Decision making in online auctions

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Abstract
Purpose – The aim of this study was to draw on the theory of planned behavior (TPB) and attempt to identify the factors influencing the customer decision to purchase via online auctions, focusing on how managers selling via online auctions can modify product positioning and promotion decisions in order to make their offerings more congruent with these factors.

Design/methodology/approach – The study employed a survey instrument to collect data from Yahoo!Kimo website consumers in Taiwan, obtaining 450 samples which were analyzed with structural equation modeling.

Findings – Attitude toward online auctions, perceived behavioral control and past related experiences significantly and positively influence the intention to purchase on online auctions, whereas subjective norm does not have such influence. Additionally, past related experiences have a positive effect on perceived behavioral control.

Research limitations/implications – There has been a relative dearth of work on online auction customer behavior. By applying the TPB to online auction research, it was empirically supported that behavioral intention to purchase via online auctions is determined by attitude and perceived behavior control. Past related experiences were further integrated, discovering that they can strengthen perceived behavioral control.

Practical implications – Recommendations are put forward in order to help better align product positioning and promotion decisions in online auctions with customer attitudes, perceived behavioral control, and past related experiences. These constructs may also be capable of explaining employee actions in general managerial contexts, thus extending the contribution of the paper beyond the limited world of online auctions.

Originality/value – This study integrated online auctions, the theory of planned behavior and consumer decision-making philosophies in order to develop and empirically test a theoretical framework of consumer decision making in online auctions.

Keywords Decision making, Consumer behaviour, Auctions, Internet, Taiwan

Paper type Research paper
1. Introduction

Although online auctions have expanded the ways in which auctions are conducted, and have even created altogether new uses for auctions, there remain many unanswered questions. Unlike offline auctions that typically last only a few minutes, internet auctions such as those on eBay, Yahoo and Amazon last many days. Since bidders may enter an auction from anywhere, and at anytime, a longer auction time allows more bidders to spot an item and bid on it (Pinker et al., 2003). Online auction websites are unique in that the owner of the website is not the seller, but rather a platform provider for trade activities. Buyers consequently have to rely on product information from sellers for purchase decision making, such as their business/trade records and credit reports (Li et al., 2009). Of the myriad available e-commerce activities, online auctions have become one of the most important online transaction modes.

However, the e-commerce related literature has mostly focused on online shopping, while online auctions have received relatively little attention. Unlike traditional online shopping, online auctions suffer particularly acutely from problems of information asymmetry between buyers and sellers (Bajari and Hortacsu, 2003; Kazumori and McMillan, 2005). Coined the “lemons” problem, scholars have suggested that the impersonal nature of online transactions and information asymmetry are the greatest obstacles to the rapid growth of Internet auction marketplaces. In response, internet auction companies have recently developed innovative tools that enable sellers to reveal more information about their credibility and product quality (Li et al., 2009). Furthermore, large online auction players such as eBay have introduced buyer protection mechanisms such as appeal processes and third-party payment verifiers such as PayPal have provided further customer protection as well as helping to alleviate the sense of information asymmetry in favor of the seller. The question remains however, have such advancements been effective in promoting online auctions, or is there more that can be done? Despite such advancements in the industry, there is notable dearth of literature exploring the specific determinants of effective online auction deliveries. That is, what are the determining factors behind the customer’s decision to purchase via online auctions, and following this, what are the specific decisive actions managers involved in the selling of products via online auctions can take in order to increase the chance that their products will be positively received by potential customers?

Extensive previous online auction research has centered on modeling the specific behavior of bidders, focusing on factors such as auction duration (Lucking-Reiley, 1999), auction characteristics (Millet et al., 2004), willingness to pay (Bradlow and Park, 2007; Park and Bradlow, 2005), first mover advantage (Markides and Powell, 2005) and auction design (Jap, 2007; Li et al., 2009; Zeithammer, 2006). Despite this past literature, there has been little research empirically investigating what drives the customer’s intention to purchase on online auctions. Pinker et al. (2003) appealed for further research, both empirical and theoretical, to better understand the behavior of customers in online auctions.

Armed with knowledge of the factors leading to customer acceptance of online auctions, managers involved in product or service selling via online auctions may enhance their decision-making process regarding the positioning and promotion of their products in order to increase the chances of their offers being accepted by
customers. This study thus aimed to provide managerial decision making direction for product sellers on how to optimally utilize online auctions to sell products or services. After all, regardless of how effective the “tweaking” of the much discussed online auction characteristics and design parameters (such as durations or starting bids) may be, such knowledge is of little use to managers interested in selling their products via online auctions if consumers are choosing to avoid these auctions altogether for other reasons within managerial control.

In order to provide managers with sound advice for effective product positioning and promotion via online auctions, it was deemed fundamentally necessary to determine the drivers of customer intention to purchase on online auctions, so that managers may better align their offers with such determinants. For developing a solid theoretical foundation to explore the drivers of customer intention to purchase on online auctions, this study began with the technology acceptance model (TAM) which has been used in studies of online shopping intention (Monsuwe et al., 2004), as well as, for example, from a managerial perspective, the willingness to adopt knowledge management systems (Kuo and Lee, 2009). The online shopping literature was further reviewed where researchers have adopted the theory of reasoned action (Fishbein and Ajzen, 1975; Yu and Wu, 2007) and the theory of planned behavior (TPB) (Ajzen, 1991; Pavlou, 2002). The TPB has been widely applied to consumer behavior, including internet purchase intentions and behaviors (Hung et al., 2003; Pavlou, 2002; Yu and Wu, 2007). Previous research has found that the TPB is capable of accounting for why individuals want (or do not want) to engage in a certain behavior, for example the purchase behaviors and intentions of internet shoppers.

The TPB has not been used to explain consumer intention to purchase on online auctions specifically however. Moreover, Ajzen’s (1991) model did not include past behavior as a predictor. However, Klein’s (1998) model suggests that prior experience with internet shopping is a significant predictor of behavior. In attempting to integrate such past findings, this research integrated the TPB with the effects of past related experiences, including past online shopping experience (Pavlou, 2003; Ranganathan and Jha, 2007; Shim et al., 2001) and offline auction experience (Cameron and Galloway, 2005) on the intention to purchase via online auctions. The results are potentially valuable to managers interested in selling their products via online auctions by helping to ensure their offerings are more congruent with the determinants of customer choice.

According to data on Taiwanese internet usage behaviors in 2009 (Market Information Center of Taiwan’s Institute for Information Industry), 49 percent of internet users had participated in online auctions, providing strong evidence of intense online auction activities in Taiwan. With eBay Taiwan closing its operations in 2006, Yahoo!Kimo became the largest auction website in Taiwan with a total of 800 million US dollars in sales (Yu and Wu, 2007). Due to the overwhelming dominance in the Taiwanese online action market, this study sampled customers from the Yahoo! Kimo auction website.

The remainder of this paper is structured as follows. First, the online auction and related research are briefly reviewed, and in addition, the TPB is introduced. Next, the hypotheses are presented, followed by a discussion of the research methods. Data is collected from Yahoo!Kimo auction website consumers and is analyzed with structural equation modeling. A discussion of the results and their implications for the enhancement of managerial decision-making in online auction product positioning and promotion decisions concludes the paper, including a discussion of how the theoretical
constructs explored in this paper may have implications for understanding employee actions and behaviors as well.

2. Literature review
2.1 Online auctions
Internet auctions are characterized by the separation of buyers from sellers (Lucking-Reiley, 1999). The earliest internet auctions appeared in 1993, with auctions based on internet news groups (Lucking-Reiley, 2000). By 1995, the first internet auction websites started operations with OnSale and eBay pioneering (Pinker et al., 2003). Online auction consumers must make decisions under more severe uncertainty than their bricks-and-mortar counterparts (Cheema et al., 2005; Dewally and Ederington, 2006). In response, internet auction companies have developed innovative tools that enable sellers to reveal more information about their credibility and product quality to avoid the “lemons” problem (Li et al., 2009). Since these innovations as well as the other buyer protection policies of third-party payment verifies such as PayPal, more consumers have been attracted to buy goods via online auctions.

In a theoretical and multi-discipline work spanning management science, economics, and information systems, Pinker et al. (2003) developed broad research directions, including, for example, the behavior of online auction participants and the optimal design of online auctions. Such work lacked empirical backing however. Millet et al. (2004) examined how auction characteristics (i.e. auction format and price visibility) and various levels of supplier participation (i.e. invitation, logging into an event, and bidding) affect the total price savings of an online auction event. Cameron and Galloway (2005) applied qualitative methods through face-to-face in-depth interviews with existing internet auction users and found that the primary motivations for purchasing on online auctions from the customer perspective are highly practical in nature and include the ability to purchase items at lower prices and information seeking, as well as the ability to interact with other auction users. More recently, Li et al. (2009) drew on signaling and auction theories, proposing a typology of internet auction quality and credibility indicators, with the results indicating which internet auction features affect customer participation and bidding decisions.

2.2 The theory of planned behavior and past related experiences
Based on social psychology research, Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980) developed the theory of reasoned action to predict and understand individual behavior in social contexts. According to the theory (Figure 1) behavioral intention (BI) (the subjective probability identified by an individual for acting out some behavior) is affected by attitude toward the behavior (ATT) (reflecting feelings of favor or disfavor towards performing a behavior) and subjective norm (SN) (reflecting perceptions of the significance of various referents’ desires for the individual to perform or not perform a behavior). Referents are defined in this paper as family, friends, expert opinions, and the mass media.

The TPB extends the theory of reasoned action to explain conditions where individuals do not have complete control over their behavior. The TPB also assumes that BI is influenced by both ATT and SN. Moreover, an additional construct, perceived behavioral control (PBC) is added to the TPB model to explain situations where an individual has less than complete control over the behavior (Figure 2).
According to Ajzen (1991), PBC describes beliefs regarding access to the resources and opportunities needed to perform a behavior. A summary of all acronyms used in constructing the theoretical model can be found in Table I.

In addition, this study utilizes past related experiences as an independent variable, which includes past online shopping experiences (Shim et al., 2001) and offline auction experiences (Cameron and Galloway, 2005) to explain the consumer intention to purchase on online auctions. According to Ajzen (2002b), the frequency of a past behavior is a good predictor of future behavior. Moreover, Cameron and Galloway
(2005) argued that the more experienced an auction buyer is, the better they will be at judging when and how much to bid for an item. This study integrates the TPB and past experiences to build up a conceptual model, as explained next.

2.3 Research hypotheses

2.3.1 Attitude towards online auctions and behavioral intention. Taylor and Todd (1995) found attitudes to be predictive of information technology usage intention. In terms of research on intention to shop online, Shim et al. (2001) conducted a survey and found that consumer attitudes towards internet shopping were important in predicting internet purchase intentions. Additionally, empirical studies on e-commerce (Pavlou, 2002; Hung et al., 2003) have supported that the consumer’s attitude toward using online services is a predictor of his/her behavioral intention. Therefore, this study proposes the following hypothesis:

\[ H1 \] Positive attitudes toward online auctions will positively influence consumer intention to purchase on online auctions.

2.3.2 Subjective norm and behavioral intention. Hartwick and Barki (1994) studied the adoption of information technology under institutional circumstances and found a direct influence of social norms on behavioral intentions. In a similar vein, Taylor and Todd (1995) studied the information technology usage of 786 potential users of a computer resource center and found that SN positively predicts information technology usage intention. Finally, Yu and Wu’s (2007) study found that SN is positively related to the intention to shop online. Based on the above-cited literature, this study proposes the following hypothesis:

\[ H2 \] Subjective norms about online auctions will positively influence consumer intention to purchase on online auctions.

2.3.3 Perceived behavioral control and behavioral intention. Taylor and Todd (1995) tested data from 786 potential users of a computer resource center and found that PBC positively predicts information technology usage intention. Regarding online purchase intention, Shim et al. (2001) found that PBC has a positive influence on online pre-purchasing intention. Yu and Wu’s (2007) survey on the determinants of internet shopping behavior found that PBC positively influences the intention to shop online. Therefore, this study proposes the following hypothesis:

\[ H3 \] Perceived behavioral control will have a positive effect on consumer intention to purchase on online auctions.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
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<tr>
<td>TPB</td>
<td>Theory of planned behavior</td>
</tr>
<tr>
<td>BI</td>
<td>Behavioral intention</td>
</tr>
<tr>
<td>ATT</td>
<td>Attitude toward the behavior</td>
</tr>
<tr>
<td>SN</td>
<td>Subjective norm</td>
</tr>
<tr>
<td>PBC</td>
<td>Perceived behavioral control</td>
</tr>
<tr>
<td>PEXP</td>
<td>Past related experiences</td>
</tr>
</tbody>
</table>

Table 1. List of abbreviations
2.3.4 Past related experiences, perceived behavioral control and behavioral intention. This study adopts past related experiences as an independent variable, inclusive of past online shopping experiences and offline auction experiences, to explore the impact of such experience on consumer intentions to purchase on online auctions. Cameron and Galloway (2005) applied qualitative face-to-face in-depth interviews with existing internet auction users, finding that the more experienced an auction buyer is, the better they are able to judge when and how much to bid for an item. As well, Ranganathan and Jha (2007) found that past online shopping experiences have a strong association with online purchase intent. Therefore, this study proposes the following hypotheses:

\[ H4. \text{ Past related experiences will positively influence consumer perceived behavioral control.} \]

\[ H5. \text{ Past related experiences will positively influence consumer intention to purchase on online auctions.} \]

Based on these hypotheses a diagram of the conceptual model is shown in Figure 3.

3. Methodology
3.1 Sampling and data collection
The study conducted in-depth interviews with five business managers involved in online auctions. Their experiences, along with a comprehensive review of the literature assisted in the development of the survey instrument. The measures were subsequently pretested with 35 Yahoo!Kimo website consumer samples. The comments and suggestions from these respondents were used to improve the readability and ease of use of the questionnaire.

Tan and Teo (2000) argued that web-based surveys are appropriate when the target subjects are internet users and a short response time frame is required. Hsu and Lu (2004) suggested that online field surveys have several advantages over traditional paper-based mail-in-surveys. For instance, they are cheaper to conduct, elicit faster responses, and are geographically unrestricted. Such surveys have been widely used in recent years (Bhattacherjee, 2001; Chang and Chen, 2008; Hsu and Lu, 2004; Tan and Teo, 2000). Following in this vein, this study conducted a survey of Yahoo!Kimo

![Figure 3. The conceptual model](image)
auction website consumers in Taiwan. As internet usage is the prerequisite to participate in online auctions, online surveys were used for data collection. The questionnaire items were posted on the Q&A board of the sellers section on the Yahoo!Kimo website (after permission was obtained). They were also left on related bulletin boards and discussion zones.

The message stated the purpose of the study, provided a hyperlink to the survey form, and, as an incentive, offered respondents an opportunity to participate in a draw for several prizes. The questionnaire collection ran continuously for the six-week duration of the survey period. In order to elicit each respondent’s experience and perception, all respondents were asked to answer each survey question based on their previous experiences with online searching and purchasing as well as with offline actions in the past six months.

The analysis of non-response bias was conducted by comparing early and late responses (Armstrong and Overton, 1977). Responses from the last quartile of respondents were compared to responses provided by the first three quartiles. No significant differences were found ($p > 0.05$) between the two groups. Therefore, there was no need to further consider non-response bias. There were 450 valid questionnaires returned; female respondents accounted for 62.3 percent. Most respondents had college education (72.8 percent), followed by those having graduate school education (17.7 percent). Most were students (52.1 percent), followed by employees in the business and service industries (10.8 percent) and IT industry (9.2 percent).

### 3.2 Measure development

As shown in the conceptual model, five constructs were of primary interest: intention to purchase on online auctions, attitude toward online auctions, subjective norm, perceived behavioral control and past related experience. Existing scales were used in the research based on the TPB. Modifications were made as necessary to adapt the items to an online auction context. The measurements of the observed variables are provided in Table II.

#### 3.2.1 The dependent variable

Intention to purchase on online auctions: behavioral intention is the subjective probability identified by an individual for acting out some behavior (Ajzen, 1991; Pavlou, 2003), defined specifically in this research as the potentiality of intention to purchase on online auctions of the consumer. Intention to purchase on online auctions was assessed by three measures modified from Pavlou (2003). These items were measured on a seven-point Likert scale where 1 = strongly disagree and 7 = strongly agree.

#### 3.2.2 Independent variables

Attitude toward online auctions: attitude toward the behavior is the individual preference for one object (Ajzen, 1991; Hsu and Chiu, 2004; Taylor and Todd, 1995), defined in this research specifically as consumer preference for purchasing on online auctions. The construct was assessed by four measures modified from Taylor and Todd (1995). All items were measured on a seven-point Likert scale where 1 = highly improbable and 7 = highly probable.

Subjective norm: subjective norm refers to recognition that the individual expects others to act out some behavior (Hsu and Chiu, 2004; Shim et al., 2001). In assessing SN (i.e. perceived social influence) we again employed a seven-point Likert scale to measure responses to a single statement. Participants were asked to indicate the
importance placed on the approval of various referents (defined in this paper as family, friends, expert opinions, and the mass media) for their purchasing on online auctions. These items were measured on a seven-point Likert scale where 1 = very unimportant and 7 = very important.

Perceived behavioral control: perceived behavioral control is the perceived access to the resources, knowledge and abilities needed to perform a behavior (Ajzen, 1991; Taylor and Todd, 1995). The construct was assessed by four questions that measured participants’ perception of their resources, knowledge and abilities to purchase on online auctions and achieve access to online auction websites. These items were measured on a seven-point Likert scale where 1 = strongly disagree and 7 = strongly agree.

Past related experience: in this study, past related experiences included past online shopping experiences (Pavlou, 2003; Ranganathan and Jha, 2007; Shim et al., 2001) and

<table>
<thead>
<tr>
<th>Components and manifest variables</th>
<th>Loading</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to purchase on online auction (AVE = 0.93, composite reliability = 0.98, Cronbach’s alpha = 0.87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI1: I intend to purchase on online auctions to conduct product purchases</td>
<td>0.88</td>
<td>–</td>
</tr>
<tr>
<td>BI2: I expect to purchase through online auctions in the future</td>
<td>0.80</td>
<td>15.34</td>
</tr>
<tr>
<td>BI3: It is likely that I will transact with online auctions in the near future</td>
<td>0.81</td>
<td>15.58</td>
</tr>
<tr>
<td>Attitude toward online auctions (AVE = 0.91, composite reliability = 0.97, Cronbach’s alpha = 0.87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1: My decision to purchase on online auctions was a good idea</td>
<td>0.78</td>
<td>–</td>
</tr>
<tr>
<td>A2: My decision to purchase on online auctions was a wise idea</td>
<td>0.91</td>
<td>17.03</td>
</tr>
<tr>
<td>A3: I (dislike/like) the idea of using the CRC</td>
<td>0.87</td>
<td>16.44</td>
</tr>
<tr>
<td>A4: My feelings for online auctions were better than for offline auctions</td>
<td>0.62</td>
<td>11.11</td>
</tr>
<tr>
<td>Subjective norm (AVE = 0.93, composite reliability = 0.98, Cronbach’s alpha = 0.91)</td>
<td></td>
<td></td>
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<tr>
<td>SN1: My family influences me to purchase on online auctions</td>
<td>0.80</td>
<td>16.56</td>
</tr>
<tr>
<td>SN2: My important friends influence me to purchase on online auctions</td>
<td>0.83</td>
<td>17.29</td>
</tr>
<tr>
<td>SN3: Expert opinions influence me to purchase on online auctions</td>
<td>0.90</td>
<td>19.41</td>
</tr>
<tr>
<td>SN4: Mass media reports influence me to purchase on online auctions</td>
<td>0.84</td>
<td>–</td>
</tr>
<tr>
<td>Perceived behavioral control (AVE = 0.95, composite reliability = 0.99, Cronbach’s alpha = 0.94)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC1: I have the resources to purchase on online auctions</td>
<td>0.90</td>
<td>22.49</td>
</tr>
<tr>
<td>PBC2: I have the knowledge to purchase on online auctions</td>
<td>0.91</td>
<td>23.11</td>
</tr>
<tr>
<td>PBC3: I have the ability to purchase on online auctions</td>
<td>0.89</td>
<td>22.11</td>
</tr>
<tr>
<td>PBC4: Purchasing on online auctions is entirely within my control</td>
<td>0.88</td>
<td>–</td>
</tr>
<tr>
<td>Past related experience (AVE = 0.89, composite reliability = 0.96, Cronbach’s alpha = 0.86)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEXP1: I have had experience with searching for product information through the Internet within the past six months</td>
<td>0.74</td>
<td>–</td>
</tr>
<tr>
<td>PEXP2: I have had experience with purchasing products through the Internet within the past six months</td>
<td>0.89</td>
<td>13.91</td>
</tr>
<tr>
<td>PEXP3: I have had experience participating in offline actions within the past six months</td>
<td>0.83</td>
<td>13.76</td>
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</table>
offline auction experiences (Cameron and Galloway, 2005). The construct was assessed by three measures modified from Bamberg et al. (2003), encompassing the determination of the individual’s experience with searching for product information online, with purchasing products via the internet, and with participating in offline auctions. These items were measured on a seven-point Likert scale where 1 = strongly disagree and 7 = strongly agree.

4. Data analysis
4.1 The measurement model
LISREL is an analysis procedure that combines path analysis with factor and multiple regression analyses (Jöreskog and Sörbom, 2001), which this study adopted (version 8.53) to analyze the structural equation model. Measurement model analysis was used to refine the measurement scale. In the present case, five latent variables were constructed from 18 items. We tested the measurement model by considering individual item reliability, internal consistency, and discriminant validity (Tables II and III).

In order to assess construct reliability, each of the intention to purchase on online auctions, attitude toward online auctions, SN, PBC and past related experiences constructs were checked for their Cronbach’s alpha coefficient values. The alpha for both the intention to purchase on online auctions and for the attitude toward online auctions was 0.87, whereas the alpha for SN was 0.91. The PBC items achieved a Cronbach’s alpha of 0.94, whereas the alpha coefficient for past related experiences was 0.86. Table II details the results of reliability tests on the five major constructs. All five scales were considered reliable since their alpha’s were greater than the commonly accepted 0.70 threshold (Nunnally and Bernstein, 1994).

The composite reliability and average variance extracted (AVE) were utilized to examine the internal consistency of each latent construct (Fornell and Larcker, 1981). The composite reliability values for each construct exceeded the threshold value of 0.70 (Nunnally, 1978). Average variance extracted values also exceeded the 0.50 threshold (Fornell and Larcker, 1981). As displayed in Table II, the composite reliability and AVE values were satisfactory for all constructs. Finally regarding discriminant validity, Table III shows the correlation matrix for the constructs, with the diagonal elements being replaced by the square root of the constructs’ AVE. Adequate

<table>
<thead>
<tr>
<th></th>
<th>BI</th>
<th>ATT</th>
<th>SN</th>
<th>PBC</th>
<th>PEXP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to purchase on online auctions (BI)</td>
<td>0.96</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude toward online auctions (ATT)</td>
<td>0.67*</td>
<td>0.95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norm (SN)</td>
<td>0.47*</td>
<td>0.51*</td>
<td>0.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived behavioral control (PBC)</td>
<td>0.64*</td>
<td>0.57*</td>
<td>0.48*</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>Past related experiences (PEXP)</td>
<td>0.66*</td>
<td>0.59*</td>
<td>0.39*</td>
<td>0.54*</td>
<td>0.94</td>
</tr>
<tr>
<td>Mean</td>
<td>5.70</td>
<td>5.47</td>
<td>5.45</td>
<td>6.28</td>
<td>4.82</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>1.31</td>
<td>1.07</td>
<td>1.06</td>
<td>1.06</td>
<td>1.52</td>
</tr>
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Notes: 450 observations, *p < 0.01; Values on the diagonal are the square root of the average variance extracted

<table>
<thead>
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<tr>
<td>0.96</td>
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<td>1.07</td>
<td>1.06</td>
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<td>1.52</td>
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</tbody>
</table>

Table III. Means and correlation coefficients
discriminant validity was demonstrated since these diagonal elements were greater than the off-diagonal elements in the corresponding rows and columns (Hair et al., 2006).

4.2 The structural model

The results of the structural model are presented in Table IV.

4.2.1 Goodness of fit. We found the $\chi^2$ to be statistically significant (346.12, degrees of freedom = 127, $p = 0.000$), which suggested some model misspecification, although it is well recognized that this statistic is sensitive to sample size (Arbuckle and Wothke, 1999). We thus considered other structural diagnostics for the overall fit of the model that are not sensitive to sample size (Bentler and Bonett, 1980). The root mean squared error of approximation (RMSEA) (Steiger, 1990) is an estimate of the discrepancy between the original and reproduced covariance matrices in the population. Cudeck and Browne (1983) suggested that a RMSEA of 0.05 represents a close fit and that RMSEAs of less than 0.08 represent reasonable fits. In our model, the RMSEA of 0.075 was within that acceptable range. Likewise, the 0.90 incremental fit index (IFI) (Bollen, 1989) and the 0.90 comparative fit index (CFI) (Bentler, 1990) were all above the common threshold of 0.90, thus designating an acceptable fit. When taken collectively, these structural diagnostics indicated a very good relative fit of the proposed theoretical model to the underlying data (CFI = 0.95, GFI = 0.89, IFI = 0.95, NFI = 0.92 and TLI = 0.94).

4.2.2 Hypotheses testing. As Table IV illustrates, the results provided significant support for the hypothesized relationships. $H1$ on the proposed positive relationship between attitude and intention to purchase on online auctions was supported ($\gamma_{11} = 0.36$, $p < 0.01$). The results additionally supported $H3$, which proposed a positive relationship between the intention to purchase on online auctions and PBC ($\gamma_{13} = 0.37$, $p < 0.01$). However, the relationship between SN and the intention to purchase on online auctions was not significant ($\gamma_{12} = 0.07$, $p > 0.05$), and thus $H2$ was not supported. Regarding the influence of past related experience, there was a positive and significant relationship between past related experience and PBC ($\gamma_{34} = 0.49$, $p < 0.01$), thus supporting $H4$. Finally, $H5$ was supported, as there was a positive significant relationship between past related experience and the intention to purchase on online auctions ($\gamma_{14} = 0.37$, $p < 0.01$).

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Standardized parameter estimate</th>
<th>$p$-values</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H1$: Attitude toward online auctions (+) $\rightarrow$ Intention to purchase on online auctions ($\gamma_{11}$)</td>
<td>0.36</td>
<td>0.000</td>
<td>Support</td>
</tr>
<tr>
<td>$H2$: Subjective norm (+) $\rightarrow$ Intention to purchase on online auctions ($\gamma_{12}$)</td>
<td>0.073</td>
<td>0.289</td>
<td>Non-support</td>
</tr>
<tr>
<td>$H3$: Perceived behavioral control (+) $\rightarrow$ Intention to purchase on online auctions ($\gamma_{13}$)</td>
<td>0.37</td>
<td>0.000</td>
<td>Support</td>
</tr>
<tr>
<td>$H4$: Previous related experience (+) $\rightarrow$ Perceived behavioral control ($\gamma_{34}$)</td>
<td>0.49</td>
<td>0.000</td>
<td>Support</td>
</tr>
<tr>
<td>$H5$: Previous related experience (+) $\rightarrow$ Intention to purchase on online auctions ($\gamma_{14}$)</td>
<td>0.37</td>
<td>0.000</td>
<td>Support</td>
</tr>
</tbody>
</table>

Table IV.
Tests of hypothesized relationships
5. Managerial implications

Through gaining a better understanding of the specific determinants behind the customers’ decision to purchase via online auctions, managers involved in product or service selling through online auctions can more properly target their offers to potential customers. Based on the theoretical findings, this section outlines specific recommendations for managerial decision-making regarding the delivering of online auctions which are more congruent with the three factors found to have a significant impact on consumer willingness to purchase via online auctions: perceived behavioral control, past related experience, and attitudes.

5.1 Increase perceived behavioral control

If only one managerial recommendation is to be taken away from this paper it should be the critical importance of reducing the perceived sense of information asymmetry inherent in online auctions, thus increasing the customer’s sense of PBC. As one of the central findings of the theoretical model is that increased PBC leads to increased intention to purchase on online auctions, managers considering selling their firm’s products via online auctions must do all they can to help dispel buyer concerns regarding the intrinsic information asymmetry of this channel.

While the buyer protection policies of firms such as Ebay and third party payment verifiers such as PayPal have assisted greatly in helping to increase the customer’s sense of PBC on the policy and seller reputation end, there is still much to be done on the product information end. Online auction product sellers are recommended to focus on innovative tools that allow the exhibition of supplemental information about the features and quality of their products, thus enhancing the customer’s sense of PBC to effectively utilize online auctions. Specifically, as the technological sophistication and associated features of Internet auction sites continues to advance, leveraged by the increasing multimedia capabilities of the Internet, there is a growing ability to adequately describe an ever-expanding scope of complex products online.

Such a recommendation is particularly salient for managers considering selling products via online auctions that have been traditionally considered difficult to describe via the internet, such as clothing or furniture (Brown et al., 2003), which generally require tactile interaction by the consumer for decision making. In order to increase the acceptance of online auctions as a channel for such products, managers may consider adopting multimedia rich technologies including video and 3D simulation. Finally, when the adoption of such technologies is either unfeasible or uneconomical, the decision to abandon online auctions altogether as a distribution channel for extremely information rich products should be seriously considered, based on the findings of this research that customer PBC is such a critical determinant of success for selling via online auctions.

5.2 The importance of past experience

In the theoretical model developed for the present study, past related experiences had a positive effect on the intention to purchase via online auctions and on PBC, which, as seen, itself plays such a crucial role in the customer acceptance of this channel. This study thus points to the importance of taking the managerial action necessary so that online auction product sellers can gather increased information on consumer preferences, either from past interactions with other online auctions or other forms of
e-commerce. By collecting and then leveraging past auction usage data through techniques such as data mining, it would be increasingly possible to discover how different customers respond to the offering of particular product or service classes via online auctions. Furthermore, information on past online auction behavior could be leveraged to design more effective future auctions, which in and of itself may have commercial value.

5.3 Attitudes toward online auctions
There is room for market research here, as different customer segments are likely to exhibit inherently different attitudes towards online auctions, as they clearly already do for other forms of e-commerce (Zhou et al., 2007). Depending on the product or service area companies are involved in, the decision might be rightly made to avoid online auctions altogether based on the demographic characteristics of their primary customers which lead to predispositions towards either favorable or unfavorable attitudes towards online auctions. Thus, the primary decision of whether to utilize or avoid online auctions altogether based on the target customer demographic may be just as if not more important than the specific auction implementation decisions (such as information richness, buyer protections policies, etc.) discussed previously.

5.4 Broader managerial implications of the theoretical model
The theory of reasoned action and planned behavior constructs, including behavioral intention, attitude toward the behavior, subjective norm, past related experiences, and perceived behavioral control have all been widely adopted in studies of consumer behavior, as in the present paper. However, due to the general nature of these theories which are rooted in psychology and are designed to understand rational human decision-making in all contexts, it is certainly possible that these constructs may also be capable of explaining employee actions, and therefore deserve consideration by managers, team leaders and professionals working on projects that have an impact on stakeholders. A given employee’s level of behavioral intention to carry out a specific action desired by management may clearly be impacted by employee attitudes, the subjective norm of various referents (such as supervisors, coworkers, subordinates, and management), past experiences regarding the behavior, as well as perceived behavioral control (employee perceptions as to whether they have been provided with sufficient resources and mandate by the firm in order to carry out a given behavior). Such a perception extends the contribution of the paper beyond the limited world of online auctions to the broader area of managerial decision-making.

5.5 Implications for research
Firstly, although online auctions have become one of the most important Internet transaction modes, there has been a relative dearth of work on online auction consumer behavior in the e-commerce literature. Pinker et al. (2003) argued that further empirical and theoretical research is needed to better understand the behavior of participants in online auctions. This study represents a first attempt to apply the TPB model in online auction research, and empirically supports that BI is determined by ATT and PBC. Secondly, the original TPB model as proposed by Ajzen (1991) did not include past behavior as a predictor. This study thus followed prior research (Cameron and Galloway, 2005; Pavlou, 2003; Ranganathan and Jha, 2007; Shim et al., 2001) and found
that past related experiences can significantly predict the intention to purchase on online auctions. Thirdly, it was discovered that past related experiences can strengthen PBC, which encompasses the resources, knowledge and abilities needed to purchase on online auctions and gain access to online auction websites.

5.6 Limitations and directions for future research
Since the present study was cross-sectional in nature, longitudinal trends could not be identified, which would be most helpful in determining patterns with respect to consumer attitudes, behavioral intentions, and so forth. Also, the past experiences of consumers were collected on a self-report basis. Future efforts may focus on obtaining actual consumer behavior through real-time electronic data collection in order to minimize the disadvantages associated with self-report data. Finally, H4 and H5 did not explicitly take into account situations when the respondent’s past experience was poor or suboptimal. As inherent in many shopping surveys, a recent unpleasant shopping/auction experience may have a direct negative impact on a respondent’s shopping/auction evaluation. While such potential effects should be taken into consideration, statistically speaking, they should not result in serious problems if such respondent negative evaluations are not significant and occur systematically.

Due to the nature of the formation of intention to carry out certain behaviors, there is necessarily a lag between intent and action with the length depending on feasibility, resources, timing, and other factors (Ajzen, 2002a). Therefore, future studies may conduct surveys in two stages to offer greater insights into the relationship between intention and behavior. Finally, the theory of perceived risk (Chang and Chen, 2008; Mitchell, 1992) and the theory of trust (George, 2004) have both been applied to online shopping environments. Integrating the TPB with those theories would allow further exploration of the factors that affect consumer intention to purchase on online auctions.

References


**Further reading**


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