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Determinants of Online Auction Participation: How Much Do Web Knowledge and Risk Perception Matter?

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Abstract: This study extends the research on online consumer behavior by examining the effect of Web knowledge and risk perception on individual attitude towards and intention to participate in online auction. The survey findings show that individuals with high Web knowledge tend to form positive attitudes towards online auction. By contrast, individuals who have heightened concerns about Internet privacy and security show less favorable attitudes towards online auction. Consistent with the attitude-intention model, attitude appears to mediate the effect of know and risk perception on intention. Research and practical implications of these results are discussed.

Keywords: Security, trust, privacy and reputation in e-business; Online auction; Online consumer behavior

I. Introduction

Online auction has become the newest trend of e-commerce. Some researchers argue that online auction epitomizes “the democratization of the Internet” because, potentially, anyone with an Internet connection can become a merchant [1]. The implications of Internet and database technologies for auction design have been widely discussed in the literature [2]. Many previous studies have also examined overt bidding behaviors of online auction participants, typically based on archival data collected from various auction sites [3]. Despite the increasing research attention, it remains unclear why some Internet users are more likely to participate in online auctions than others. Although much research has been done to classify observable bidding behaviors, we know little about the unobservable cognitive and psychological forces that drive these bidding actions.

Drawing upon the research on technology adoption and online consumer behavior, the present study is intended to identify the determinants of an individual’s attitude towards and intention to participate in online auction. Online bidding is conceptualized as a task involving high information processing demand and high outcome uncertainty. Therefore, we focus on two categories of determinants: knowledge and risk perception. A basic argument is that individuals with high Web knowledge and low perceived risk of the Internet tend to develop positive attitudes towards online auction. With a few exceptions [4], the effect of knowledge and risk perception on attitude and behavioral intention have

typically been examined separately in previous studies. This paper integrates the research on individual knowledge structure and risk perception (and its flip side – trust belief) into the belief-attitude-intention framework of human behavior [5].

II. Hypotheses

II.1 Web Knowledge

Web knowledge, or the level of understanding of the Internet as an information and communication mechanism, can be gained via direct experience of using the internet and/or from secondary sources (e.g., technical manuals). We measure Web knowledge along two dimensions: skill and experience. Web skills refer to an individual’s perception of how skilled he or she is at using the Internet. Measured as subjective knowledge, Web skills are similar to computer self-efficacy, defined as “an individual judgment of one’s capability to use a computer” [6]. Prior research has shown that computer self-efficacy reduces an individual’s computer anxiety and leads to a favorable attitude towards new technologies [7]. Similarly, in the context of online auction, individuals with high levels of Web skills may feel less anxious when viewing and searching the vast amounts of information about auction products, prices, shipping arrangements, payment methods, buyer and sellers, and so on.

The second dimension of Web knowledge is related to one’s direct experience of using the Internet, particularly for the purpose of shopping. The amount of purchase experience has often been used as a measure of consumer knowledge [8]. The attitude-intention model suggests that the more positive a person’s past experience about an object, the more positive beliefs he or she will hold about it. Familiarity based on previous experience helps reduce uncertainty and increase perceived behavioral control. Online auction is similar to online shopping in the sense that both involve economic transactions and financial payments. More important, both are particularly important predictor of attitude towards online auction. The more favorable online shopping experience that an individual has accumulated over time, the more likely he or she is to develop a positive attitude towards a related transactional mechanism – online auction. These arguments lead to the following hypotheses:

H1: Web skills are positively related to attitude towards online auction.

H2: Favorable Web experience is positively related to attitude towards online auction.

II. 2 Risk Perception

Online auction is not risk-free. In a virtual market of unseen participants and products, buyers and sellers are faced with the risk caused by information asymmetry. Since potential buyers have no physical access to the product in question, sellers can easily misrepresent the condition or the quality of their products. Auction participants also face the risk caused by opportunism. For example, buyers or sellers may decide not to abide by the contract. To make things worse, the cost of enforcing a contract is high relative to the value of the auction product / service in many cases, resulting in an absence of legal enforcement in the online auction community. In general, transactions conducted on the Internet are viewed as riskier than offline transactions. However, individuals hold different risk perceptions regarding the Internet and what matters for attitude formation is the risk as *perceived* by potential auction participants. We examine perceived risk in two ways. First, we argue that disposition to trust, defined as a general inclination to display faith in humanity and to adopt a trusting stance toward others [11], should be associated with a positive attitude towards online auction. Individuals with high levels of trust propensity tend to believe that people in general are trustworthy. This belief is neither situation-specific nor based upon knowledge of a specific trusted party. Therefore, disposition to trust may have greater influence over attitude and behavioral intention in situations where the transactional parties are unfamiliar with each other. Previous studies also establish that trust reduces risk perception [12].

We also examine situation-specific risk perception, that is, an individual's concern towards the Internet's reliability as a transactional medium. Two types of risk are predominant in the online environment -- perceived risk associated with privacy and security [13]. Various surveys have shown that Internet users are increasingly concerned about the unauthorized collection, improper storage, and inappropriate use of their personal data by online marketers. Closed related to this privacy concern is the concern about the security of transmitting financial information (e.g., credit card number). The anonymity on the Internet and the ambiguity of the online environment makes it difficult for consumers to distinguish trustworthy transaction parties from less trustworthy ones. Therefore, they may transfer their privacy and security concerns to the Internet -- the medium itself [14]. Individuals with high levels of perceived Web risk will then tend to avoid online auctions. These arguments lead to the following hypotheses:

H3: Disposition to trust is positively related to attitude towards online auction.

H4: Perceived Web risk is negatively related to attitude towards online auction.

II. 3 Attitude and Intention

The belief-attitude-intention framework views participation in online auction as a consciously intended behavior. This

framework suggests that an individual's performance of a specific behavior is determined by his or her intention to perform that behavior. Behavioral intention, in turn, is determined by attitude. The positive relationship between attitude and behavioral intention has been examined in various empirical contexts ranging from acceptance of Internet-based self services [13] to online shopping [15]. Consistent with the attitudinal model, this paper proposes that attitude should mediate the effects of Web knowledge and risk perception on intention to participate in online auction.

H5: Attitude mediates the relationships between Web knowledge and risk perception and intention to participate in online auction.

III. Methods and Results

Survey data were collected from a sample of 126 undergraduate students majoring in business administration and accounting. All theoretical constructs were measured using established scales. The exploratory factor analysis (EFA) shows that all items converge to form distinct factors and there is no cross-loading of items. The Cronbach's alpha coefficients for the measurement scales all exceed .70. These results provide further evidence for the validity and reliability of the measurement model.

Descriptive statistics are shown in Table 1. OLS regression analysis was conducted to test the hypotheses. The results are shown in Table 2. In Model 1, the dependent variable (DV) -- attitude was regressed on four independent variables (IVs). Consistent with H1 and H2, Web skills and favorable Web experience are both positively related to attitude towards online auction. Empirical support is also found for perceived Web risk (H4). However, the hypothesis that disposition to trust and attitude are positively related (H3) is not supported. We followed the four-step approach suggested by Baron and Kenny [16] to test the mediating effect of attitude on intention (H5). The regression results for Model 2 are similar to those for Model 1, indicating that three IVs (i.e., Web skills, favorable Web experience, and perceived Web risk) are significantly related to intention to participate in online auction. Model 3 shows that attitude has a significant and positive effect on intention. Finally, the full model (Model 4) shows that, except for attitude, all the other four IVs are no longer significantly related to behavioral intention. These results are consistent with a full mediation model, as suggested in H5.

IV. Discussion

In this study, we investigated the effect of Web knowledge and risk perception on attitude formation in the context of e-auction. We found that high Web knowledge positively affect an individual's attitude towards online auction that, in turn, translates into strong intention to participate in online

Table 1 Mean, Standard Deviation and Correlation

	Mean	s.d.	1	2	3	4	5	6	7
1. Gender	.45	.50							
2. Age	19.45	1.12	.06						
3. Disposition to trust	4.56	1.02	-.11	-.04					
4. Web skills	4.48	1.03	.11	.18	.09				
5. Positive Web experience	4.72	1.24	.07	.10	.11	.32***			
6. Perceived Web risk	4.71	1.23	.11	.12	-.28**	-.06	-.30***		
7. Attitude	4.21	1.25	.03	.01	.13	.47***	.48***	-.28**	
8. Intention	4.53	1.48	-.08	.07	.20*	.41***	.46***	-.34***	.75***

Table 2 Linear Regression Results

	Model 1 (IVs→Attitude)	Model 2 (IVs→Intention)	Model 3 (Attitude→Intention)	Model 4 (IVs & Attitude→Intention)
(Constant)	1.49 (.83)	1.68 (.98)	.91** (.31)	.56 (.77)
Gender	-.03 (.19)	-.31 (.22)	-.29 (.17)	-.28 (.17)
Disposition to trust	.02 (.09)	.11 (.11)		.09 (.08)
Web skills	.44*** (.09)	.44*** (.11)		.11 (.09)
Positive Web experience	.32*** (.08)	.36*** (.10)		.12 (.08)
Perceived Web risk	-.17* (.08)	-.24* (.10)		-.12 (.08)
Attitude			.89*** (.07)	.75*** (.08)
<i>R square</i>	.36	.35	.76	.78

auction. On the other hand, individuals who had heightened concerns about Internet privacy and security showed less favorable attitudes towards online auction. The data support the mediation model in which attitude serves as a bridge psychological mechanism that links belief and behavioral intention. Interestingly, we did not find any relationship

between disposition to trust and attitude / intention. This may be due to the multidimensional usage dimensions of the Internet. A powerful mechanism for information search, communication, and transaction, the Internet would engage users and consumers with different personality traits. It might be difficult to observe the direct effects of personality traits on specific Web behaviors [14].

This study shows that both knowledge and risk perception matter for attitude formation in the context of online auction. Theoretically, these findings call for attention to an integrative framework about consumer behavior in e-commerce transactions. Practically, auction sites and online sellers will benefit through increased understanding of how concerns about Internet privacy and security may affect a customer's response to online transactions. This study also shows the importance of increasing customers' familiarity with a specific Web site. Auction sites, online stores, and individual sellers who list their products on an auction site should focus on Web features that are easy to recall and that can create a sense of familiarity (e.g., a carefully designed "about us" section and/or timely email reminders) because customers' positive specific experiences will lead to positive general beliefs and attitudes.

Future research should explore additional aspects of Web knowledge and risk perception. Moreover, research evidence has been mixed regarding the relationship between knowledge and risk perception. While some researchers suggest that knowledge helps reduce risk perception, others argue that more experienced and knowledgeable Internet users actually are more concerned about online risks. More research is needed to clarify this issue.

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