

The effects of hedonic and utilitarian bidding values on e-auction behavior

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Abstract This study focuses on how hedonic versus utilitarian bidding values affect bidding behavior in e-auctions. The bidding behavioral data was collected through a quasi-experimental design on an authentic e-auction website. The results, derived from 121 participants, showed that bidders with high utilitarian bidding values were more likely to win bids than those with high hedonic bidding values. In addition, bidders with high utilitarian bidding values were more likely to offer a higher final bid than those with high hedonic bidding values because they estimated a higher reasonable price for the item. Finally, bidders with high hedonic bidding values were more likely to use a manual bidding approach, whereas those with high utilitarian bidding values were more likely to use an automatic bidding approach.

Keywords Hedonic bidding value · Utilitarian bidding value · e-Auction behavior

1 Introduction

Over the past two decades, electronic auctions (e-auctions) have gained widespread appeal as an efficient and effective way of buying and selling goods and services [73]. More and more individuals and retailers adopt e-auctions as an alternative method of selling their products [89]. By 2013, more than 112.3 million active users

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utilized the e-auction website eBay.com as their major channel of selling [21]. The introduction of the e-auction has created a new type of C2C market that brings together a large number of participants, a large selection of goods and services to be exchanged, and a more flexible time frame within which to conduct transactions. E-auctions have, as a consequence, become a multi-billion dollar industry where a broad range of products, from raw materials to used consumer goods, are regularly bought and sold.

Certain issues have attracted the attention of e-auction researchers, such as seller strategies or reputation [41, 57, 72], the key determinants of a successful e-auction site [24, 33, 40, 43], and the impacts of buy-it-now options on bidding behavior [1, 84]. Other consumer behavior researchers have identified the effects of bidders' characteristics on attitudes or intentions toward participating in e-auctions [32, 38, 39, 73, 74, 87].

Because information systems usage behaviors are likely to be motivated by an individual's inner values [12, 46], a deeper understanding of individual differences among online shoppers may help explain many important aspects of e-auction behaviors [5]. An understanding of users' inner characteristics will be beneficial to the design of information system environments [49, 70]. Moreover, e-commerce researchers have also called for the investigation of the impact of values on bidder behaviors and auction outcomes [53].

Values hold promise as an area of information system research because of the opportunity to incorporate an important stream of social psychology research into decision-making research. Rokeach, speaking of the centrality of values to individuals, stated that, "an adult probably has tens or hundreds of thousands of beliefs, thousands of attitudes, but only dozens of values" [59, p. 124]. Yet, individuals' values have rarely been related to decision-making in previous information system research. Considering the importance of an individual's values on guiding behaviors, the design of information systems should pay more attention to decision makers' values as the initial part of their decision process. Thus, this study argues that bidders engage in online auctions and compete with others as a form of entertainment which fully represents their value-oriented activities. These values direct a bidder's behavior and actions, including the selection of their bidding and pricing strategy. This study believes that e-auction behaviors are considered to be a means with which to achieve desired final goals or end states (i.e., values). That is, bidding behaviors are guided by values.

A review of the literature has revealed that utilitarian and hedonic values are key individual differences related to traditional bricks-and-mortar shopping behavior [3, 14, 22, 75], and, more recently, online shopping behavior [50, 54]. Although previous research findings have indicated the presence of both hedonic and utilitarian dimensions in web usage behavior in general, very few attempts have been made to model both types of values for bidding behavior. One exception is Lee and her colleagues, who have linked the concept of a shopping value to the context of e-auctions [38, 39].

This study further applies the concept of shopping values and transforms them into bidding values to fully reveal the uniqueness of values in the context of e-auctions because the manner of acquiring items via bidding is different from

shopping. This study hypothesizes that different bidding values reflect in the bidding process distinction between completing a task “to gain something in the most economical way” as opposed to doing it because of “competitive enjoyment.” The former represents “a utilitarian bidding value”, while the latter is “a hedonic bidding value.” The dichotomy between hedonic and utilitarian values provides new knowledge, therefore, within an e-auction context.

The aim of this study is to tackle these challenges by developing a model for e-auction behavior. In particular, this study examines the relationship between bidders’ hedonic and utilitarian values for bidding on items and their actual bidding behaviors (i.e., pricing decisions and bidding strategies) and outcomes (i.e., the likelihood of winning) during an e-auction. We seek answers to the following research question: How are bidders’ hedonic and utilitarian values for bidding on items during the e-auction process reflected in their bidding behavior and outcome? We differentiate between two types of behavior; namely pricing decision and bidding strategy. Bidders are responsible for setting the prices they are willing to pay at online auctions. Prior studies have found that a better reputation and the number of visits yield higher final prices [6, 24, 31, 56, 76]. A bidding strategy represents a series of interrelated types of bidding behaviors that a bidder adopts with a certain purpose or tactic in mind during an e-auction. Bidders will choose strategies, such as a manual bidding approach or an auto-bidding approach, to maximize their benefits and satisfy their values. In the context of online bidding, being a winner is an external reward that has been confirmed empirically to be a key component of bidding [52].

Overall, compared with previous studies, this study provides further contributions in several ways. First, this study provides a basis on which to study hedonic and utilitarian bidding values within the novel context of an e-auction. Given that e-auction activities are steadily gaining attention from individuals and retailers [89], there is a clear need for research that would enhance the understanding of both hedonic and utilitarian drivers of online shopping activity in information system environments. Second, the most important contribution is the investigation of values as an explanation of auction behaviors and outcomes, rather than intentions or attitudes toward e-auctions. Although some empirical research has focused on either individual values on using an e-auction [38, 39] or behaviors during an e-auction [1], no research has formally connected both the values and actual behaviors at the same time. Third, prior studies have explored the determinants of bidding behavior, such as pricing decisions and bidding strategies from the viewpoint of online marketplace providers [19], but this study offers an alternative theoretical lens through which to view how behaviors are driven by bidders’ values. Fourth, the measurement of individual differences in an e-auction through an experiment offers the opportunity to gain insights into bidder behaviors that are not immediately evident through an analysis of bid data or analytical models alone. That is, this study combines primary data collection on bidders’ values with secondary auction data, which represents a departure from the prevalent research tendency to utilize bid data alone. Finally, an understanding of how bidding values influence bidders’ behaviors may assist online auction providers with the creation of a more customizable

interface with which to enhance customer satisfaction and contribute to the success of this new transaction channel.

2 Conceptual background and hypothesis development

2.1 A review of relevant literature on e-auction research

This study examines the relationship between bidders' hedonic and utilitarian values for bidding on items and their actual bidding behaviors (i.e., pricing decisions and bidding strategies) and outcomes (i.e., the likelihood of winning) during an e-auction. Table 1 summarizes the relevant literature on e-auction research.

Independent variables in e-auction research can be classified into four types: bidders' characteristics (i.e., individual traits, personal values, or the level of experience), bidding strategy, product characteristics, and seller reputation. The major results that have been evaluated are pricing decision, bidding strategy, winning likelihood, and satisfaction. The hedonic and utilitarian needs and values have been examined as moderators or mediators in previous e-auction studies (see Table 1), which brought out more interesting results and unrevealed topics for further investigation.

This study considers bidders' values as an important independent variable for understanding bidders' behavior, because online auction activity is a value pursuit process, similar to all shopping behavior, but it is driven by values even stronger than those found in other daily shopping processes because there is only one winner at the end of the auction. Behaviors may be regarded as a means to achieve desired final goals or end states (i.e., value).

Pinker et al. [53] addressed the fact that no systematic research has proven that participants enjoy the shopping benefits of e-auctions and, therefore, they called for further research to examine auction participants' values during e-auctions. Although Lee and her colleagues have evaluated the role of values in e-auctions, they focused on the effects of the long-term values held by bidders on their intentions of bidding online, leaving the influence on their bidding patterns unidentified. In contrast to Lee et al. [38, 39] works, this study focuses on the outcomes or strategies of bidding online, rather than on the intentions of bidding online. Moreover, prior studies have discussed pricing strategy [1, 35], bidding strategy [19], and winning likelihood [5] separately; this study, however, has combined the three dependent variables. This study contributes to a better understanding of theoretical, managerial, and empirical knowledge about values in e-auction behaviors.

2.2 A theory of value-congruent behavior

The definition of a value is “an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence [60, p. 5].” A value represents broad goals that can be applied across contexts and time [60, 65, 66], while values provide potentially powerful explanations of human behavior because they serve as

Table 1 Literature review on e-auction research

Study	Independent variables	Dependent variables	Moderators	Mediators	Key findings
Angst et al. [1]	1. Competitiveness 2. Impulsive buying 3. Hedonic need	Price	Hedonic need	Strategic exit	1. Impulse-buying tendencies, trait competitiveness, and hedonic need fulfillment are antecedents of strategic exit, and that hedonic need fulfillment moderates the effect of impulse-buying tendencies on strategic exit 2. Buyers who exit an auction early by using the BIN feature end up paying a higher than average price
Bapna et al. [5]	Bidder strategy properties	1. Winning likelihood 2. Surplus extraction	N/A	N/A	Agent bidders, followed by the participants, have the highest levels of surplus, while opportunists and sip-and-dippers have a higher likelihood of winning an auction. Also, the economic benefit of the agent bidder is predicated on the strategies of other bidders
Cui and Lai [19]	Bidding strategies	Bidding strategy satisfaction	N/A	1. Winning outcome 2. Cost saving 3. Perceived enjoyment	1. Snipe bidding and agent-supported ratchet bidding strategies resulted in a greater number of winning outcomes, whereas the early bidding strategy resulted in the lowest number 2. Early bidding was also found to generate significantly lower cost saving to bidders than the other two strategies 3. Bidders are more satisfied with the snipe bidding strategy and less with an early bidding strategy
Kim [35]	1. Buyers' shopping pattern (analytical vs. impulsive buyers) 2. Propensity to trust (trusting vs. skeptical buyers) 3. Attitude toward auction (competitive vs. noncompetitive buyers) 4. Product characteristics 5. Seller reputation	Price premiums	N/A	N/A	4. All outcome variables (i.e., winning outcome, cost saving, and perceived enjoyment) had significant effects on satisfaction across all bidding strategies, except for early bidding 1. Impulsive buyers consistently pay high premiums, whereas analytical buyers pay greatly different premiums depending on sellers' reputations 2. Buyers' propensity to trust and attitudes toward auctions do not significantly contribute to the difference of price premiums when information about sellers' reputations is explicitly provided 3. Even competitive buyers do not pay higher premiums to sellers of bad reputation simply to become a winning bidder 4. Buyers pay higher premiums for expensive products or products with various options

Table 1 continued

Study	Independent variables	Dependent variables	Moderators	Mediators	Key findings
Lee et al. [38]	Bidders' characteristics (i.e., compulsive buying, variety seeking, price sensitivity)	1. Preference 2. Intentions	N/A	1. Utilitarian value 2. Hedonic value	1. Both compulsive buying and a variety-seeking tendency are critical factors of shopping value in the online auction environment. There were no positive relationships between price sensitivity and shopping value 2. Consumers' shopping value positively influenced their preference, which, in turn, formed behavioral intentions in online auctions 3. Utilitarian value was found to be a significant predictor of behavioral intentions, whereas, hedonic value influenced intentions indirectly through preference
Lee et al. [9]	Bidders' characteristics (i.e., impulse buying behaviors, variety-seeking tendencies, price sensitivities, and risk consciousness)	1. Utilitarian value 2. Hedonic value	N/A	N/A	Auction lovers with high utilitarian and high hedonic values also gained the most enjoyment from e-auctions, while impulse buyers valued hedonic and utilitarian benefits the least, and they also spent the least on e-auctions
Wilcox [87]	Bidders' experience (i.e., experts and amateurs)	Bidding strategy, i.e., whether a bid was placed during the last 60 s of an auction or at some other time	Common value of product categories	N/A	More experienced bidders are more likely to bid according to theoretical predictions

standards or criteria for conduct [88] and they are remarkably stable over time [61, 62]. Bardi and Schwartz [7] further argued that “the natural way to pursue important values is to behave in ways that express them or promote their attainment” (p. 1208). Roccas and Sagiv [58] also argued that “one of the reasons for the interest in understanding personal values is their effects on behavior (p. 30)” and “personal values have been found to be associated with a large variety of behaviors (p. 33).”

The basic assumption in this study is value-based behaviors are expected to be congruent with whichever strongest values apply. A value-congruent behavior is a behavior in which values play a large part. For example, an individual with particularly strong religious values will make a decision in such a way to support those values while, alternatively, a decision-maker with strong socially-minded values would make a decision from a more socially-oriented standpoint. A value-based behavior is then expected to follow the principle of value congruence, proposed by Rokeach [60] and Schwartz [64], in which values act as guiding standards with which individual behavior is made congruent.

People want to act according to their values [7, 23, 63, 82] and have a need for consistency between their values and actions [60]. Value-consistent action is rewarded; it helps people achieve what they want. Thus, behavioral scientists view values as one of the most important factors in understanding consumer behavior [29, 55, 81, 83]. Claeys et al. [16] even claimed that “values are the ultimate source of choice criteria that drive buying behavior (p. 193).” Some researchers have also indicated that an individual’s values have a more pervasive influence on consumption behavior [9, 69]. For example, Sheth et al. [69] suggested that the categories of values which relate to an individual’s preferred mode of behavior would lead directly to the choice in certain consumption situations. In addition, it was suggested that gift-giving behavior was primarily motivated by consumers’ values of self-esteem and social acceptance [9].

Value congruent behavior is not merely a fundamental theory in consumer behavior research; it has also been applied to prior information system research, where, for example, Daghfous et al. [20] found hedonism values to be directly and significantly related to consumers’ inclination to adopt the use of electronics. Matook [46] also found that users with high information systems values want to use eBay to buy, sell, and bid for products, while users with low information systems values seem to avoid using eBay. Pöyry et al. [54] distinguished between consumers’ hedonic and utilitarian values for using company-hosted Facebook pages and related them to two types of community usage behavior: browsing and participation. As a result, values could serve as predictors of behavior over extended periods of time. An individual’s value system is a stable construct that does not change easily, and this notion is useful to explain the influence of bidding values on behaviors.

There is ample evidence that hedonic and utilitarian values affect consumption behavior (e.g., [4, 30]), so this study widely adopts the view in which shopping values include both utilitarian and hedonic dimensions and further transforms these concepts into bidding values. Thus, the roots, definition, and studies related to shopping values will be reviewed comprehensively in the following sections.

2.3 Shopping values: hedonic versus utilitarian values

Shopping values, which are one kind of value, are stable across various shopping situations [4], and two major dimensions of shopping values have already been tested empirically—utilitarian value and hedonic value [4, 27, 68].

A utilitarian value reflects shopping with a work mentality [27, 28]. That is, consumers purchase products in an efficient and timely manner to achieve their goals with a minimum of aggravation. They commonly evaluate task performance in terms of success, accomplishment, or relief [68, 77]. Meanwhile, a hedonic value is more subjective than a utilitarian value, and results more from the fun and playfulness of shopping activity rather than its completion [28, 30]. That is, the perceived enjoyment of shopping in and of itself is an important hedonic benefit [10]. Sherry [68] concluded that “the seeking of such experience is often far more significant than the mere acquisition of products (p. 27).” In summary, utilitarian values relate to goal-oriented and rational behavior, whereas hedonic values are concerned with fun, playfulness, and enjoyment [4].

The concept of shopping values was developed by Babin et al. [4] and was originally derived from offline shopping contexts. Numerous studies have examined the effects of consumers’ shopping values on shopping strategies in the context of the shopping mall [3, 14, 22, 75, 78, 79], and the influences on preference, satisfaction, loyalty, and other important outcomes [18, 34].

More recently, some scholars have extended the concept of shopping values to the context of information systems, e-commerce [17, 25, 36, 42, 50], and e-auctions [38, 39]. However, the concept of shopping values should be slightly different between offline and online environments, as well as between online shopping and e-auctions. For example, compared to offline shopping, online shoppers simply click onto a website without interacting with salespeople. Thus, the hedonic value of online shopping is more likely to be satisfied by impersonal information than is the case for offline shopping.

Moreover, an e-auction activity includes uncertainty and competition, which makes it different from online shopping. The manner of acquiring items is also different for shopping and bidding. For example, the enjoyment of online shopping might be derived from browsing products, while the interesting component of e-auctions might come from the “competition.” The final price of a product or service in an e-auction is unpredictable [45] due to the unknown number of bidders. This uncertainty provides feelings associated with play, risk, and potential competition, which are different from the feelings associated with buying products in a traditional way.

On the one hand, this study argues that the bidding process is akin to the process of competing and the perceived competitive pleasure of participating in online auctions generates important hedonic benefits. On the other hand, if the product is acquired in the most economical way, this generates utilitarian benefits. Accordingly, the definition of a hedonic bidding value in this study is the perception of the potential entertainment provided through the competing activities/processes, while the definition of a utilitarian bidding value is an efficient and timely manner to achieve the goal of winning with a minimum of effort. The meaning of “utilitarian”

has been slightly modified in this research because the focus was on how a product was acquired in the most economical way during e-auctions. In other words, the utilitarian bidding values were derived from the bidding process rather than the product itself. Following the principle of value congruence proposed by Rokeach [60] and Schwartz [64], this study suggests that bidders' hedonic/utilitarian values determine their pricing decision, bidding strategy, and the likelihood of winning. The hypotheses are developed in the following section.

2.4 Pricing decision

Hedonic shoppers focus on the fun and playfulness of shopping activity rather than its completion [30]. Prior studies have indicated that pleasure-oriented consumers might engage in interaction with a web environment just for the sake of the interaction [15, 37]. In addition, Cotte et al. [17] found that web users seeking hedonic benefits from their usage were less concerned with the time they spent than users seeking utilitarian benefits, and were thus more likely to exhibit recreational usage behaviors. However, those with utilitarian bidding values for engaging in a particular type of behavior usually tended to evaluate task performance in terms of success, accomplishment, or relief [4, 17, 68, 77]. Thus, compared to bidders with high hedonic bidding values, bidders who hold high utilitarian bidding values tend to seek to achieve their goal of winning the bid, and then may raise their final bid aggressively in the bidding process. The first hypothesis is proposed as follows:

Hypothesis 1 Bidders with high utilitarian bidding values are more likely to submit a higher final bid than those with high hedonic bidding values.

2.5 Bidding strategy

Bidding strategy during e-auctions could be classified into two methods: a manual bidding approach and an auto-bidding approach. Bidders using the auto-bidding approach simply press a button once and then wait. It is simple and efficient, but often boring. The means of auto-bidding is designed purely for functional and convenient purposes, and somehow diminishes the fun, novelty, and variety during the process of auction competition.

This study argues that highly hedonic-oriented bidders will tend to favor the manual bidding approach when compared to high utilitarian-oriented bidders. First, this is because hedonic-oriented bidders prefer to extend the length of an auction, which is similar to a shopper who lingers in shopping malls because the experience of wandering around the shops is inherently satisfying and, as with all activities that are enjoyable, the shopper does not want to terminate the activity [78, 79]. The second reason is hedonic-oriented bidders pursue hedonistic values by engaging in competitive activities [7, 17]. Drawing from online game studies, “social competition” results from the social situation when playing or competing against another, and leads to more enjoyment [86]. Mandryk et al. [44] found that playing against another person leads to both higher arousal and more fun. Heeter [26] suggested that the knowledge of other people coexisting in the same virtual reality

might enhance the enjoyment and feelings of social presence. The possibility to interact with other users in the virtual world also exists in the context of an e-auction. Moreover, e-shoppers with high hedonic needs tend not to use the buy-it-now function [1]. This study considers that the auto-bidding approach is similar to the buy-it-now mentality and this may decrease participation and competitive enjoyment during the bidding process. Thus, bidders with high hedonic values will prefer to bid manually when compared to bidders with high utilitarian values, because manual bidding raises more social competition and leads to more enjoyment, regardless of time and effort.

In contrast, utilitarian bidders focus mainly on completing a task in an efficient and timely way [4, 17], thus, they may consider the manual bidding approach to be troublesome and would rather not use it. Furthermore, they are concerned with “finishing a task” and are focused on how to gain the item efficiently in a trouble-free manner [68, 77]. Pressing an auto-bidding button once during an e-auction and waiting for the result fits well with utilitarian bidders’ values and needs. Hence, the second hypothesis is proposed as follows:

Hypothesis 2 Bidding values will influence bidding strategy.

H2a Bidders with high hedonic bidding values tend to bid manually compared to those with high utilitarian bidding values.

H2b Bidders with high utilitarian bidding values tend to bid automatically compared to those with high hedonic bidding values.

2.6 The likelihood of winning

Bidders may experience the feelings of excitement associated with competing in the bidding process due to their rivalry with other bidders, while they may also achieve their goals efficiently and with minimal investment. Since the performance, i.e., being the winner, is a more important concern for bidders with high utilitarian bidding values than those with high hedonic bidding values, utilitarian bidders’ values guide them to pursue the winner’s status [8], and furthermore, they will aggressively seek to achieve their goal of winning the bid. Conversely, bidders holding high hedonic bidding values enjoy mainly the competing process itself, irrespective of whether or not they win the item at the end of the auction [30]. In other words, the bidders’ hedonic values are derived more from the competing process (i.e., competitive enjoyment) than from the outcome (i.e., completion of a task). Hence, a bidder with a higher level of utilitarian bidding values has a higher likelihood of winning than a bidder with a higher level of hedonic bidding values. Thus, the third hypothesis is proposed as follows:

Hypothesis 3 Bidders with high utilitarian bidding values are more likely to become winners than those with high hedonic bidding values.

This study further considers that the likelihood of winning is also determined by bidding strategy and pricing decision. Cui and Lai [19] proposed that different bidding strategies yield different winning outcomes. They found that the use of an

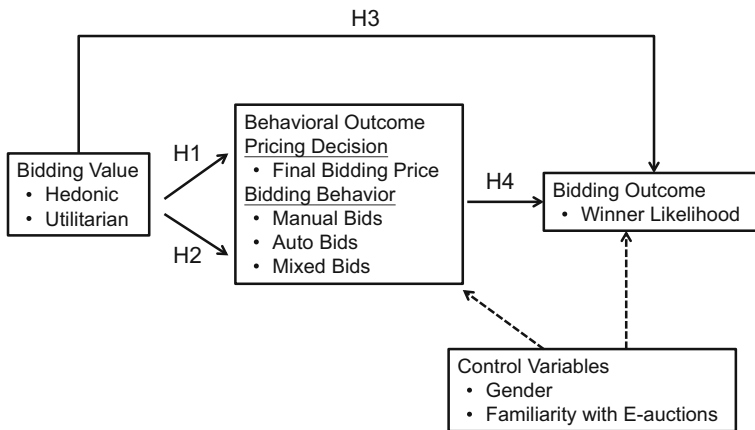


Fig. 1 Research framework

automatic bidding agent resulted in a greater number of winning outcomes. Similarly, this study also believes that bidders using an automatic bidding strategy are more likely to be winners. Thus, the fourth hypothesis is proposed as follows:

Hypothesis 4 Bidders using an automatic bidding approach are more likely to be winners.

The proposed research framework is based on the theoretical background discussed above. The framework explores the relationships between hedonic and utilitarian bidding values, pricing decisions, bidding strategies, and outcomes. In addition, some previous studies have shown that males and experts in the e-auction environment behaved differently to females and amateurs [67]. Consequently, this study includes two control variables, namely gender and familiarity with e-auctions, as covariates in the analysis. Figure 1 illustrates the research framework.

3 Research methods

This study conducted a quasi-experimental design on a real e-auction website. The experimental setting allowed the researchers to control the competitive level and auction length in all e-auction sessions, as well as to closely monitor participants' bidding patterns and times.

3.1 Experimental design and procedure

The participants consisted of college students from two business courses. Previous studies have determined that college students make up a representative sample of the e-commerce shopper population [51], and college student samples are more likely to be familiar with e-commerce and e-auctions. Moreover, the student sample could increase the internal validity of the experiments.

The final valid sample size was 121. Those participants who did not offer a bid during the process were excluded from the results, and in addition, if the participants offered a final price exceeding or below their estimated reasonable prices over three standard deviations (SD), they were also excluded. Not entering a bid, a dramatic over-bid or a dramatic under-bid might signal that the participant did not fully understand the rules of the bidding game or the product.

Participants first practiced bidding on a trial item prior to the experiment, to become familiar with the auction process and environment. Since this was an experiment and the participants might not have been interested in the product being auctioned, five auction items were included, namely a cell phone, a digital camera, a digital translator, an MP3 player, and a flash drive, being products with which all the participants were familiar. Each participant selected one of the five items about which they felt comfortable to make a bid. Moreover, these five products are representative of search goods used in previous research [47, 85]. The market price range of these items was wide, ranging from US \$12 to \$260, to increase the generalization of the study results.

Furthermore, the objective of the participants was to win the assigned product with a lower-than-market price. The winner of each bid was scored based on the difference between the final price and the market price. The bidder could only be ranked if he/she won the auction and offered a final price lower than the market price, to prevent unreasonable high bidding prices. The top five “smartest” bidders would win a cash coupon worth between US \$6 and \$30 to encourage their involvement during the e-auction. Moreover, this cash reward system also created a simulation of an auction situation with authentic competition and ensured that bidders did their best to participate in the auction without the interference of product preferences. In other words, winning the prize, instead of truly acquiring the product, could encourage participants to be focused more on the process, rather than the product itself.

In fact, this was another reason for using prizes rather than actual products in this study. The utilitarian or hedonic values could come from the products and the transaction process, however, the utilitarian or hedonic values from a product or service could be individually different. Also, the purpose of this study is to investigate utilitarian or hedonic bidding values; thus, the transaction process itself is the focus. Furthermore, this experimental setting altered the goal of the auction to prevent any interference from personal levels of product involvement, product preferences, compulsive purchase habits, and variety seeking on the auctioned products. In addition, how bidders’ values influenced bidding behaviors could be observed during the e-auction simulation.

Four to five participants were randomly assigned to one auction. Each session had at least five auctions ongoing simultaneously, which meant a minimum of 20 bidders participated at the same time. The participants arrived at a computer laboratory at an assigned time and were asked to log-into an actual e-auction website where the items being auctioned were already all set. The seats in the laboratory were randomly assigned so that the bidders neither knew who the competing bidders were nor where they were sitting.

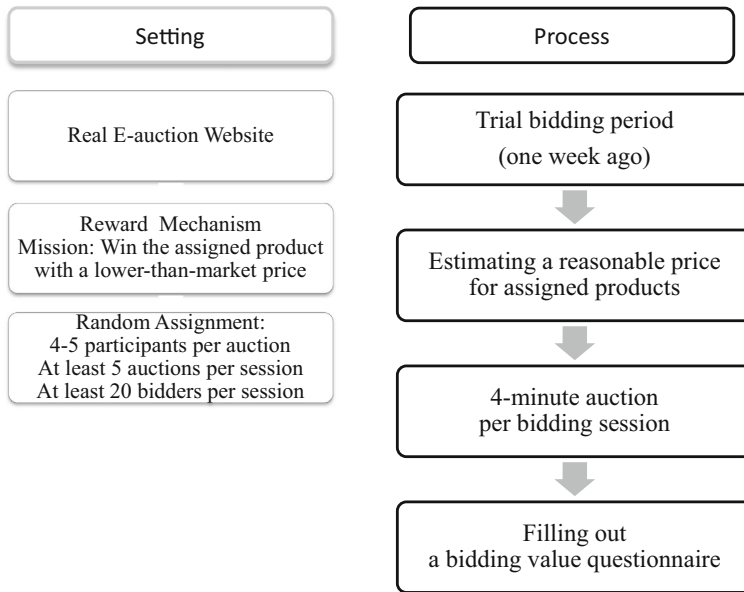


Fig. 2 A flowchart of the experimental procedure

Before the bidding game started, the respondents were first asked to estimate a reasonable price for the target item. Each auction lasted for four minutes, during which participants were able to bid on the focal items. The purpose of the short time period was to prevent actual bidders from joining the experimental auction accidentally. After the bidding game, the researchers stopped the bidding and announced the actual market price and whose final bid was the highest. Then, the respondents were asked to fill out a questionnaire about their bidding values and their prior experience of e-auctions. Figure 2 shows a flowchart of the experimental procedure.

3.2 Measurements

The development of an online bidding value scale was based on the personal shopping value scale [4] to fit the purposes of this study. A panel of four experts on consumer behavior and marketing modified the questions for the e-auction setting and came up with four items corresponding to hedonic values and four items corresponding to utilitarian values. All items were six-point Likert-type scales, ranging from 1 (strongly disagree) to 6 (strongly agree). The score of the two value dimensions was calculated separately, because a high/low level on one dimension does not preclude a low/high level on the other [80]. The theoretical evidence has also supported the coexistence of two distinct dimensions of the original Personal Shopping Value [4].

All of the dependent variables including the final bidding price, the frequency of manual bids, bidding approach (i.e., auto, manual, and mixed), and final status (i.e.,

winner or loser) were obtained from the database of the e-auction website. Before the bidding game started, participants were required to estimate the reasonable price for the target product (an open-ended question). Except for the variables of final status and bidding approach, which are nominal scales, all other variables are ratio scales.

This study adopted a Z score transformation to standardize the final price and the estimation of a reasonable price across the product categories to combine the five different data sets. The bidding approach was recorded by researchers (i.e., “auto bidding approach only” = 1, “manual bidding approach only” = 2, and “mixed-bidding approach” = 3). The times of manual bids were also recorded.

After the end of the e-auction, participants also expressed their satisfaction level toward the outcome. Although the main focus of the study is to examine how an individual's values influence their engagement in specific behaviors or strategies, previous findings on shopping value and satisfaction have provided support for linking utilitarian shopping values and hedonic shopping values to satisfaction [13, 34], so a measurement of post-satisfaction was included to re-examine the findings of prior research. The measurement of satisfaction was on a five-point scale, ranging from 1 (very unsatisfied with the outcome of bidding) to 5 (very satisfied with the outcome of bidding).

4 Results

The percentage of female and male respondents was 66.94 and 33.06 %, respectively. Male respondents were more satisfied with the bidding outcomes ($M = 3.23$, $SD = 1.10$) than the females ($M = 2.64$, $SD = .88$, $t_{(1, 119)} = 3.18$, $p < .05$). The percentage of winners was 32.23 %; the remainder were losers. The proportions of those using the auto-bidding approach (35.54 %) and the mixed-bidding approach (36.36 %) were similar, while the percentage using the manual bidding approach was 28.10 %. Because nearly half (43.80 %) of the participants were unfamiliar with e-auctions before the experiment, they were required to practice bidding on a trial item prior to the experiment. Moreover, the results showed that familiarity with e-auctions was not significantly related to any dependent variable, so the heterogeneity of the bidders in terms of their familiarity with the bidding process should not be a problem in the present study. Table 2 presents the basic statistics for each variable of the total sample. Table 3 reports the mean and SD of each variable by different groups.

4.1 Factor analysis

An exploratory factor analysis was first performed to confirm the factor structures of the online bidding value (see Table 4). The results of the varimax rotation revealed two factors with eigenvalues over one. All factor loadings were over .67 and two factors explained 64 % of the total variance. Indeed, the four items for the hedonic

Table 2 Means, SDs, and correlations of variables ($n = 121$)

Variables	Hedonic value	Utilitarian value	Manual bids	Satisfaction toward outcome	Estimation of reasonable price	Final bid
Mean	3.93	3.64	1.12	2.81	.00	.00
SD	.91	.77	1.41	1.00	.98	.98
HV		.13	.22**	.20**	-.08	-.02
UV			.08	.09	.09	.18**
MB				-.09	-.08	.01
SO					-.13	-.26***
ERP						.34***

HV hedonic value, *UV* utilitarian value, *MB* manual bids, *SO* satisfaction toward outcome, *ERP* estimation of reasonable price

* $p < .10$, ** $p < .05$, *** $p < .01$

dimension (39 % of the variance) had a Cronbach's $\alpha = .89$, while the other four items for the utilitarian dimension (25 % of the variance) had a Cronbach's $\alpha = .68$. According to Nunnally and Bernstein's [48] suggestion, Cronbach's α for exploratory research up to .60 is an acceptable benchmark and over .70 is a satisfactory level. It is worth noting that the correlation between the hedonic bidding value and the utilitarian bidding value was .12 ($p > .1$), which implies that these two dimensions co-exist independently.

4.2 Hypotheses test

The main purpose of this study is to compare the differences between consumers with different bidding values. Therefore, the first step was to apply the median split on the score of the hedonic (median = 4.00) and utilitarian bidding value (median = 3.50) and form a 2 by 2 matrix.

First, a one-way ANCOVA (analysis of covariance) was performed with the group of bidding values as the independent variable to test H1 and H2a. The two covariates were gender and e-auction experience. The frequency of manual bids, final bidding price, estimation of reasonable price, and satisfaction were dependent variables separately. The results revealed a significant main effect of bidding values on manual bids ($F_{(3, 115)} = 3.07$, $p = .03$), and satisfaction toward bidding outcomes ($F_{(3, 115)} = 2.32$, $p = .08$), but this was not significant on final bids ($F_{(3, 115)} = 2.05$, $p = .11$) and estimation of reasonable price ($F_{(3, 115)} = 1.21$, $p = .31$). Tables 5 and 6 show the results of the ANCOVA and the means of e-auction behavioral outcomes by virtue of different bidding values.

This study emphasizes the comparison of pure hedonic bidders (i.e., high hedonic/low utilitarian in Group 1) and pure utilitarian bidders (i.e., high utilitarian/low hedonic in Group 2), rather than the comparison between the four cells. Thus, although the final bids were not significant in the two-tail test, as shown in Table 5, the one-tail planned contrast was applied based on the directional hypothesis.

Table 3 Mean of each variable by different groups

Variables	HV	UV	MB	SO	ERP	FBP
Winner (n = 39)	3.89 (.93)	3.80 (.68)	.95 (1.39)	2.95 (1.19)	.28 (1.10)	.29 (.99)
Loser (n = 82)	3.96 (.92)	3.57 (.82)	1.12 (1.29)	2.78 (.88)	-.07 (.87)	-.17 (.86)
t value	.37	-1.46	.67	-.88	-1.91**	-2.61**
Auto-bidding (n = 43)	3.85 (.95)	3.76 (.82)	.00 (.00)	2.93 (1.01)	.16 (1.03)	.05 (.96)
Manual bidding (n = 34)	4.08 (.90)	3.50 (.94)	2.00 (1.50)	2.76 (.92)	-.04 (1.14)	.11 (1.14)
Mixed-bidding (n = 44)	3.91 (.91)	3.62 (.60)	1.39 (1.10)	2.79 (1.04)	-.01 (.72)	-.19 (.65)
F value	.57	1.01	38.75***	.32	.52	1.25
Female (n = 81)	3.75 (.79)	3.58 (.69)	1.00 (1.30)	2.64 (.88)	.00 (.85)	-.11 (.87)
Male (n = 40)	4.32 (1.04)	3.77 (.94)	1.20 (1.38)	3.23 (1.10)	.13 (1.17)	.16 (1.00)
t value	3.28***	1.24	.78	3.18***	.67	1.54
Unfamiliar with e-auctions (n = 53)	3.90 (.81)	3.63 (.83)	1.26 (1.47)	2.70 (.93)	.12 (1.04)	.04 (1.09)
Familiar with e-auctions (n = 68)	3.96 (.99)	3.65 (.75)	.91 (1.18)	2.94 (1.03)	-.01 (.90)	-.07 (.77)
t value	-.35	-.15	1.46	-1.33	.73	.66

SDs are in parentheses

HV hedonic value, UV utilitarian value, MB manual bids, SO satisfaction toward outcome, ERP estimation of reasonable price, FB final bid

* $p < .10$, ** $p < .05$, *** $p < .01$

A planned contrast showed that Group 2 with high utilitarian values offered final bids ($M = .23$, $SD = .74$) higher than pure hedonic bidders (Group 1) ($M = -.24$, $SD = 1.00$; $F_{(1, 51)} = 3.47$, $p = .07$). Also, their estimated reasonable prices were different ($M_{utilitarian\ bidders} = .29$, $SD = 1.24$ versus $M_{hedonic\ bidders} = -.21$, $SD = .71$; $F_{(1, 51)} = 3.64$, $p = .06$). It is clear that the high utilitarian bidders' curse of overpaying could be due to a higher ceiling price limit (i.e., estimated reasonable price or internal reference price) at the beginning of the auction. They may have sought to achieve their goal of winning the bid and then could hardly control their need to offer higher prices in order to win. Ultimately, they were more likely to become a winner (76.47 %, compared with 23.53 % of hedonic winners) by raising the final bid aggressively in the bidding process simply because they paid much more attention to the task of satisfying their winning mentality, which supports H1. A planned contrast also showed that high hedonic bidders (Group 1) tended to bid manually more often ($M = 1.19$, $SD = 1.41$) than high utilitarian

Table 4 Results of exploratory factor analysis

Factor	Items	Factor loadings	Cronbach's α
Hedonic value	This competing process was truly a joy	.91	.89
	I enjoyed this competing process for its own sake, not just for the prize(s) I might have received	.92	
	The uncertainty made me enjoy the competing process	.89	
	During the bidding process, I felt the excitement of competition	.73	
Utilitarian value	I felt this auction was meaningful when I won the bid with the lowest price possible	.67	.68
	If I couldn't win the item with a low enough price, the bidding effort was a waste	.69	
	The value of participating in an e-auction was winning the bid	.77	
	Winning the bid was the only thing I cared about	.72	

Table 5 Results of the ANCOVA

Source	Degree of freedom	Dependent variables (F value)			
		Manual bids	Final bid price	Estimation of reasonable price	Satisfaction toward outcome
Group of bidding values	3	3.07**	2.05	1.21	2.32*
E-auction experience	1	1.86	.86	.78	2.65
Gender	1	.00	1.50	.71	8.95***
Total	120	2.40**	1.78	.91	4.00***

* $p < .10$, ** $p < .05$, *** $p < .01$

bidders (Group2) ($M = .65$, $SD = .97$, $F_{(1, 51)} = 3.49$, $p = .07$), consistent with H2a.

The multivariate categorical model was adopted to further examine H2a, and also to test H2b. The results illustrate that the proportion of participants using a manual bidding approach among high hedonic bidders (Group1) (70.00 %) was higher than that for the high utilitarian bidders (Group2) (30.00 %), whereas the proportion of participants using an auto-bidding approach among high utilitarian bidders (Group 2) (69.57 %) was higher than that for the high hedonic bidders (Group 1) (30.43 %), with a significant $\chi^2 = 4.71$ ($p = .09$), which supports H2a and H2b. Indeed, a bidder with a higher level of hedonic bidding values was more likely to adopt a manual bidding approach and would tend to bid manually more often, whereas a utilitarian bidder was more likely to use an auto-bidding approach. Thus, high hedonic bidders seemed to enjoy the experience of the auction mechanism by participating and competing in the bidding process.

Table 6 E-auction behavioral outcomes by different bidding values

Bidding values	Dependent variables				
	Sample size	Manual bids	Final bid price ^a	Estimation of reasonable price ^a	Satisfaction toward outcome
High hedonic and low utilitarian (Group 1)	25	1.19 (1.41)	−.24 (1.00)	−.21 (.71)	2.70 (.95)
Low hedonic and high utilitarian (Group 2)	30	.65 (.97)	.23 (.74)	.29 (1.24)	2.65 (.73)
High hedonic and high utilitarian (Group 3)	38	1.55 (1.62)	.19 (.95)	.07 (.65)	3.18 (1.18)
Low hedonic and low utilitarian (Group 4)	28	.82 (.86)	−.17 (.93)	.14 (1.16)	3.02 (.88)

SDs are in parentheses

^a The final bid and the estimation of reasonable price are a Z score transformation across five product categories

In line with H3, the results illustrate that the proportion of winners with high utilitarian bidding values (Group 2) (76.47 %) was higher than that of those with high hedonic bidding values (Group 1) (23.53 %), with a significant $\chi^2 = 4.77$ ($p = .03$). High utilitarian bidders were more likely to become winners because they raised the final bid aggressively in the bidding process. Furthermore, the proportion of winners with an automatic bidding approach (64.71 %) was higher than those with a manual bidding approach (5.88 %) and a mixed bidding approach (29.41 %), with a significant $\chi^2 = 5.82$ ($p = .05$), which supports H4.

4.3 Other findings

Only Group 3 (i.e., those with high hedonic/high utilitarian bidding values) was satisfied with the bidding outcomes ($M = 3.18$, $SD = 1.18$), compared to Group 1 (i.e., high hedonic/low utilitarian) ($M = 2.70$, $SD = .95$, $F_{(1, 115)} = 3.87$, $p = .05$) and Group 2 (i.e., low hedonic/high utilitarian) ($M = 2.65$, $SD = .73$, $F_{(1, 115)} = 5.16$, $p = .03$). Although hedonic-oriented bidders enjoyed the bidding process, they may remain unsatisfied with the bidding outcomes due to the fact that they didn't win the item or didn't have enough time to enjoy the bidding process. While utilitarian-oriented bidders raised their final bids, they may be "cursed" by overpaying for the item they have "won."

5 Conclusions and general discussion

Conceptually, product acquisitions through e-auctions are fundamentally different from regular fixed-price purchases, because bidders enjoy better deal outcomes and/or the bidding process more than for a traditional shopping experience [2]. The results of the study reveal the effects of bidding values on e-auctions directly on

different behavioral patterns, beyond the influence of shopping values on attitudes or intentions toward participating in e-auctions [39, 40].

The concept of bidding values is rooted in the notion of shopping values. This study suggests that bidding values provide the grounds for bidding decisions and are an intrinsic guideline for consumers' bidding behavior. The significant relationships between bidding values and bidding behavior revealed in this study can be used to strengthen the value congruence theory for understanding behavioral motivations and lessen the gap between value and action.

This study finds that hedonic bidding values seem to be an important predictor of certain process-related behaviors. Hedonic-oriented bidders cared more about the enjoyment gained during the competing/participating process than about the outcome, so they preferred the manual bidding approach. The result of the bidding performance, i.e., being the winner, may not be the major concern for bidders with high hedonic bidding values. Conversely, bidders with strong utilitarian bidding values tended to raise their final bid at the end of the bidding process in order to guarantee the win, and also because they estimated higher internal reference prices at the beginning of the auction.

5.1 Managerial implications

More robust measures of bidding values in different market segments are, of course, key to managerial practice. Based on a deeper understanding of why different bidder segments bid for items, sellers may elicit higher bidding prices from their target customers by adequately addressing their values. From a viewpoint of market segmentation, clustering groups according to their primary bidding values may indicate distinct market segments in which marketing strategies could be implemented. Our findings on e-auction typologies and classification schemes can provide a basis for segmentation and targeting different types of bidders. For example, from the market positioning point of view, online auction managers could provide an entertaining experience during e-auctions and various games, which could accompany the auction process, could attract hedonic-oriented bidders.

Moreover, when an e-auction platform senses that a bidder always bids manually, it may provide some fun-related interaction with the bidder to maintain their bidding activity. E-auction marketers may exploit the emotional excitement associated with competing in e-auctions when they develop advertising strategies to increase online shopper traffic to their websites [11]. The atmosphere of competition is likely to attract hedonist bidders. E-auctions could also restructure their auction systems or processes by incorporating other entertainment features, such as interactive videos, music, and games to increase the atmosphere of competition to attract hedonist bidders.

On the other hand, an auto-bidding approach represents a winning determinant. When an e-auction platform senses a bidder using the automatic approach, it may direct the bidder to a straight purchase site to acquire the product immediately. Providing efficient auction techniques and enhancing the cost/benefit ratio via e-auctions should be attractive to utilitarian-oriented bidders. A trouble-free approach, such as well-organized and easily accessible information hierarchies,

comprehensive FAQ lists, and web tools that make posting pictures and information relatively simple, provides for the utilitarian values of auction participants. Search efficiency and purchases with potentially low prices via e-auctions are the major attractions for utilitarian-oriented bidders.

5.2 Limitations and suggestions for future studies

This study carries several limitations in the quasi-experimental process and leaves several possible areas for future research. First, a real auction website was employed which enhanced the external validity, however, the student sample decreased the external validity of the experiment and did not provide a demographically diverse group, although young students represent the main body of Internet users and e-auction shoppers. Future research may consider recruiting respondents from an authentic environment to increase the generalizability of the results.

Because the attraction for all bidders was the prize rather than the auctioned items in this experiment, product characteristics did not interact with bidding values in the study. Thus, this e-auction simulation may also have led to some limitations. First, the five auction items were all search goods. The purpose of selecting the same types of products was to control any interference from product categories, but this limited the application of the results of this study. Second, the price range of the auctioned products was from US \$12 to \$260, which was a wide range but not wide enough to represent all product categories. Since bidders perceive much higher risks from a transaction involving an expensive product than for a transaction involving an inexpensive item, they may be inclined to look for more reputable sellers and may be more willing to pay higher price premiums to trustworthy sellers for expensive auction items [35, 90, 91]. The effect of expensive products on bidding price may be particularly significant for bidders with utilitarian values, because they emphasize the completion of a task in an efficient way. This hypothesis is worthy of further study and evaluation.

The meaning of “utilitarian” was slightly modified because this study focused mainly on how a product is acquired in the most economical way during e-auctions. In other words, the utilitarian bidding values in this study were based on the bidding process rather than the product itself. Consequently, this well-controlled experiment was only a simulation of the competing/bidding process. It would be better if both utilitarian values from the product and transaction process could be included in any future research.

In this study, each auction in the experiment lasted for only four minutes, which was a decision based on a pre-test result. Overall, the hedonic bidding value of respondents ($M = 3.93$) in this study was significantly higher than the middle point 3.5 ($t = 5.05$, $p < .01$). Although it could be argued that four minutes for an e-auction was not sufficient to induce the feelings of enjoyment for some hedonic-oriented bidders in the bidding process, the results revealed that most participants did experience some hedonic value from the four-minute e-auction. In the future, a relatively optimal experimental time period necessary to induce strong enough psychological effects could be determined, or the use of a simulated auction site

designed for the study, rather than using an existing production site, could be employed to extend the available bidding time.

This study categorizes online bidders based on their bidding values, then directly links these fundamental drives to their bidding behavior. However, mediators or moderators commonly exist in the linkage between one's value system and behavior. Thus, the model may not yet be comprehensive and needs further study for it to be modified. For example, Sivadas et al. [71] suggested that potential bidders face two conflicting goals, i.e., approach and avoidance motives, and these conflicting motives may link to different bidding values which will in turn influence online bidding behavior. Thus, a self-regulatory focus or other motivational factors may influence bidders' promotional or preventive behavior patterns, thereby complicating their bidding values. Comparing the effects of a self-regulatory focus with bidding values would be another interesting topic for additional research.

In this study, bidders with high utilitarian bidding values tended to offer a higher bidding price in order to win; thus, they were more likely to suffer from what is commonly known as the "winner's curse." This implies that the "winner's curse" and any associated regrets are potential negative consequences for utilitarian bidders. This viewpoint is worthy of further investigation in the future. It is also worth knowing whether so-called "snipers" have high utilitarian bidding values. Bidders who snipe at the end of an auction, one would assume, are determined to win, which implies that snipers may hold strong utilitarian bidding values, and this is something which could also be further investigated.

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