3, the Cronbach's alpha coefficients for all constructs but two are well above the threshold value (0.7). The Cronbach's alpha values of the two remaining measures (Propensity-to-Trust), though below 0.7, are close to the threshold level. Thus the reliability for all the measures is acceptable. Multicollinearity represents a high degree of correlation among constructs. We checked two related measures, tolerance value and variance inflation factor (VIF). The results are presented in Appendix 3. We conclude that our constructs have low multicollinearity.

To test for sample bias, we conducted a frequency polygon analysis for the dependent variable and confirmed that our data shows an approximately "bell-shaped" (normal) distribution of the dependent variable. Thus we conclude that the dependent variable is well

distributed. Because the validity and reliability of the measures were within acceptable levels, we went on to perform a path analysis, using LISREL to test our research hypotheses.

Structural Model: Path Analysis

The research model's goodness of fit was analyzed in order to evaluate the reliability of the model. The several indicators[1] of the LISREL analysis show that our research model has an acceptable goodness of fit, allowing us to proceed to a further analysis ($p<0.05$) of the path coefficients.

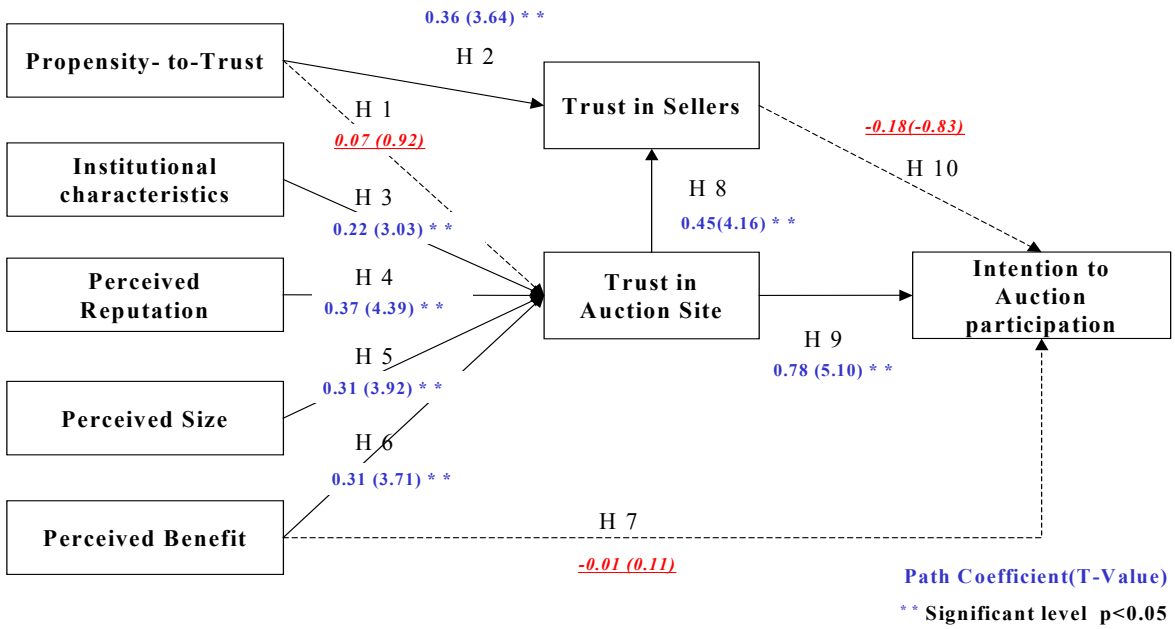

Figure 2. Results of path analysis for research model

The results of the path analysis indicate that seven paths out of ten were statistically significant. Four antecedents of trust directly affected the level of trust in auction sites.

The buyer's propensity-to-trust did not influence the level of trust in an auction site, although it had an impacts on the buyer's trust in sellers. We adopted from Kim and Prabhakar (2000) an operational definition of buyer propensity-to-trust that refers to "willingness to depend on new media" (Internet or Information Technology) rather than to a tendency to depend on other people. Survey respondents showed a relatively high propensity-to-trust–that is, a strong willingness to depend on new media—most likely because all were experienced users of C2C Internet auctions. The average value of Propensity-to-Trust is 2.97 (1 representing the highest propensity-to-trust), and 84.5% of respondents scored lower than 4. We suspect that the relatively high value of Propensity-to-Trust may have biased the

[1] The value of $\chi 2$ was 35.729, the value of GFI 0.945, the value of RMR 0.055, and the value of NFI 0.888.

sample in this dimension and complicated the results. It is worth noting, however, that the link between Propensity-to-Trust and Trust in sellers is significant, implying that "willingness to depend on new media" can influence buyer trust in sellers but not buyer trust in auction sites.

We have found that Trust in Auction Site shows a full mediation effect between Perceived Benefit and Intention to Participate in Auction. In other words, the perceived benefit of an Internet auction does not directly influence the intention to participate in that auction. Perceived benefit can increase the intention to participate only indirectly, by strengthening buyer trust in auction sites. Consumers are not willing to participate in an Internet auction just because they perceive benefits to online auctions. Only when they trust an auction site will consumers who perceive such benefits purchase products through the site. Given our results, we can say with confidence that buyer trust in an auction site significantly influences their intention to participate in an online auction—indicating that Trust in Auction Site plays an important role as a mediating variable.

However, Trust in Sellers does not on its own influence Intention to Participate in Auction. One possible explanation is that, unlike the buyer-site relationship, the buyer-seller relationship is short-term in C2C auctions. Consumers view their relationships with sellers as a short-term one, and thus trust in sellers may not influence their intention to participate in online auctions. It should be noted that our research results strongly support the notion of "trust transfer": trust built up by an auction site can be transferred to sellers who post their products on that site.

Conclusions

In this study, we have proposed a causal model of trust and of its behavioral consequences in the context of C2C Internet auctions. Using a research model empirically tested through an online survey and verified through a two-stage statistical analysis, we have arrived at several key findings. First, trust plays a pivotal role in facilitating transactions in a C2C online auction environment. Transaction risks are more salient in C2C online auctions than in general B2C electronic commerce, because consumers hesitate to transact with online sellers when they are uncertain of product quality and of the identity of the seller. Thus trust plays a central role in helping consumers overcome perceptions of risk and purchase products in online auctions. Second, institutional characteristics, perceived reputation and size, and perceived benefits all have significant effects on a buyer's initial trust in an online auction site. One important insight that emerges from this research is that it is indeed possible to create initial trust in buyers who have not had prior interactions with an auction site. Online

auction firms can build up trust by strengthening institutional safeguards and by enhancing the reputation and size of their sites.

Third, while perceived usefulness has been known to influence consumer behavior (acceptance) of a new technology in the TAM, the analogous construct, perceived benefit, is not on its own enough to influence consumer behavior in C2C online auctions. Consumers, though they may perceive benefits in an Internet auction, will participate in those auctions only when they trust the Internet auction site. Thus trust plays a full mediating role between perceived benefit and intention to participate in C2C online auctions. Finally, by distinguishing buyer trust in sellers from buyer trust in Internet auction sites, we have been able to verify that "trust transfer" does occur. Most sellers who list their products in C2C auctions have no brand name and are generally unknown. Consumer fears of an unfamiliar seller's opportunism deter them from purchasing products from those sellers. Once an online auction site has built up buyer trust, this trust is transferable to sellers, making consumers more comfortable about conducting transactions with unfamiliar sellers.

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Appendix 1. Constructs and operational definitions of variables

Constructs	Operational definition	Number of items	Source
Buyer's Propensity-to-Trust	▪ I am cautious when using new technologies. ▪ If possible, it is best to avoid using new technologies for transactions. ▪ In dealing with a new business, one is better off being cautious until the business has provided evidence that it is trustworthy.	3	▪ Kim & Prabhakar (2000)
Institutional Characteristics	▪ The auction site has clearly provided statements about or logos implying transaction security. ▪ The auction site guarantees against any monetary losses that might occur due to purchases made through the site. ▪ The auction site has clearly stated policies about the proper use of personal and financial information collected when purchasing through the site. ▪ The auction site has clearly stated policies protecting against fraud resulting from use of the site. ▪ The auction site has clearly stated policies about procedures for claiming a refund.	5	▪ Kim & Prabhakar (2000) ▪ Yoon (2000)
Perceived Reputation	▪ This auction site is concerned about customers. ▪ This auction site is easy to use. ▪ This auction site is well known. ▪ This auction site is very reliable.	4	▪ Jarvenpaa & Tractinsky (1999) ▪ Kim & Prabhakar (2000)
Perceived Size	▪ This auction site is a large site. ▪ There is a large number of sellers that post products on this auction site. ▪ There is a large number of consumers who participate in this auction site.	3	▪ Jarvenpaa & Tractinsky (1999)
Perceived Benefit	▪ I believe that using an Internet auction enables me to make economical purchases. ▪ I believe that using an Internet auction reduces my transaction costs. ▪ I believe that using an Internet auction enables me to easily buy rare products. ▪ I believe that using an Internet auction enables me to inexpensively purchase costly products.	4	▪ Kim & Prabhakar (2000) ▪ Kim et al.(2000) ▪ Turban (1997)
Trust in Auction Site	▪ Sustainability of Internet auction services ▪ Reliability in buying product/service ▪ Retention of buyer's transaction record ▪ Security of customers' confidential information	4	▪ Kim & Prabhakar (2000) ▪ Jarvenpaa & Tractinsky (1999)
Trust in Sellers	▪ Level of fulfillment of seller's promise ▪ Reliability of sellers enrolled in the auction site ▪ Level of sellers' credit	3	▪ Kim & Prabhakar (2000) ▪ Gwon et al., (2000)
Intention to Participate in Auction	▪ Intention to participate on an ongoing basis in an auction to buy ▪ Intention to participate on an ongoing basis in an auction to sell ▪ Intention to recommend Internet auctions as a purchasing channel	3	▪ Jarvenpaa & Tractinsky (1999) ▪ Menon et al., (1999) ▪ Yoon (2000)

Appendix 2. Results of exploratory factor analysis

Scale item	Independent variables				
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
PTT1	-0.061	-0.238	-0.080	0.080	**0.736**
PTT2	0.050	0.202	0.146	-0.029	**0.752**
PTT3	0.039	-0.301	-0.093	0.054	**0.848**
IC1	0.048	0.261	**0.631**	-0.065	-0.118
IC2	0.065	-0.083	**0.701**	0.310	-0.081
IC3	0.125	0.125	**0.796**	0.020	-0.021
IC4	0.149	0.021	**0.830**	0.022	0.083
IC5	0.376	0.011	**0.545**	0.022	0.083
PR1	**0.616**	0.399	0.197	0.079	0.078
PR2	**0.842**	0.145	0.093	0.228	-0.131
PR3	**0.831**	0.136	0.213	0.079	0.121
PR4	**0.873**	0.112	0.148	0.235	0.027
PS1	0.150	**0.843**	0.219	0.121	-0.151
PS2	0.219	**0.859**	0.019	0.096	-0.086
PS3	0.137	**0.833**	0.032	0.142	-0.078
PB1	0.083	0.239	0.075	**0.826**	0.019
PB2	0.143	0.340	0.101	**0.772**	0.022
PB3	0.267	-0.069	-0.041	**0.566**	-0.020
PB4	0.081	-0.083	0.106	**0.783**	0.075

PTT: Propensity-to-Trust, IC: Institutional Characteristics, PR: Perceived Reputation,
PS: Perceived Size, PB: Perceived Benefit

Scale item	Mediating and dependent variables		
	Factor 1	**Factor 2**	**Factor 3**
TOAS1	**.645**	.007	.289
TOAS2	**.507**	.506	.284
TOAS3	**.860**	.003	.186
TOAS4	**.658**	.305	.007
TOS1	.001	**.827**	.003
TOS2	.113	**.862**	.004
TOS3	.252	**.683**	.009
IOAP2	.196	.004	**.883**
IOAP3	.123	.108	**.883**

TOAS: Trust in Auction Site, TOS: Trust in Sellers, IOAP: Intention to Participate in Auction

Appendix 3. Results of reliability and multicollinearity test

Variables	# of Item	Cronbach's Alpha	Tolerance	VIF
Propensity-to-Trust	3	0.6885	**0.893**	**1.1**
Institutional Characteristics	5	0.7786	**0.744**	**1.3**
Perceived Reputation	4	0.8718	**0.595**	**1.7**
Perceived Size	3	0.8845	**0.706**	**1.4**
Perceived Benefit	4	0.7683	**0.744**	**1.3**
Trust in Auction Site	**4**	**0.7267**	**0.529**	**1.9**
Trust in Seller	**3**	**0.7417**	**0.719**	**1.4**
Intention to Participate in Auction	3	0.8898	-	-