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Sellers' Trust and Continued Use of Online Marketplaces*

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Abstract

Despite the fact that more and more people are selling things online, the community of sellers is under-investigated by information systems researchers. This research explores the role of sellers' trust in the continued use of online marketplaces. This research differentiates between the sellers' trust in intermediaries and their trust in the community of buyers. In addition, the concept of trust is examined with a balanced view of cognitive and affective trust. A research model is developed. Empirical data collected from sellers at uBid.com confirm the research model and hypotheses. The findings show that, for online sellers, (1) both cognitive and affective components of trust matter; (2) trust in the intermediary impacts trust in the community of buyers through the trust transference mechanism; (3) trust influences sellers' retention to online marketplaces indirectly via perceived usefulness and perceived enjoyment of using online marketplaces; and (4) perceived enjoyment is an important antecedent of sellers' retention. This research has implications for information systems research and practice.

Keywords: Trust, online selling, sellers, enjoyment, survey.

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Sellers' Trust and Continued Use of Online Marketplaces

1. Introduction

Advances in information technologies, specifically Web-based technologies, have given people an unprecedented opportunity to sell things to a large number of potential buyers around the world. According to a survey conducted in 2005, 17 percent of American Internet users — about 25 million people — have sold something online, primarily through online marketplaces.¹ The same survey also indicated that despite the apparent promise of online selling, online auctions, which are the primary venue for online selling, rank first in Internet fraud. The National Consumer League (NCL) estimates that there were 30,720 online auction complaints in 2005, and an average loss of \$1,155 per complaint. Both buyers and sellers in online markets are victims of Internet fraud.

Because of the risks of online selling, trust is crucial for online buyers and sellers to initiate and continue online selling activities. As a result, a significant number of information systems (IS) studies have examined trust in e-commerce (e.g., Gefen et al., 2003b; Komiak and Benbasat, 2006; Mcknight et al., 1998; Pavlou and Gefen, 2004). Prestigious IS journals have also devoted several special issues to deepen our understanding of trust (e.g., the *Journal of Management Information Systems* (24:4) special issue on "Trust in Online Environments," *MIS Quarterly's* forthcoming special issue on "Novel Perspectives on Trust in Information Systems," etc.). However, a review of prior IS studies on trust in e-commerce reveals that most of them are conducted from the buyers' perspective. That is, IS researchers have traditionally focused on buyers' trust and how to protect buyers from online fraud. Online sellers have thus far received much less attention. In light of the fact that more and more people sell things online, the sellers' perspective is of great value to both IS researchers and practitioners.

Seller's trust is a concern for e-commerce. Two pre-conditions need to be met in order for trust to come into play: the trustor's dependency on and lack of control of the trustee (Gefen, 2004; Rousseau et al., 1998). First, sellers, in charge of selling things and making selling decisions for themselves or their organizations in online marketplaces, rely on the intermediary (i.e., the service provider) and buyers to complete their businesses. This implies that sellers are dependent on the intermediary and buyers for their business. Second, sellers cannot fully control the intermediary and buyers. For example, buyers often fail to send the payment on time, may communicate ineffectively, behave in unfriendly ways, or have unreasonable disputes with the sellers over the quality of a product. What makes sellers more vulnerable is that they routinely engage in transactions with unfamiliar buyers: about 89 percent of all seller-buyer pairs conducted just one transaction and 98.9 percent conducted no more than four (Chong et al., 2003; Resnick and Zeckhauser, 2002). Hence, familiarity with specific buyers — an important building block of trust (Zucker, 1986) — is difficult to achieve in an online marketplace. Therefore, sellers — who rely heavily on buyers and intermediaries but have little overt control over them — need trust to continue their transactions on an online marketplace. In fact, the Professional eBay Sellers Alliance claimed, "The integrity [one of the major components of trust] of the eBay marketplace is the single largest issue challenging their [sellers'] businesses on eBay."²

The importance of studying sellers' trust — given that there already exists a large body of research on buyers' trust — lies in the fact that sellers' trust is essentially different from that of buyers. First, sellers and buyers base their trust on different aspects and features of e-commerce websites. Sellers and buyers visit different web pages and follow different procedures designed for, respectively, selling and buying products. Buyers primarily follow the shopping cart procedure, whereas sellers interact mainly with web pages designed to facilitate online selling. Given that the content and layout of e-commerce web pages have a significant impact on one's trust in the intermediary maintaining these pages (Cyr, 2008; Flavian et al., 2006; Wang and Emurian, 2005), sellers and buyers, interacting with different web pages within the same company website, may have radically divergent views regarding the trustworthiness of the same service provider.

¹ PEW Internet & American Life Project: http://207.21.232.103/pdfs/PIP_SellingOnline_Nov05.pdf.

² http://www.gopesa.org/inr_stmt.cfm, June, 2006

Second, a policy change initiated by the intermediary can result in different, and possibly conflicting, reactions from sellers and buyers. For instance, in a move aimed at attracting more buyers, eBay.com announced several changes in early 2008. It changed its fee structure, resulting in lower benefits for many sellers. Also, eBay changed its website so sellers could no longer leave negative feedback for buyers, which, while pleasing to buyers, reflected the low benevolence (an essential basis for trust building) of eBay toward sellers. As a result, sellers continued migrating to other online marketplaces.³

Third, sellers and buyers rely on different institutional mechanisms, another important source of trust (Zucker, 1986). Institutional mechanisms are legally binding arrangements created by third parties to protect the transacting parties against potential risk of loss (Zucker, 1986). In e-commerce the most common institutional mechanisms are online credit card guarantees and online escrow services (Pavlou and Gefen, 2004). These credit card guarantees and escrow services usually have separate terms for sellers and buyers, leading sellers and buyers to base their trust on different institutional mechanisms.

In summary, sellers' trust and buyers' trust have different technical, policy, and institutional bases and, thus, can be substantially different. Because of this, findings from prior studies on buyers' trust cannot be simply applied to sellers' trust. Systematic investigations into sellers' trust are needed.

This research attempts to understand sellers' trust and how it, together with other pertinent factors, determines the sellers' continued use of online marketplaces. Specifically, this study is interested in two research questions:

1. What does online sellers' trust consist of? This study approaches this question by examining the different components of online seller's trust and the relationships among them.
2. What are the relationships between online sellers' trust and their continued use of online marketplaces? This study approaches this question by connecting trust and use factors in the Motivational Model.

2. Theoretical Development

2.1. Trust

The importance of trust is obvious. It has been confirmed that trust plays an important role in interpersonal relationships, organizational behaviors, conflict management, and business transactions (Dirks and Ferrin, 2001; Lewis and Weigert, 1985; Williamson, 1975; Williamson, 1993; Zaheer et al., 1998). Despite its importance, it is not easy to conceptualize trust, and there is no agreed upon definition of it. As noted by Hosmer, "There appears to be widespread agreement on the importance of trust in human conduct, but unfortunately there also appears to be an equally widespread lack of agreement on a suitable definition of the construct" (Hosmer, 1995 p.380). Trust has been studied from a wide variety of perspectives, ranging from the psychological to the social. For instance, political scientists and psychologists have treated trust as a psychological state within the individual, whereas sociologists conceive trust as a property of collective units such as ongoing dyads, groups, and collectivities (Lewis and Weigert, 1985). Researchers have also developed different views regarding the structure of trust: some consider trust to be a multi-faceted construct that has distinct components (e.g., McKnight et al., 2002), while some others treat trust as a simpler one-dimensional construct (e.g., McAllister, 1995).

The complexity of defining trust has prompted researchers to develop composite definitions of trust by looking for its "core characteristics." Notable efforts have been taken to synthesize the work on trust in various disciplines to generate an aggregate view of trust. Johnson-George and Swap (1982) asserted that "willingness to take risks may be one of the few characteristics common to all trust

³ CNN, February 9, 2008, "eBay fee hike sparks seller rebellion", http://money.cnn.com/2008/01/31/smbusiness/ebay_fee_hike.fsb/.

situations" (p.1306). Similarly, Mayer, Davis, and Schoorman echoed Johnson-George and Swap's assertion and offered a widely cited definition of trust: "willingness to be vulnerable 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 the other party" (Mayer et al., 1995, p.712). Rousseau and colleagues (1998) also found that vulnerability is the key component of trust, regardless of the context. In the same vein, Gambetta concluded that there is a degree of convergence in the definitions of trust: Trust is a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action (Gambetta, 2000; Williamson, 1993). Hence, this research is consistent with the above research and conceives trust as the *willingness to take risks when uncertainties exist*.

There are both cognitive and affective components in the act of trusting (Johnson-George and Swap, 1982; Lewis and Weigert, 1985; McAllister, 1995; Rempel et al., 1985; Swan et al., 1999; Swan et al., 1988). Cognitive trust is usually referred to as the belief that others "will not take advantage of the situation by behaving in an opportunistic manner, but, rather, will fulfill their expected commitment" (Gefen, 2004, p.264). Specifically, cognitive trust means that "we choose whom we will trust in which respects and under what circumstances, and we base the choice on what we take to be 'good reasons', constituting evidence of trustworthiness" (Lewis and Weigert, 1985 p.970). Cognitive trust stems from a trustor's "*rational expectations* that the trustee will have the necessary attributes to be relied upon" (Komiak and Benbasat, 2006, p.943). Therefore, cognitive trust can be viewed as a set of specific beliefs about the trustee's trustworthiness attributes such as competence (ability of the trustee to do what the trustor needs), benevolence (the trustee's caring, and faith that he or she will act in the trustor's interests), integrity (the trustee's honesty and likelihood of keeping his or her promises), and predictability (the predictability of a trustee's behavior) (Gefen et al., 2003b; McKnight et al., 1998).

Trust also has an affective component, referring to the *emotional bonds* between trustors and trustees (Lewis and Weigert, 1985; McAllister, 1995). Trust involves more than simply cold-blooded rational prediction, it often carries an emotional investment that can run as deep as friendship or love. Trust succeeds where purely rational decisions based on prediction alone would fail because "to trust is to live as if certain rationally possible futures will not occur" (Lewis and Weigert, 1985 p.969). Moreover, the amount of knowledge necessary for generating trust is somewhere between total knowledge and total ignorance: "Given total knowledge, there is no need to trust, and given total ignorance, there is no basis upon which to rationally trust" (McAllister, 1995 p.26). Therefore, we cannot make decisions about whether or not to trust a person based merely on rational information processing. Instead, to make a decision to trust another party, we have to make a "cognitive leap"; knowledge and the rational reasoning based on it serves only as the platform from which the leap is made (Lewis and Weigert, 1985 p.970). Affect plays an important role in this leap.⁴ Specifically, affective trust supplements cognitive trust when complete information about a trustee and/or the situation is unavailable (and, thus, cognitive trust alone is insufficient). In this research, affective trust refers to *the extent to which one feels **secure** and **comfortable** about relying on the trustee*. This is consistent with existing trust studies, including those in current information systems research (Komiak and Benbasat, 2004; Komiak and Benbasat, 2006; Mayer et al., 1995; Swan et al., 1999; Swan et al., 1988).

The conceptual distinctions between cognitive and affective trust are also supported empirically; this is seen primarily in marketing research. Rempel and colleagues (1985) distinguished between "dependability" and "faith" (emotional security) as unique forms of trust. Johnson-George and Swap (1982), on the other hand, examined the distinctions between "reliableness" and "emotional trust," respectively representing the cognitive and affective components of trust. In studying customer trust of salespersons, Swan and colleagues conceived trust as having two components: affect and cognition. They conceived affective trust being conceived as feeling secure or insecure about relying

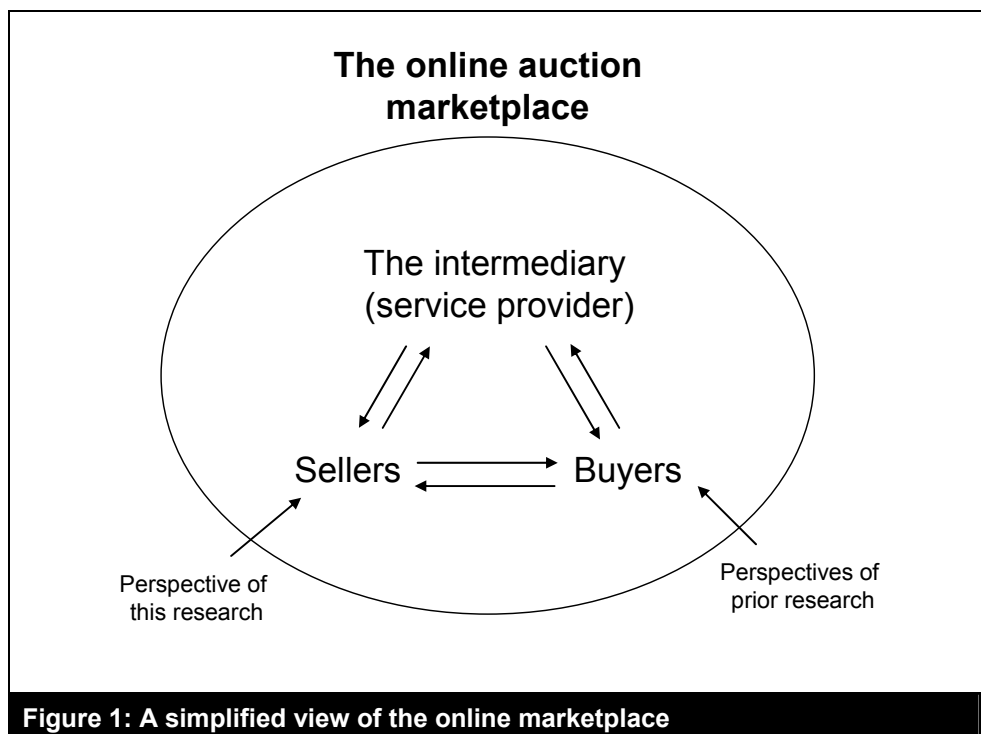
⁴ It is noteworthy that affective trust is not the only thing needed for the cognitive leap. People make the leap also based on cognitive beliefs such as their psychological "make-ups" and the assumption that others in the social world will join in the leap (i.e., "trust in trust") (Lewis et al. 1985).

on the salesperson, and cognitive trust as the belief that the salesperson has both the necessary competence and motivation to be relied upon (Swan et al., 1999; Swan et al., 1988). In IS research, Komiak and Benbasat's seminal work (2004; 2006) explicitly addressed the distinctions between cognitive and affective trust; the latter they labeled "emotional trust".

Despite the fact that researchers have realized that cognitive trust alone is insufficient and that affective trust can also prompt people to engage in trusting behaviors, the contemporary IS literature has primarily focused on cognitive trust and has mostly neglected affective trust (e.g., Komiak and Benbasat, 2006). McKnight et al. (1998) and Gefen et al. (2003b), for instance, explicitly asserted that their studies focused exclusively on cognitive trust and that they felt that affect was irrelevant to business transactions (Komiak and Benbasat, 2006). This research takes the position that affective trust is actually a crucial and indispensable concept in e-commerce.

2.2. Online Seller's Trust

IS research has shown that trust — which has been traditionally observed in interpersonal relationships — is relevant in both computer-mediated interpersonal interactions and human-computer interactions. It has been argued that people can trust impersonal computers (e.g., Reeves and Nass, 1996), computer applications (e.g., Wang and Benbasat, 2005), and information resources on the Internet (e.g., Kelton et al., 2008). Reeves and Nass (1996) argued that people treat computers as social actors and apply social rules to them accordingly. Moreover, this argument does not assume a sophisticated, human-like persona of the technology. Instead, the research shows that people respond socially to not only sophisticated conversational computer agents such as recommendation agents (Wang and Benbasat, 2005), but also to computer systems with simple text interfaces (Nass et al., 1997) and web-based information resources (Kelton et al., 2008). These studies suggest that trust is relevant in online selling where both computer-mediated interpersonal interactions and human-computer interactions are ubiquitous.



An online marketplace includes three key components and their interactions: the intermediary, sellers, and buyers (Pavlou and Gefen, 2004, Tan and Thoen, 2001). Figure 1 depicts this simplified view of the online marketplace. Although by no means does this research exclude the existence of other

stakeholders such as third-party credit card companies and escrow services, often conceptualized as institutional mechanisms (Pavlou and Gefen, 2004), this simplified view of the online marketplace, supported by several prior studies (e.g., Chong et al., 2003, Pavlou and Gefen, 2004, Tan and Thoen, 2001, Tan and Thoen, 2002), renders a convenient vehicle for the current research and outlines the focus of this study. As a result, sellers' trust in an online marketplace can be further deconstructed into two types of trust: trust in the intermediary and trust in the buyers.

It is noteworthy that trust can be conceived in different ways. Trust can be viewed as a "multidimensional" high-order construct that has two subconstructs: trust in the intermediary and trust in the community of buyers (Petter et al., 2007). Alternatively, it can be treated as having two distinct constructs. Each conceptualizing approach has its pros and cons (Howell et al., 2007; Petter et al., 2007). While the former approach can give us a parsimonious model and generate insightful explanations about complex phenomenon (Petter et al., 2007), the latter one can help specify the relationships among the components of trust and their distinct relationships with other factors. Given that the research questions of this study are not only about the relationships between trust and other constructs but also about the relationships among the components of trust, I have chosen the second approach. Specifically, I deconstruct sellers' trust into two distinct components — trust in the intermediary and trust in the community of buyers — and study their direct relationships with use factors and seller's retention of online markets.

Trust in the intermediary

An e-commerce intermediary is a third-party institution that uses Web-based infrastructure to facilitate transactions among buyers and sellers in its online marketplace by collecting, processing, and disseminating information (Pavlou and Gefen, 2004; Sarkar et al., 1995). Examples of e-commerce intermediaries include eBay.com, Amazon.com, and uBid.com, among others. E-commerce intermediaries perform essentially the same functions as traditional markets in matching buyers and sellers, facilitating transactions, and providing institutional infrastructure, but in different ways and with different foci (Giaglis et al., 2002). For sellers, online intermediaries can help them obtain market signals, reduce search costs, discover better prices, deliver products at a lower price, facilitate transaction settlements, and monitor buyers (Bakos, 1998; Giaglis et al., 2002). Sellers need to trust that the intermediary performs these functions honestly, competently, and with the sellers' best interest in mind. This study has adapted Pavlou and Gefen's definition of trust in the intermediary and defines seller's cognitive trust in the intermediary as *a seller's subjective beliefs that the intermediary will institute and enforce fair rules, procedures, and outcomes in the marketplace, competently, honestly, and in the seller's best interest, and if necessary, will provide resources for the seller to deal with buyers' opportunistic behavior*. Applying Komiak and Benbasat's conceptualization of affective trust (2006), this study defines seller's affective trust in the intermediary as *a seller's subjective feeling that relying on this intermediary for conducting business is secure and comfortable*.

Trust in the community of buyers

Another important component of an online marketplace is the community of buyers. Sellers need to trust that buyers can complete transactions with competence, benevolence, and integrity. This research considers trust in the community of buyers rather than trust in specific buyers since, as mentioned earlier, most transactions occur between sellers and buyers who are unfamiliar to each other (Chong et al., 2003; Resnick and Zeckhauser, 2002). Because of this, familiarity with a specific buyer, which is a building block for trust (Gefen, 2000), is hard to achieve in the online context. Trust in the community of buyers serves as a "generalized trust" (one-to-many), which has been conceived of as the major influence on trust in a specific buyer from within that community (one-to-one, also referred to as "dyadic trust") (Pavlou and Gefen, 2004). The emphasis on trust in a trustee community, as opposed to trust in a specific trustee within it, presents "new avenues of research on the topic [of trust]" (Pavlou and Gefen, 2004 p.52). Thus, a seller's cognitive trust in buyers (the community of buyers) is defined in this study as *a seller's subjective beliefs that buyers will behave in accordance with the seller's confident expectations by showing ability, integrity, and benevolence*. A seller's affective trust in buyers is defined as *a seller's subjective feeling that relying on buyers of an online marketplace for businesses is secure and comfortable*.

2.3. Sellers' Use of Online Marketplaces

User acceptance and continued use of various types of e-commerce marketplaces is undoubtedly an important topic to e-commerce developers and researchers. IS researchers have studied this topic from a variety of theoretical perspectives, among which the Technology Acceptance Model (TAM, Davis, 1989; Davis et al., 1989) seems to be dominant (van der Heijden et al., 2003). To date, researchers have referred extensively to the Technology Acceptance Model, or its reference theory, the Theory of Reasoned Action (Ajzen and Fishbein, 1980, Fishbein and Ajzen, 1975), to study user acceptance of e-commerce marketplaces (e.g., Aladwani, 2002; Chen et al., 2002; Devaraj et al., 2002; Gefen et al., 2003a; Gefen et al., 2003b; Lee et al., 2001; McKnight et al., 2002; Pavlou, 2001). According to the simplified TAM (Figure 2), one's behavioral intention to use any given piece of technology is influenced jointly by the perceived usefulness (PU) and the perceived ease of use (PEOU) of the technology. Perceived usefulness is defined as the degree to which a person believes that using a particular technology will enhance his or her performance, while perceived ease of use refers to the degree to which a person believes that using a particular system would be free of effort (Davis, 1989 p.320). Perceived usefulness and perceived ease of use mediate the impacts of other factors that are labeled as "external variables" in TAM (Davis, 1989 p.320).

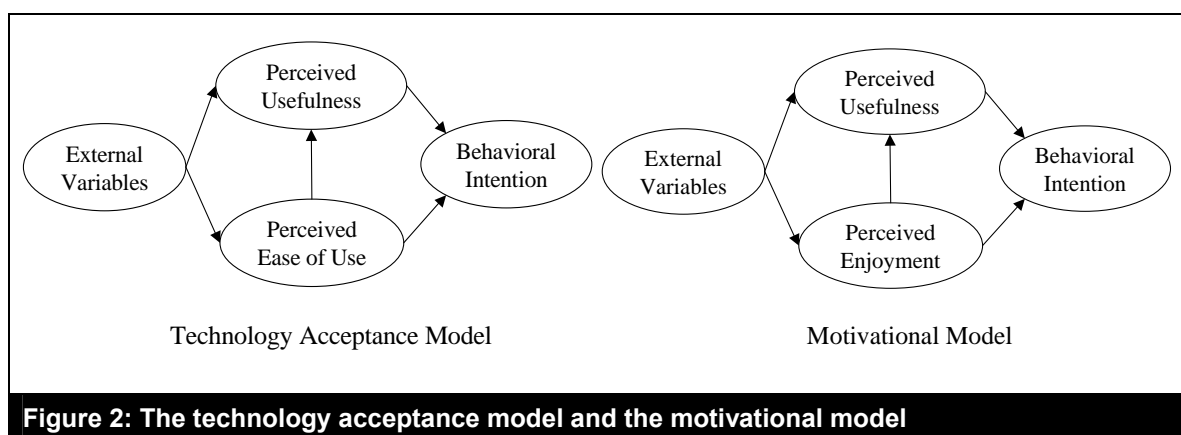


Figure 2: The technology acceptance model and the motivational model

However, the present study refers to the Motivational Model (MM, Davis et al., 1992) of user technology acceptance (Figure 2). MM posits that two factors, perceived usefulness and perceived enjoyment — as extrinsic and intrinsic motivations, respectively — influence users' behavioral intentions. Perceived enjoyment (PE) is defined as the extent to which the activity of using an information system is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Davis et al., 1992). Other researchers have suggested a link between perceived usefulness and perceived enjoyment (e.g., Li et al., 2005; Venkatesh et al., 2002; Yi and Hwang, 2003) that was not in the original MM. This research considers this link.

With no intention to devalue TAM, the usefulness of which has been acknowledged by numerous prior studies in studying user acceptance of various types of information systems, I argue that the motivational model is more appropriate for studying sellers' continued use of online marketplaces. Specifically, perceived enjoyment (PE) is believed to be more important than perceived ease of use (PEOU) in influencing online sellers' continued use of an online marketplace, for the following reasons.

First, PE is a direct motivator of online selling. Keeney (1999) compiled a list of e-commerce values to the customer and categorized these values into two groups: *means objectives* and *fundamental objectives*. Ease of use is considered a means objective, whereas enjoyment is viewed as a fundamental objective of e-commerce customers. That is, ease of use, although critical, is not the fundamental objective customers pursue. Rather, it is merely a means through which fundamental objectives such as enjoyment can be achieved. Similarly, Gefen et al. (2003a) did not propose a direct relationship between PEOU and behavioral intention at all, believing that PEOU did not contribute to the main reasons that e-commerce websites were used. Perceived enjoyment, on the other

hand, is a factor that motivates sellers to conduct transactions in online marketplaces. It has long been observed that bidders (i.e., buyers) often enjoy the bidding process itself quite a bit (Koufaris, 2002; Möllenberg, 2004), but sellers are also able to enjoy the experience of online selling (Beckmann, 2004). In the act of processing bids — uploading products, setting up bidding rules, watching the bidding process, waiting for results, finishing the transactions, and receiving the payments — all of which is just one aspect of online sales, sellers may experience varying levels of enjoyment (Beckmann, 2004). The enjoyment itself can function as an objective and a motivator for online selling.

Second, prior empirical studies demonstrate that with accumulated direct experience with a particular information system, the effect of PE on behavioral intention increases, while the effect of PEOU on behavioral intention diminishes (Sun and Zhang, 2006b; Venkatesh, 2000). That is, PEOU does not appear to have a significant effect on people's behavioral intentions for experienced users. By opening a new bid, people can quickly become experienced with uploading the product information, setting up bidding rules, and dealing with the payment systems. PEOU is not a big concern for them, and thus, will not affect their behavioral intentions to continue to use the online marketplace.

Third, online marketplaces have been made easy for sellers to use regardless of their technical skills. The selling procedure has become almost standardized across many of the online marketplaces. In this sense, online marketplaces/websites are, in essence, not complex systems at all, and PEOU is not a significant consideration in forming behavioral intention for such systems (Sun and Zhang, 2006b).

In summary, the facts that enjoyment is one of the fundamental objectives of online selling, that PE becomes more important for experienced users, and that online systems are not complex systems, all suggest that perceived enjoyment seems to be more salient and relevant in the online selling context than perceived ease of use. In light of this, I employ the motivational model for this research. Accordingly, this study defines the seller's perceived usefulness of selling in an online marketplace as *the extent to which a seller believes that using a specific online marketplace (including both the intermediary and the community of buyers) will enhance his or her performance in selling products*. The seller's perceived enjoyment of selling in an online marketplace is defined as *the extent to which the activity of selling in an online marketplace (including both the intermediary and the community of buyers) is perceived by a seller to be enjoyable in its own right*. Different from trust, perceived usefulness and perceived enjoyment are high-level constructs that aggregate perceptions of the intermediary and buyers.

As for the dependent variable, I use retention of an online marketplace as the indicator of continued use of that marketplace. Sellers' retention in this study has two important components: intention to return and intention to sell. These two intentions, albeit distinctive, are indispensable measures of one's willingness to continue being a seller in a particular marketplace. This study includes both of them and defines sellers' retention (SR) as *the extent to which a seller is willing to **return to** and **sell things in** an online marketplace*. Customer retention is one of the primary goals of all companies, traditional or online (Crosby and Cowles, 1990; Koufaris, 2002; Palmatier et al., 2006). It has been widely accepted that keeping current customers is more cost-efficient than attracting new customers and provides the "most reliable source" of future revenues and profits (Lemon et al., 2001; Reichheld and Scheffer, 2000). This is especially true for e-commerce, where there are many different marketplaces available (e.g., eBay.com, uBid.com, Amazon Auction, etc.) and sellers can switch from one marketplace to another with a relatively low switching cost. A measure of the sellers' retention can help determine what their actual behavior would be in such voluntary contexts. Therefore, how to retain sellers — who are important customers and a major revenue source for online intermediaries — is a critical issue for the success of online marketplaces.

3. The Research Model and Hypotheses

Thus far I have defined four components of sellers' trust (hereafter called trust factors): cognitive trust in the intermediary, affective trust in the intermediary, cognitive trust in buyers, and affective trust in

buyers. I have proposed that the Motivational Model, consisting of perceived usefulness and perceived enjoyment (hereafter called use factors), is an appropriate model to use when studying online selling. Figure 3 is a representation of the research model, which I constructed in four steps. First, I created a baseline model to position trust factors, use factors, and retention. Specifically, trust factors do not have a direct impact on retention; rather, their impacts on retention are mediated by use factors. Second, I explored the relationships among the four trust factors. I found two mechanisms: the mechanism through which cognitive trust influences affective trust and the transferring mechanism through which trust in the intermediary influences trust in buyers. Third, I investigated how trust factors impact use factors. Fourth, I briefly explored the well-studied relationships in the motivational model.

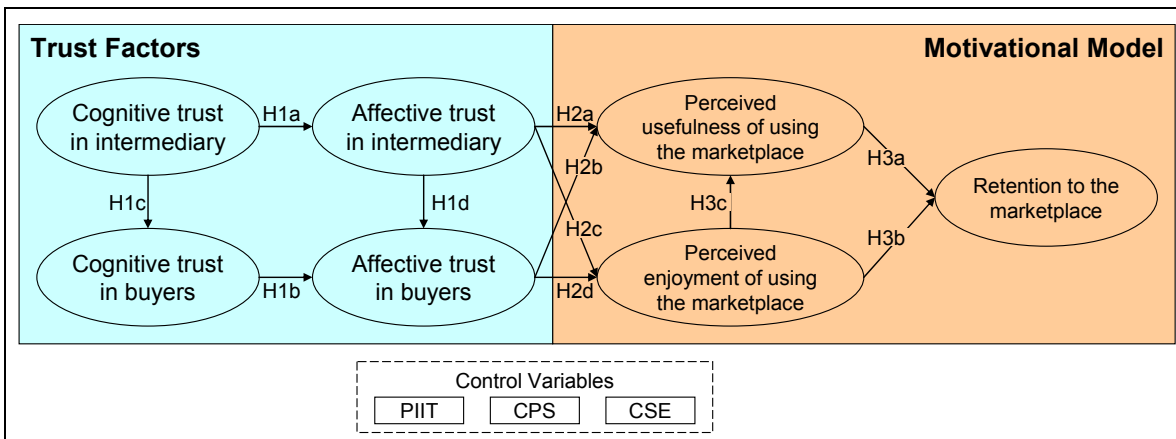


Figure 3: The research model of seller's trust

PIIT: Personal innovativeness in IT; CP: Computer playfulness; CSE: Computer self-efficacy

3.1. The Baseline Model Structure: Positioning Trust and Use Factors

I first built a baseline model (Figure 4) that depicts the most basic relationships among trust factors, use factors, and retention. One of the major differences that distinguish the research model of this study from those in prior research is that the model in this study proposes an *indirect* relationship between trust and behavioural intentions (seller's retention). Previous studies often proposed a direct link between trust and behavioural intention (e.g., Gefen et al., 2003a; Gefen et al., 2003b; Pavlou, 2003; van der Heijden et al., 2003). One reason for this, as argued by Gefen et al. (2003b), is that an e-commerce website is both an example of IT and the channel through which consumers interact with an e-vendor; hence, "technology-based and trust-based antecedents should work together to influence the decision to partake in e-commerce with a particular e-vendor" (p. 53). However, technology-based factors and trust factors working together does not necessarily mean that they all must have direct relationships with behavioural intention. Trust and use factors differ in nature and, thus, may have different relationships with intention.

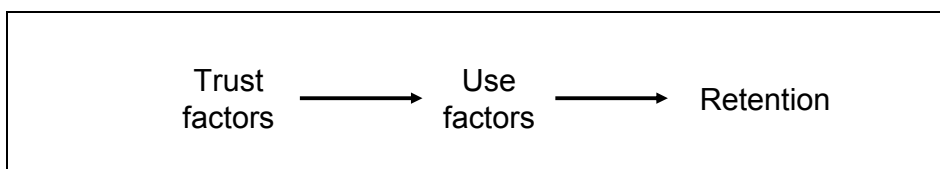


Figure 4: The baseline model

Trust factors and use factors are related to different attributes of an online marketplace and, thus, have different relationships with retention. In studying consumer judgments and preferences, marketing researchers measure product similarity and consumer preference through a variety of product attribute descriptors. These descriptors represent three types of product attributes:

characteristic attributes, beneficial attributes, and image attributes (Lefkoff-Hagius and Mason, 1993). It is argued in this study that trust factors are related primarily to the characteristic attributes of an online marketplace; use factors, on the other hand, are more about the beneficial attributes of that marketplace. Characteristic attributes represent the defining attributes of a product and indicate how a product can be described; thus, they are "product referent" and consumer independent (Cohen, 1979). Therefore, trust factors are, in essence, about relying on specific defining characteristics — the competence, integrity, benevolence, and predictability — of a trustee. These characteristics, taken together, define a trustee's trustworthiness. Beneficial attributes are, on the other hand, about what the product will do for the consumer, and, hence, are task or outcome referent. Unlike characteristic attributes, beneficial attributes are the bridge connecting the product and a consumer's needs, and are more about the "instrumental" value of the product. Perceived usefulness and perceived enjoyment are, by definition, related to using the online marketplace to meet one's needs. These needs may be either extrinsic (usefulness) or intrinsic (enjoyment).

It has been argued that these sorts of beneficial attributes are more directly relevant to one's behavioral intention than characteristic attributes (Lefkoff-Hagius and Mason, 1993). No matter how high a seller's trust in buyers and the intermediary might be, he or she may still not use the online marketplace if he or she does not see any extrinsic or intrinsic benefits from using it. Sellers trust an intermediary and buyers not for the sake of trust itself, but rather for the benefits resulting from such trust.

Prior empirical evidence can be found to support the indirect impact of trust on sellers' retention through perceived usefulness and perceived enjoyment. He et al. found that the impact of trust on continuance intention to seek knowledge in Knowledge Management Systems (KMS) is not a direct impact, but "is fully mediated by perceived usefulness of KMS" (He et al., 2009). He et al. further argued that "if the KMS is perceived as not useful owing to other reasons such as irrelevance to one's specific tasks at hand.... The KMS may still not be used for knowledge seeking even if the community of KMS users are trusted" (p.535). This argument is similar to the distinction between characteristic and beneficial attributes. Ball et al. (2006) also found that there is "surprisingly" little direct impact of trust on loyalty. Ribbink et al. (2004) found that although trust may directly affect customer retention in some cases, it seems to do so in a much less significant manner. Desouza et al.'s study (2006) found that the credibility of the knowledge source does not appear to affect a person's intention to use the source knowledge. This makes sense because people use source knowledge not for its credibility per se; rather, for its usefulness in their own work.

With the above in mind, this research argues that trust factors are the means through which the fundamental objectives such as perceived usefulness and perceived enjoyment can be achieved. Therefore, trust factors do not have direct impact on sellers' retention.

3.2. Relationships among Trust Factors

It has been suggested that cognitive trust leads to affective trust. Cognitive trust is believed to be "more superficial and less special" than affective trust (Johnson-George and Swap, 1982; McAllister, 1995). As argued by McAllister, "Some level of cognition-based trust may be necessary for affect-based trust to develop; people's baseline expectations for peer reliability and dependability must be met before they will invest further in relationships." Specifically, cognitive trust indicates the reliability of the trustee: affective trust is more sophisticated than cognitive trust, requiring a greater investment of time and emotion than cognitive trust does. Only when a track record of reliability and dependability is established is affective trust likely to develop.

IS researchers have also proposed this same relationship between cognitive trust and affective trust, although sometimes from different perspectives. For instance, Komiak and Benbasat (2006) argued that cognitive trust influences emotional trust. They based their arguments on the theory of reasoned action (TRA, Ajzen and Fishbein, 1980, Fishbein and Ajzen, 1975), conceiving of cognitive trust as a belief and emotional trust as an attitude. Therefore, cognitive trust can be said to have a significant effect on emotional trust, just as beliefs have been shown to shape attitudes as depicted in the TRA.

In short, cognitive trust is a prerequisite for affective trust, which involves a great deal of investment of time and emotion in a relationship. Without strongly believing that the trustee will fulfill the expectations for him or her and behave honestly and competently, as predicted, and in the trustor's best interest, the trustor is unlikely to feel comfortable and secure about relying on this trustee.

H1a: A seller's cognitive trust in the intermediary positively influences his or her affective trust in the intermediary.

H1b: A seller's cognitive trust in buyers positively influences his or her affective trust in buyers.

Trust in the intermediary, conceived as a type of institution-based trust (Pavlou and Gefen, 2004), can influence trust in buyers through a trust transference mechanism (Doney and Cannon, 1997; Milliman and Fugate, 1988). Trust can be transferred from the better-known party to a closely associated but less-well-known group or individual (Strub and Priest, 1976). This trust-transference mechanism is a manifestation of the "deeply sociological nature of trust in both its sources and functions in human group life." (Lewis and Weigert, 1985, p.974). Examples from Lewis and Weigert clearly show this point (1985, p.973):

"[A] person often interacts with others who are not known well or even at all. Yet, for example, we do not hesitate to buy a new appliance from a stranger if we know that s/he is acting merely as a representative of a corporation which offers a warranty for its product. Similarly, we will buy or sell a house to someone we do not know, because we know that the power of the State will intervene if necessary to enforce the terms of the legal contract."

In the above examples, Lewis and Weigert label the trust in the corporation and the State *system trust*. In contrast to personal or interpersonal trust, system trust is defined as "trust in the functioning of bureaucratic sanctions and safeguards, especially the legal system" (Lewis and Weigert, 1985, p.973). The above examples posit that system use can be transferred to build trust in the other party, which serves to illustrate the trust transference mechanism.

In the same vein, Milliman and Fugate (1988) found that salespersons can use "proof sources" to build customer trust. A proof source is defined as "a source separate and apart from the salesperson which is used in the sales presentation to substantiate selling points, benefits and/or claims made by the salesperson" (Milliman and Fugate, 1988 p.3). Specifically, trust in the proof sources can be transferred to or help to "compensate" for a lack of trust in the salesperson (Swan and Nolan, 1985). An example of a common type of a proof source is a company's reputation. A salesperson from a well-respected company with a good reputation is more likely to be trusted than a salesperson from a less well-known company. In studying buyers' trust in the intermediary and sellers, Pavlou and colleagues confirmed that buyers' trust in the intermediary influences their trust in sellers (Pavlou and Gefen, 2004). As mentioned earlier, sellers deal with strangers for most bids in online marketplaces. This suggests that the interaction with the intermediary serves as the "system trust" of the sellers and provides a basis for inferring the extent to which the relatively less-known buyers can be trusted. Hence, this study argues that this transferring effect exists for sellers' trust as well, and works for both cognitive trust and affective trust:

H1c: A seller's cognitive trust in the intermediary positively influences his or her cognitive trust in buyers.

H1d: A seller's affective trust in the intermediary positively influences his or her affective trust in buyers.

3.3. Impact of Trust Factors on Use Factors

Trust is required before sellers will perceive an e-commerce marketplace as useful tool. The level of trust is a primary determinant of what people can expect in uncertain situations. This is especially true for business relationships where uncertainties are ubiquitous (Fukuyama, 1995). In using an e-commerce marketplace for their businesses, sellers expect that they will be able to benefit from it. Specifically, sellers expect to sell more products at higher prices, and to be able to sell them faster. Nevertheless, these expectations are unrealistic if there is a lack of trust in the intermediary and/or

the buyers. In other words, if sellers expect that the intermediary and/or buyers cannot transact honestly, competently, as predicted, or in the sellers' best interest, they will not expect that they can truly benefit from the marketplace. Conversely, when sellers believe the intermediary and buyers will conduct transactions honestly, competently, and in the sellers' best interest, they will feel comfortable and secure in relying on them and subsequently conclude that their expected benefits from this marketplace are legitimate.

Affective trust can also increase the perceived likelihood of success in a transaction through past experiences. As mentioned earlier, affective trust is formed based upon cognitive trust and involves a significant investment of time and emotion in one's relationship with the trustee. Affective trust is often based on repeated past interactions with the trustee, which usually, although not always, leads to comfort and security about relying on this trustee (Zucker, 1986). Therefore, affective trust transfers the satisfaction from past exchanges with the trustee and feeds the trustor's expectations for the current interactions. A high affective trust, reflecting satisfying past exchanges with the trustee, increases the perceived certainty of the benefits from current transactions.

Affective trust in the intermediary and the buyers of a specific e-commerce marketplace also can result in lower costs for sellers, which in turn enhance their perceptions of the usefulness of using this marketplace to enhance their sales performance. Feeling comfortable and satisfied with their interactions with the intermediary and buyers, a seller can save on the cost of monitoring their behaviors and the expected cost of complex legal contracts to gain their own fair share in a transaction that goes bad (Fukuyama, 1995; Gefen et al., 2003b; Kumar, 1996). Conversely, a lack of trust on the sellers' part can result in additional costs, as the sellers have to be concerned with uncertainties such as monitoring the intermediary and the buyers, keeping a close look at trivial changes in the legal contracts, keeping track of every stage of the transaction process, and more. All of these will result in higher costs — including not only monetary costs but also time, energy, and opportunity costs — and may make sellers decide that the benefits of online selling are not worth the associated costs. Therefore, this research argues that:

H2a: A seller's affective trust in the intermediary positively influences his/her perceived usefulness of using that marketplace (including both the intermediary and the community of buyers).

H2b: A seller's affective trust in a buyer's community positively influences his/her perceived usefulness of using that marketplace (including both the intermediary and the community of buyers).

Prior research has not addressed the direct impact of affective trust on perceived enjoyment. In this paper, it is argued that affective trust in the intermediary and in the buyers has a significant impact on the perceived enjoyment of using an online marketplace. Positive affective trust in the intermediary and in the buyers frees the seller from the fear of being exploited and from worrying about the potential risks associated with doing business in the marketplace; this means that the seller is more likely to enjoy the bidding process (Zand, 1972). Moreover, affective trust, as an affective concept in nature, can also serve to bias sellers' information collection and processing. Prior research has shown that mood-consistent information is more likely to be paid attention to and to be processed (Fazio, 1986; Fazio, 1990; Mattila and Wirtz, 2000). When a seller feels comfortable and secure about relying on the intermediary and the buyers in an e-commerce marketplace, this feeling directs him or her to positive information regarding the enjoyment of selling things in this marketplace. Conversely, a seller who does not feel comfortable and secure about relying on the marketplace is inclined to pay attention to information that confirms his or her own discomfort and insecurity about this marketplace and, thus, finds it hard to enjoy the bidding process. In short, affective trust is the means through which the fundamental objective, the enjoyment of online selling, can be achieved. This study argues that this effect exists for both affective trust in the intermediary and affective trust in the community of buyers.

H2c: A seller's affective trust in the intermediary positively influences his/her perceived enjoyment of using that marketplace (including both the intermediary and the community of buyers) for selling.

H2d: A seller's affective trust in the community of buyers positively influences his/her perceived enjoyment of using that marketplace (including both the intermediary and the community of buyers) for selling.

3.4. Relationships of Use Factors and Retention

The right side of the research model in Figure 3 is the adapted motivational model that has been well-studied in IS research (Davis et al., 1992). First, perceived usefulness (PU) is shown to significantly influence sellers' retention (SR). When an individual thinks a marketplace is useful, he or she is more likely to have the intention to use it again. Second, perceived enjoyment (PE) influences sellers' retention significantly. The rationale is that individuals who experience pleasure or enjoyment when using an online marketplace are more likely to choose to return to it (Agarwal and Karahanna, 2000; Igbaria et al., 1995; Igbaria et al., 1996; Koufaris, 2002; Teo et al., 1999; Van der Heijden, 2004; Venkatesh et al., 2003). Third, PE has a significant impact on PU in that it increases the deliberation and thoroughness of cognitive processing, leading to enhanced perceptions of the extrinsic motivations such as perceived usefulness (Bagozzi et al., 1999; Batra and Ray, 1986; Venkatesh et al., 2002). Therefore, it is proposed that:

H3a: A seller's perceived usefulness of using an online marketplace for selling positively influences his/her retention of that marketplace.

H3b: A seller's perceived enjoyment of using an online marketplace for selling positively influences his/her retention of that marketplace.

H3c: A seller's perceived enjoyment positively influences his/her perceived usefulness of using an online marketplace for selling.

3.5. Control Variables

Controlling for the variables that may potentially influence the dependent variables in a research model provides a stronger test of the theory underlying that research model (Doney and Cannon, 1997). This study controls for three factors that may also influence retention, including computer self-efficacy (CSE), personal innovativeness in information technology (PIIT), and computer playfulness (CPS). Specifically, computer self-efficacy may affect both perceived usefulness and retention (Compeau and Higgins, 1995). Personal innovativeness in IT may affect perceived usefulness (Lewis et al., 2003) and perceived enjoyment (Agarwal and Karahanna, 2000). Computer playfulness, on other hand other, can have a significant impact on perceived enjoyment (Agarwal and Karahanna, 2000, Sun and Zhang, 2006a).

4. Method

4.1. Survey Administration

To test the hypotheses, I conducted a survey at uBid.com, one of the major online marketplaces. Before implementing the survey, I reviewed the questionnaire with academics and practitioners with knowledge of survey design, trust, and user technology acceptance and made revisions based on their suggestions. Considering that the same people can be both sellers and buyers, I designed the questions to be from the seller's viewpoint. The subjects were repeatedly reminded that their answers should be based merely on their selling experiences. To elicit demonstrations of the subjects' attitudes and beliefs, I designed a simple task that required each seller to log into his/her uBid.com account and report the closing time of the last completed bid.

A contact person at uBid.com sent out the invitation letters to about 1,000 sellers who had each had prior experience with uBid.com. These subjects were randomly drawn from a pool of uBid.com sellers who had completed transactions through uBid.com. One week later, an email was sent to those sellers who had not yet responded as a reminder to fill out the survey. Three gift cards of \$100 each were raffled off as incentives. We obtained 161 usable entries. Table 1 presents the demographic data of the sample.

Table 1: Demographic characteristics of the sample

Variables	Sample Composition		Early vs. late responses comparison* (p value)
Age	Mean=40; std.dev=12; range 22-75		0.425
Gender	Female	24%	0.700
	Male	76%	
Highest Education Level Attained	Graduate Degree	17%	0.757
	Some Graduate Work	6%	
	University or College Degree	36%	
	Some University of College	27%	
	Secondary School or Less	14%	
Number of Previous Bids	1-3	8%	0.275
	4-10	19%	
	More than 10	73%	
Number of Expected Bids within the Next Month	0-3	24%	0.549
	3-10	29%	
	More than 10	47%	
*: Chi-square tests were conducted for gender and education level because they are nominal variables. T tests were used for assessing the other variables.			

To check the non-response bias, I conducted a wave analysis. The sample was split into two groups: early responses (the first 10 percent of the sample) and late responses (the last 10 percent of the sample). I conducted independent sample t-tests and Chi-square tests using SPSS to compare the demographic data between these two groups. The results are summarized in Table 1. None of the demographic characteristics was different between these two groups at the .05 significant level (i.e., $p > 0.05$). Therefore, the non-response bias should not be a significant issue for this study.

4.2. Measures

Wherever possible, this study adopted previously validated measures. I measured cognitive trust by items taken from Gefen et al.'s work on user acceptance of e-commerce (Gefen et al., 2003b). I adopted three items of affective trust measuring how sellers feel "secure," "comfortable," and "content" about relying on uBid.com/buyers from Komiak and Benbasat (2006). Items for perceived usefulness were originally developed by Davis (Davis, 1989, Davis et al., 1989) and adopted by Gefen et al. for the e-commerce context (Gefen et al., 2003b). I took three items measuring for perceived enjoyment from van der Heijden's work (2004). Four items measuring for personal innovativeness in IT and seven items for computer playfulness were from Agarwal and Karahanna (2000). I adopted ten items for computer self-efficacy from Compeau and Higgins' seminal work on computer self-efficacy (Compeau and Higgins, 1995). Except for computer self-efficacy, which has a 10-point Likert Scale, constructs in the research models were measured by a 7-point Likert Scale ranging from strongly disagree (1) to strongly agree (7). Table 2 lists items for the primary constructs in the research model as well as their means and standard deviations.

As mentioned earlier, the measure of sellers' retention (SR) has two components: the intention to use/(re)visit and the intention to sell in the future. Returning to an online marketplace is different from selling things again in this marketplace. I included both intentions to capture the full meaning of sellers' retention. I adopted one item measuring intention to visit from Koufaris's work (2002), then created an item that measures intent to sell.

Table 2: The instrument and descriptive statistics

Construct	Indicator	Mean	SD
Sellers' Retention (SR)	SR1: How likely is it that you will visit uBid.com again in the future?	6.48	1.12
	SR2: How likely is it that you will sell things again at uBid.com in the future?	6.22	1.64
Perceived Usefulness (PU)	PU1: uBid improves my performance in selling products.	4.73	1.77
	PU2: uBid enables me to sell products faster.	4.66	1.64
	PU3: uBid enhances my effectiveness in sales.	4.50	1.90
	PU4: uBid increases my productivity in sales.	4.68	1.78
Perceived Enjoyment (PE)	PE1: I find using uBid to be enjoyable.	4.96	1.62
	PE2: Using uBid is pleasant.	4.99	1.59
	PE3: I have fun using uBid.	4.86	1.76
Affective trust in the Intermediary (ATI)	ATI1: I feel secure about relying on uBid.com for my auctions.	5.83	1.51
	ATI2: I feel comfortable about relying on uBid.com for my auction.	5.68	1.77
	ATI3: I feel content about relying on uBid.com for my auction.	5.07	2.11
Affective trust in Buyers (ATB)	ATB1: I feel secure about relying on buyers at uBid for my business.	4.88	1.73
	ATB2: I feel comfortable about relying on buyers at uBid for my business.	4.94	1.47
	ATB3: I feel content about relying on buyers at uBid for my business.	4.71	1.92
Cognitive trust in the Intermediary (CTI)	CTI1: I know uBid.com is honest.	5.65	1.80
	CTI2: I know uBid.com cares about its customers.	5.61	1.91
	CTI3 (dropped): I know uBid.com is not opportunistic.	5.08	1.85
	CTI4: I know uBid.com is predictable.	4.94	1.87
Cognitive trust in Buyers (CTB)	CTB1: I know buyers at uBid are honest.	4.83	1.66
	CTB2: I know buyers at uBid usually care about sellers.	4.10	1.65
	CTB3: I know buyers at uBid are not opportunistic.	3.84	1.73
	CTB4: I know uBid buyers' behaviors are predictable.	4.40	1.67
	CTB5: I know buyers at uBid are capable of doing business.	5.42	1.38

5. Data Analysis and Results

I assessed the research model using Partial Least Squares (PLS). I chose PLS for two major reasons. First, compared to other SEM approaches (e.g., LISREL), PLS has been shown to be robust in the case of small sample sizes (e.g., Fornell and Bookstein, 1982; Lohmoller.J., 1989)⁵. The sample size (161), although generally acceptable in information systems research, is still fairly small. Second, especially compared to LISREL, PLS remains robust in the face of non-normality (Hair et al., 1992; Hubona, 2009). An analysis of the measurement items shows that the two items for seller's retention deviate radically from normality, with skewness values of -2.728 and -2.901, respectively. The kurtosis values of these two items are also high: 7.636, and 8.757, respectively. The skewness and kurtosis values indicate that the two items for measuring seller's retention are not normally distributed. With this in mind, I chose PLS to accommodate both the relatively small sample size and skewed measurement items.

5.1. Measurement Model

To assess the measurement model, I examined the validity and reliability of the scales. I examined both convergent and discriminant validity. Convergent validity is present when items load highly (loading>0.7) on their associated factors, and constructs have an average variance extracted (AVE) of at least 0.5 (Barclay et al., 1995; Fornell and Larcker, 1981). Table 4 shows that all item loadings but one (CTI3) are larger than 0.70. Table 3 shows that all constructs have an AVE larger than 0.5. Thus, we can conclude that the measures have acceptable convergent validity.

Discriminant validity is demonstrated in PLS when (1) the square root of the average variance extracted (AVE) is greater than the variance shared among the construct and other constructs (i.e.,

⁵ Several recent IS studies have challenged this argument that PLS places minimal demands on sample size (e.g., Marcoulides and Saunders, 2006, Qureshi and Compeau, 2009). This is not the focus of this study and is subject to further examination.

correlations), and (2) indicators load higher on their corresponding constructs than on other constructs (i.e., loadings should be higher than cross-loadings) (Chin, 1998; Compeau et al., 1999). Table 3 shows that the square roots of AVEs are larger than correlations among constructs. Table 4 shows that all indicators loaded more highly on their own constructs than on any other constructs. Tables 3 and 4 present sufficient evidence of discriminant validity of the constructs.

Table 3: Reliability, convergent and discriminant validity coefficients

Constructs	CR	CA	AVE	1	2	3	4	5	6	7
1. Sellers' Retention	0.984	0.967	0.968	0.984						
2. Perceived usefulness	0.952	0.933	0.834	0.436	0.913					
3. Perceived enjoyment	0.931	0.889	0.818	0.398	0.737	0.905				
4. Affective trust in the intermediary	0.949	0.918	0.860	0.325	0.600	0.580	0.927			
5. Affective trust in buyers	0.956	0.931	0.878	0.268	0.420	0.446	0.569	0.937		
6. Cognitive trust in the intermediary	0.864	0.776	0.625	0.290	0.280	0.391	0.616	0.210	0.791	
7. Cognitive trust in buyers	0.891	0.844	0.623	0.022	0.119	0.368	0.365	0.587	0.394	0.789

CR: Composite Reliability; CA: Cronbach's Alpha; AVE: Average Variance Extracted

Table 4: Loadings and cross-loadings

	Seller retention (SR)	Perceived enjoyment (PE)	Perceived usefulness (PU)	Cognitive trust in intermediary (CTI)	Affective trust in intermediary (ATI)	Cognitive trust in buyers (CTB)	Affective trust in buyers (ATB)
SR1	0.985	0.396	0.435	0.252	0.312	0.000	0.245
SR2	0.983	0.386	0.422	0.320	0.327	0.043	0.283
PE1	0.306	0.906	0.685	0.362	0.539	0.429	0.521
PE2	0.416	0.908	0.690	0.505	0.565	0.291	0.292
PE3	0.355	0.900	0.621	0.175	0.464	0.274	0.399
PU1	0.402	0.704	0.966	0.297	0.603	0.131	0.398
PU2	0.425	0.675	0.884	0.185	0.474	0.144	0.464
PU3	0.390	0.699	0.945	0.271	0.548	0.106	0.389
PU4	0.376	0.609	0.853	0.267	0.565	0.050	0.278
CTI1	0.371	0.351	0.342	0.902	0.615	0.314	0.163
CTI2	0.367	0.349	0.218	0.888	0.492	0.302	0.163
CTI3	0.021	0.322	0.136	0.476	0.369	0.341	0.180
CTI4	0.076	0.187	0.138	0.819	0.410	0.285	0.155
ATI1	0.314	0.519	0.554	0.514	0.938	0.317	0.508
ATI2	0.412	0.590	0.614	0.566	0.954	0.306	0.480
ATI3	0.175	0.503	0.499	0.629	0.889	0.389	0.594
CTB1	0.046	0.286	0.142	0.227	0.322	0.876	0.562
CTB2	-0.077	0.424	0.165	0.252	0.276	0.860	0.424
CTB3	-0.038	0.388	0.072	0.427	0.283	0.809	0.396
CTB4	0.045	0.233	0.055	0.245	0.171	0.751	0.570
CTB5	0.104	0.115	0.039	0.413	0.401	0.623	0.322
ATB1	0.212	0.357	0.326	0.121	0.445	0.506	0.928
ATB2	0.305	0.421	0.377	0.215	0.488	0.597	0.954
ATB3	0.231	0.461	0.462	0.238	0.642	0.542	0.928

To assess the reliability, I examined composite reliability and Cronbach's alpha. Cronbach's alpha and composite reliability need to be 0.70 or higher in order to indicate sufficient reliability (Bagozzi and Yi, 1988; Bearden et al., 1993). Table 3 shows that the composite reliabilities and Cronbach alphas for all constructs are larger than 0.70. Thus, the measures have acceptable reliability.

5.2. Common Method Bias Assessment

To assess common method bias (CMB), I conducted a CMB test following the procedure described in Liang et al.'s article (2007). Specifically, a new factor called "method" was included in the research model. This method factor included all the principal constructs' indicators. Then each indicator's variances, as explained by the principal construct and by the method factor, respectively, were calculated and compared. Table 5 shows the results. The indicators' loadings on the principal constructs are all significant at the 0.01 level, whereas most of their loadings on the method factor are non-significant. The variances in indicators explained by their principal constructs (average: 0.781) are much larger than those explained by the method factor (average: 0.009). The ratio of principal variance to method variance is about 86.78:1. The above results show that the method did not contribute substantively to the variances in indicators and, therefore, common method bias was unlikely to be a serious concern for this study.

Table 5: Analysis of Common Method Bias

Construct	Indicator	Substantive Factor Loading (R1)	Variance Explained by the Principal Construct (R1 ²)	Method Factor Loading (R2)	Variance Explained by the Method Factor (R2 ²)
Seller Retention	SE1	0.994**	0.988	-0.021	0.000
	SE2	0.974**	0.949	0.021	0.000
Perceived Usefulness	PU1	0.950**	0.903	0.021	0.000
	PU2	0.865**	0.748	0.023	0.001
	PU3	0.909**	0.826	0.047	0.002
	PU4	0.929**	0.863	-0.099	0.010
Perceived Enjoyment	PE1	0.785**	0.616	0.155*	0.024
	PE2	0.879**	0.773	0.033	0.001
	PE3	1.054**	1.111	-0.192**	0.037
Affective trust in the Intermediary	TAI1	0.979**	0.958	-0.030	0.001
	TAI2	0.807**	0.651	0.099	0.010
	TAI3	0.992**	0.984	-0.065	0.004
Affective trust in Buyers	TAB1	1.030**	1.061	-0.141*	0.020
	TAB2	0.928**	0.861	0.043	0.002
	TAB3	0.857**	0.734	0.092	0.008
Cognitive trust in the Intermediary	TBI1	0.921**	0.848	0.007	0.000
	TBI2	0.984**	0.968	-0.113	0.013
	TBI3	0.198**	0.039	0.299	0.089
	TBI4	0.853**	0.728	-0.037	0.001
Cognitive trust in Buyers	TBB1	0.892**	0.796	-0.018	0.000
	TBB2	0.890**	0.792	-0.012	0.000
	TBB3	0.826**	0.682	-0.011	0.000
	TBB4	0.708**	0.501	0.037	0.001
	TBB5	0.595**	0.354	0.013	0.000
Average		0.867	0.781	0.006	0.009

* p<0.05; ** p<0.01

5.1. Structural Model

The path coefficients and R squares of the dependent variables are shown in Figure 5. Table 6 summarizes the results of hypothesis testing. All hypotheses are supported except one (H2b). As expected, cognitive trust influences affective trust significantly (H1a, H1b). Cognitive trust in the intermediary has a significant effect on cognitive trust in buyers (H1c), whereas affective trust in the intermediary has a significant effect on affective trust in buyers (H1d), indicating strong transferring effects.

Affective trust in the intermediary has a significant influence on both perceived usefulness and perceived enjoyment (H2a and H2c supported). Affective trust in buyers, on the other hand, has a significant impact on perceived enjoyment (H2d supported) but not on perceived usefulness (H2b not supported).

Table 6: Results of hypothesis tests

Hypothesis				β	t value
H1: Hypotheses among trust factors					
H1a (✓)	CTI	→	ATI	0.569***	9.702
H1b (✓)	CTB	→	ATB	0.437***	6.890
H1c (✓)	CTI	→	CTB	0.334***	4.518
H1d (✓)	ATI	→	ATB	0.409***	9.075
H2: Impact of trust factors on use factors					
H2a (✓)	ATI	→	PU	0.223***	3.526
H2b (x)	ATB	→	PU	-0.005(ns)	0.075
H2c (✓)	ATI	→	PE	0.493***	5.348
H2d (✓)	ATB	→	PE	0.167**	3.118
H3: motivational model					
H3a (✓)	PU	→	Retention	0.282***	3.675
H3b (✓)	PE	→	Retention	0.188*	2.485
H3c (✓)	PE	→	PU	0.563***	8.101
Control variables					
Computer playfulness		→	PE	0.212*	2.543
Personal innovativeness in IT		→	PE	-0.010(ns)	0.148
		→	PU	0.120(ns)	1.082
Computer self-efficacy		→	PU	-0.131(ns)	1.515
		→	Retention	-0.122(ns)	1.003
* Significant at $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$					

Hypotheses 3a-3c deal with the motivational model. Not surprisingly, perceived usefulness and perceived enjoyment influence sellers' retention significantly (H3a, H3b supported), and perceived enjoyment has significant effects on perceived usefulness (H3c supported).

As for the control variables, only computer playfulness has a significant impact on perceived enjoyment at the .05 level ($b = 0.212$, $t = 2.543$).

The research model explains 21.7 percent of the variance in retention, 61.3 percent of the variance in perceived usefulness, and 39.9 percent of the variance in perceived enjoyment. Cognitive trust in the intermediary alone explains 32.3 percent of the variance in affective trust in the intermediary and 11.2 percent of the variance in cognitive trust in buyers. Cognitive trust in buyers and affective trust in the intermediary jointly explain 48.9 percent of the variance in affective trust in buyers. The high R squares shown in Figure 5 indicate the robustness of this research model.

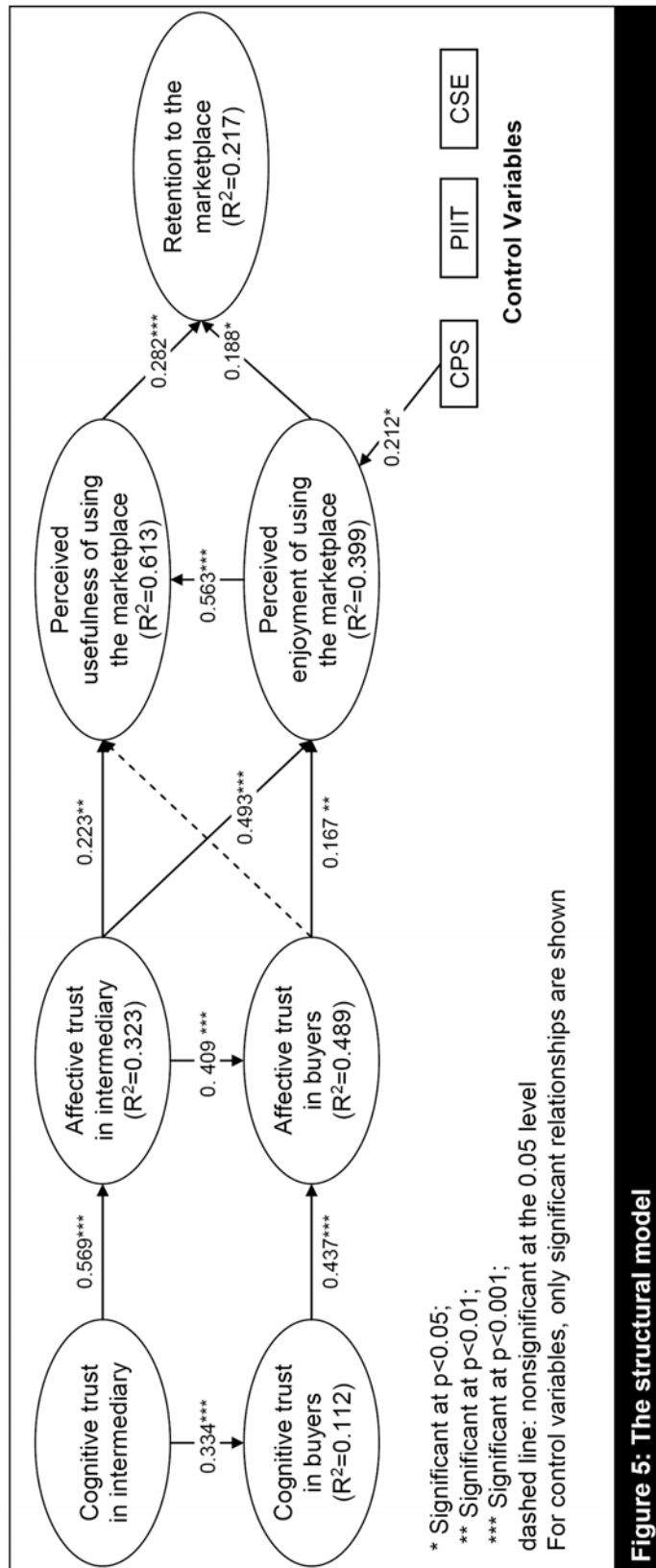


Figure 5: The structural model

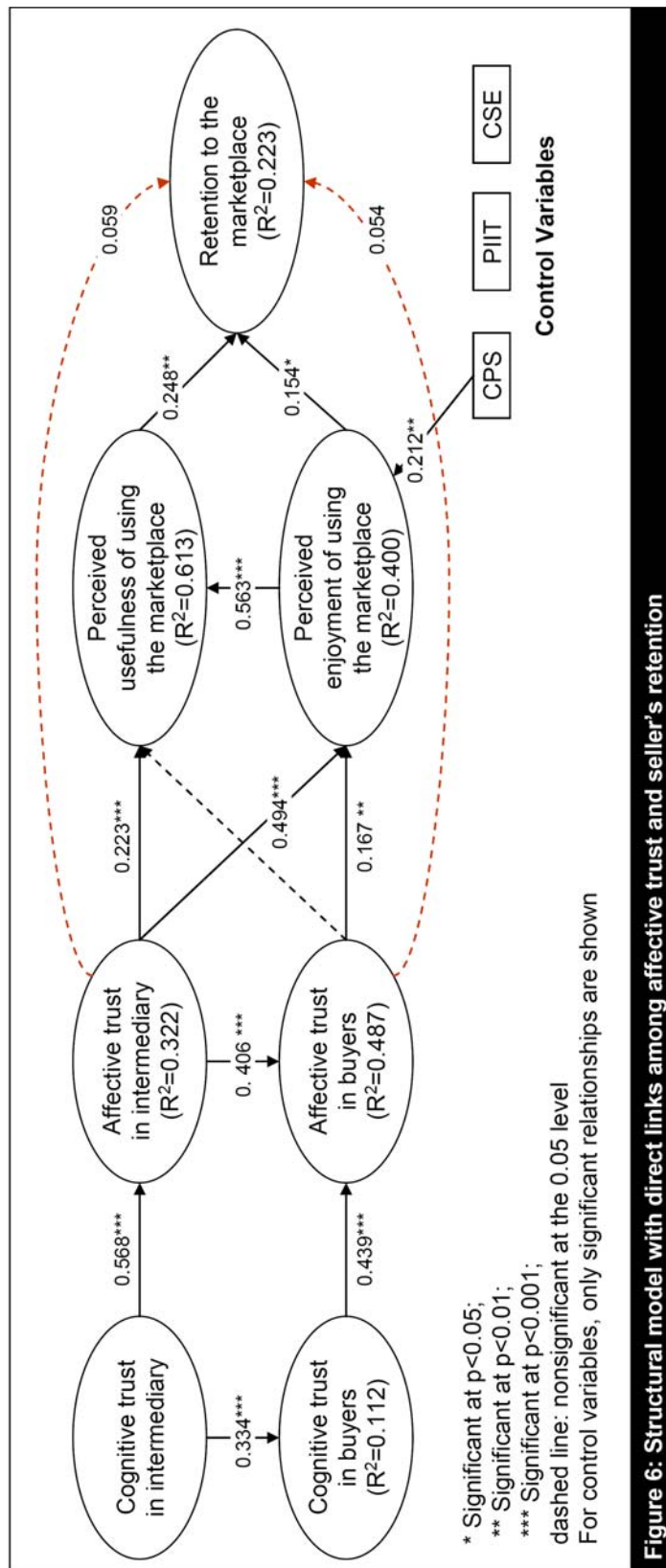


Figure 6: Structural model with direct links among affective trust and seller's retention

5.2. Post Hoc Assessments of Mediating Effects

One of the major arguments of this paper is that the impact of trust on sellers' retention in an online marketplace is mediated by the perceived usefulness and perceived enjoyment of using that marketplace. This section examines that mediating effect. First, two direct links between affective trust in the intermediary (ATI) and affective trust in the community of buyers (ATB) to sellers' retention (SR) were drawn. As Figure 6 illustrates, both links are non-significant.

Given the importance of the mediating effects in the research model, it is necessary to conduct a systematic analysis exploring these effects. Since the research model has more than one mediator, this study refers to the method that Preacher and Hayes (PH) recommended for testing multi-mediator models (2008). It examines the total and direct effects of the independent variable (IV) on the dependent variable (DV), and the indirect effects through the mediators. It also specifies and contrasts the indirect effects of multiple mediators. In addition, the PH method can include more than one IV, each of which can be tested in a separate model. In each model, I chose one of the IVs as the primary IV to be examined, and treated the others as covariates for that test.

Per Preacher and Hayes' suggestions, I elected the bootstrapping strategy for the tests. Bootstrapping is a nonparametric resample procedure that does not impose the assumption of normality of the sampling distribution.⁶ It involves repeatedly sampling from the dataset and estimating the indirect effects of mediators in each resampled dataset. Based on the repeated samplings, an empirical approximation of the indirect effects can be estimated and used to construct confidence intervals for the indirect effects. In the current study, I used the bias-corrected (BC) bootstrap, as Preacher and Hayes recommended. Preacher and Hayes, consistent with prior research (Briggs, 2006; Williams, 2004; Williams and MacKinnon, 2008), have argued that bootstrapping is in general superior to the multivariate product-of-coefficient strategy (the Sobel test) in small to moderate samples. Their results suggested that the BC bootstrap performs best in terms of both statistic power and Type I error rate.

A PH analysis includes an examination of the total and direct effects of the IV on the DV, the difference between which is the indirect effect of the IV on the DV through mediators. The analysis also yields an estimation of the indirect effect of each mediator. In addition, the BC bootstrap will generate a 95 percent confidence interval (CI) for each mediator. If the interval for a mediator does not contain zero, it means the indirect effect of this mediator is significantly different from zero. In addition, a contrast between two mediators shows how their indirect effects can be distinguished in terms of magnitude.

Table 7 shows the results of this study (ATI and ATB as IVs, PU and PE as mediators, and SR as the DV). First, a model is examined, in which ATI is the independent variable (Model 1 in Table 7) with ATB treated as a covariate. As Table 7 shows, ATI does have a significant total effect on SR (coefficient=0.2554, *t* value=2.8081). When the mediators, PU and PE, are introduced, ATI no longer has a significant direct effect on SR (coefficient=0.0374, *t*=0.3718). This means that PU and PE *fully* mediate the impact of ATI on SR. Furthermore, the difference between the total and direct effects is the total indirect effect as mediated through PU and PE, with a point estimate of 0.2180 and a 95 percent BC bootstrap CI of 0.1002 to 0.3983. Since the CI does not contain zero, the total indirect effect is different from zero. An examination of the specific indirect effects indicates that both PU and PE are mediators, given both their 95 percent CIs do not contain zero. The point estimate of the indirect impact through PU is 0.1520, and of that through PE 0.0660. The difference between them is -0.0860. The CI of the contrast contains zeros, indicating that the two indirect effects, of PU and PE, respectively, cannot be distinguished in terms of magnitude. In summary, PU and PE, taken together, fully mediate the impact of ATI on SR with similar magnitudes.

Next, I examine the model that has ATB as the independent variable and ATI as a covariate (Model 2 in Table 7). First, ATB does not have a significant total effect on SR (coefficient=0.1222, *t*=1.3437).

⁶ This study used a SPSS script that was developed by Professors Preacher and Hayes to calculate the bootstrap statistics. This script can be found at: http://www.comm.ohio-state.edu/ahayes/SPSS_programs/indirect.htm.

While some researchers (e.g., Baron and Kenny, 1986) suggested that a significant total effect of the IV on the DV is a prerequisite for testing mediating effect, others (e.g., Collins et al., 1998; MacKinnon, 2000; MacKinnon et al., 2000; Shrout and Bolger, 2002) argued that this is not necessary for mediation to occur. Thus, we can continue to examine the mediating effects of PU and PE. As Table 7 shows, the total indirect effects are significant, with a point estimate of 0.0566 and a 95 percent BC bootstrap CI of 0.0101 to 0.1442. An examination of the specific indirect effects shows that only PE acts as a mediator, since its 95 percent CI does not contain zero. The contrast between PU and PE has a 95 percent CI of -0.0755 to 0.0361, indicating that the indirect effects of PU and PE do not differ significantly, despite the fact that one is significantly different from zero and the other is not. Such "apparent paradoxes" can occur "when one of the specific indirect effects involved in the contrast is not sufficiently far from zero" (Preacher and Hayes, 2008, p. 886), such as PE in this study.

In summary, the analyses show that PU and PE fully mediate the impact of ATI on SR, whereas PE mediates the impact of ATB on SR.

Table 7: Summary of the tests of mediating effects

Total Effect of IV on DV		Direct Effect of IV on DV		Indirect Effects			
Coefficient	T value	Coefficient	T value		Point Estimate	BC 95% Confidence Interval	
						Lower	Upper
Model 1: ATI as the IV							
0.2554	2.8081	0.0374	0.3718	Total	0.2180	0.1002	0.3983
				Mediators	PU	0.1520	0.0569
					PE	0.0660	0.0001
				Contrast	PU vs.	-0.0860	0.0529
Model 2: ATB as the IV							
0.1222	1.3437	0.0656	0.7456	Total	0.0566	0.0101	0.1442
				Mediators	PU	0.0333	-0.0051
					PE	0.0233	0.0021
				Contrast	PU vs.	-0.0100	0.0361
IV: independent variable, DV: dependent variable, BC: Bias-Corrected Bootstrap ATI: Affective trust in the intermediary, ATB: Affective trust in buyers PU: Perceived usefulness; PE: Perceived enjoyment; SR: Sellers' Retention							

6. Discussion

The community of online sellers has to date garnered little attention from IS researchers, despite the fact that online selling has become a popular practice and that trust is such an important issue for online selling due to the frequency of online fraud affecting sellers. This research attempted to understand the conceptualization and composition of online sellers' trust and how it influences online sellers' retention in online marketplaces. An empirical study of uBid sellers confirmed all but one of the relationships proposed in the research model.

6.1. Limitations

It is important to acknowledge the limitations of this study. First, this study recognizes the potential threats of the dual role of online sellers, namely that many sellers may also be buyers. This study tries to control for this problem by asking the subjects to report their own "selling experiences." But, practically speaking, it is difficult to completely dissociate one's selling experiences from buying

experiences. Second, individual sellers and sellers representing organizations were not differentiated. They may have different mindsets. Third, the sample size is relatively small. Given the strong commitment of uBid.com to protect sellers' privacy, this study did not get as many sellers as desired. Although a sample of 161 sellers is generally acceptable, especially considering that PLS has minimal demand on sample size, a larger sample is certainly more desirable. Fourth, the instrument used for measuring sellers' retention seems limited. A two-item instrument was created to measure seller's retention, including one item from Koufaris's study (2002) that was used for measuring intention to visit and a new item to measure intention to sell. It is necessary to systematically develop an instrument for measuring sellers' retention. Fifth, the measures of cognitive trust in the intermediary were limited. As shown in Table 2, the final instrument did not actually include an item for measuring the competence of the intermediary. This item was dropped from the instrument because it loaded very low on its primary construct. In Gefen et al.'s paper (2003b) from which this item was adopted, the item for measuring competence (i.e., the intermediary knows its market) has the lowest loading (0.70) among all the items for trust. The low loadings of the competence in Gefen et al.'s work (2003b) and in the present study may have two implications. First, competence does not seem to be perceived as a significant component of trust by the trustor in an e-commerce context. Second, the instrument itself may have drawbacks that need to be overcome.

6.2. Contributions

The present study has conceptual, theoretical, and methodological contributions to IS research. Conceptually, this study examines the trust of a new group of people: online sellers. Few, if any, prior IS studies have focused on and empirically tested sellers' trust. Given the fact that more and more people are selling things online and that a great deal of uncertainty exists for them in the virtual marketplace, this group of users deserves more attention from IS researchers. In examining the trust of an online seller, this study defined four distinct components of seller's trust: cognitive trust in the intermediary, cognitive trust in the community of buyers, affective trust in the intermediary, and affective trust in the community of buyers. This study proposed and empirically examined the relationships among these four components of sellers' trust. This conceptualization of sellers' trust carries a balanced view of cognitive and affective trust, echoing the recent calls for more attention to affective trust (Komiak and Benbasat, 2004; Komiak and Benbasat, 2006). Empirical findings from this study help to demonstrate the importance of sellers' affective trust in their continued use of online marketplaces.

Theoretically, the research models trust as an *indirect* antecedent of customer retention. This contributes to our understanding of the mechanisms through which trust influences people's adoption of online marketplaces. Moreover, this research shows that online selling is essentially an enjoyable process, by conceiving of perceived enjoyment as a major antecedent of sellers' retention. This study is the first that investigates the important role of perceived enjoyment in online selling and that explicitly examines the relationships between trust and perceived enjoyment.

Methodologically, the method that was used for testing mediating effects merits mention. In this paper, a new method, namely Preacher and Hayes' bootstrapping method (2008), was applied. This method allows for multiple mediators and independent variables and, thus, is suitable for a wide variety of information systems research. In addition, the bootstrapping method for testing mediation has been shown in several studies (e.g., Briggs, 2006; Williams, 2004; Williams and MacKinnon, 2008) to be superior to the multivariate product-of-coefficient strategy (the Sobel test). Thus, this study recommends this method to IS researchers.

6.3. Research Implications

Although the present research focuses on sellers, the findings may inform IS research on trust, in general. First, the results confirmed the expected relationships among trust factors. Cognitive trust influenced affective trust, and trust in the intermediary can be transferred to trust in the community of buyers. Second, sellers' affective trust influences perceived usefulness and perceived enjoyment significantly, which has not yet been studied in IS research. Although previous researchers have argued that affective trust is "normally most intense in close interpersonal trust" (Lewis and Weigert,

1985 p.971) and hence, may be irrelevant to business transactions (Gefen et al., 2003b p.60), this research shows that affective trust is important in influencing sellers' continued use of online marketplaces. That is, sellers do develop a form of "emotional bonding" with the intermediary and the community of buyers.

Third, this study demonstrates the importance of perceived enjoyment in sellers' usage of online marketplaces. This confirms the importance of perceived enjoyment as a motivating factor in the choice to continue online selling. After all, online selling is an activity with both external (usefulness for selling) and internal (enjoyment) benefits. Sellers anticipate and are motivated by the enjoyment of online selling.

Fourth, this study highlights the **indirect** impact of trust on retention. The findings of this study illustrate that trust affects sellers' retention of an online marketplace indirectly via beneficial factors such as perceived usefulness and perceived enjoyment. Specifically, PU and PE fully mediate the impact of affective trust in the intermediary on sellers' retention and PE itself mediates the impact of affective trust in buyers on sellers' retention. This finding challenges prior studies that proposed a direct link from trust to intention to use. Trust may serve as a "background" for online transactions. As vividly argued by Levitt (1969), consumers "do not buy quarter-inch drills; they buy quarter-inch holes" (page 2). It is the benefits, the results of online selling that drive sellers directly. No matter how trustworthy the intermediary and buyers of an online marketplace appear to be, a seller will not sell things in this marketplace unless doing so is ultimately beneficial to him or her (e.g., useful and enjoyable). The findings in Table 7 further suggest that perceived enjoyment is an important mediating factor. It explains why previous studies still found a direct impact of trust on behavioral intention, even when an indirect impact of trust on behavioral intention via perceived usefulness was considered. It also helps explain the non-significant direct impact of trust on behavioral intention that was found in some empirical studies (e.g., Desouza et al., 2006; He et al., 2009). Therefore, IS researchers may need to be cautious about the frequently proposed direct impact of trust on behavioral intention.

6.4. Practical Implications

Practitioners who provide services for online selling should be aware of the importance of trust to sellers. The intermediary should promote sellers' trust in itself and in its buyers as a way to enhance its own use by sellers. The intermediary can take certain measures such as introducing third-party institutional mechanisms (e.g., feedback mechanisms, third-party escrow services, and credit card guarantees) to enhance sellers' trust in the community of buyers (Pavlou and Gefen, 2004). In addition, prior research has yielded suggestions of how to build trust through the construction of the e-commerce websites. For instance, it has been confirmed that trust can be built through designing a visually attractive website, providing accurate information of the product and transaction, offering an effective and easy-to-learn navigation system, and responding to customers' inquiries promptly and with high quality (Cyr, 2008, Flavian et al., 2006; Wang and Emurian, 2005).

It is also important to realize that sellers and buyers base their trust on different aspects of an online marketplace. For instance, buyers extensively use the shopping cart pages, while sellers interact more with the bidding setup pages.

The findings show that enjoyment is an important factor for online selling. It is one of the fundamental objectives of sellers when they consider selling things online. A trustworthy marketplace allows its sellers to enjoy the selling process, and the intermediary should pay attention to the mechanisms involved in making online selling more enjoyable. The results suggest that developing sellers' affective trust in the intermediary and in the community of buyers can lessen sellers' worries about the potential risks and can make their online selling experience more enjoyable and, thus, make them more likely to return to sell things again in online marketplaces.

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