# IMPORTANT AUCTION CHARACTERISTICS IN E-MARKETPLACE DECISIONS: AN EXPLORATORY LOOK AT AUCTION SELECTION AND PRODUCT VALUATION

**John Drake**
**Auburn University**
drakejr@auburn.edu

## Abstract

*The emerging success of online auction marketplaces has challenged researchers to identify the characteristics that affect success of these auctions. It is far from clear how certain auction characteristics affect bidding decisions in the context of individual ethical foundations. We conducted an exploratory study that examined which auction characteristics were most important when making decisions for selecting an auction and when deciding on how much to bid. Results indicate that online auction buyers do treat the importance of auction characteristics differently at each decision. Interesting findings with regards to seller feedback and various other auction characteristics warrant further study.*

**Keywords**: e-Marketplace, decision-making, ethics, exploratory

## Introduction

Auctions have experienced tremendous commercial success online. Despite the success of these auctions, researchers understand little about how and why buyers choose a particular auction or how and why a buyer decides how much to bid on that auction.

In determining what auction characteristics affect the bid price, researchers have explored such characteristics as feedback scores, escrow services, starting price, reserve prices, psychological contract violations, and certifications. Although less numerous, some research has explored which auction characteristics affect the selection of a particular auction over alternatives. Such auction characteristics as current bid amount have been shown to influence auction entry (Anwar, McMillan et al. 2006). Corresponding research found that the number of bidders in an auction is related to the book value, seller reputation, and the interaction effect between minimum bid and secret reserve price (Bajari and Hortacsu 2003).

We made two observations from these research efforts; 1) the auction characteristics chosen to observe were selected prior to the data collection and 2) several of the characteristics are significant at both the decision to enter an auction and at the decision on the amount to bid. The first observation suggests that an exploratory study may be appropriate to verify and rank the importance of these auction characteristics to consumers. The second observation suggests one of two things; (a) these characteristics are important for both decision points or (b) there is more complexity than the current theories account for.

This study contributes to literature by verifying which auction characteristics are most important to online auction buyers when selecting an auction and when deciding how much to bid, and by determining how the importance auction characteristics change from auction selection to product valuation. These results are compared with existing theories used in explaining online auction behavior.

# Literature Review

At the decision to enter an auction, a buyer must make two decisions. The first is whether to select *this* particular auction or not. We call this the *auction selection*. Even if a buyer selects multiple auctions in which to "cross-bid" (Anwar, McMillan et al. 2006), the buyer must pick in which auctions they wish to cross-bid. The second decision is how much to bid on the product in that auction. We call this the *product valuation*. The product valuation may include factors that are not product related, but the ultimate goal of an auction consumer is to purchase a product at no more than the value they see in that product. Even if the decision dynamics change near the end of an auction, the value assessment is likely to have already occurred (Ariely and Simonson 2003). After the auction selection and the product valuation, the consumer places their bid.

## *Ethical foundations*

Two diametrically opposed ethical theories suggest two different approaches to decision-making at these two decision points. In the first ethical perspective, Contractarianism (Gauthier 1986), individuals believe everyone acts opportunistically if they can get away with it. It is only the possibility of being discovered that fosters moral restraints. The consequences of this perspective in online auctions are that buyers assume all sellers will act opportunistically if given the chance. This leads them to trivialize the auction selection and to focus exclusively on the product valuation. Seller reputation acts as a signal to how likely a seller will act opportunistically and as such directly affects the price premium (Dellarocas 2003). In the second ethical perspective, Objectivism (Rand 1964), moral judgment is based on observed facts. Justice requires the evaluation of the merchant before a buyer considers conducting a transaction with that seller. In online auction terms, an objective evaluation of a seller determines whether or not that auction is selected. Only sellers high reputations are consider for auction selection and no further evaluation of the seller is necessary after that selection.

## *Auction Characteristics*

In this study, the determination of the importance of these characteristics in auction selection and product valuation is largely exploratory. However, we expect to observe several trends based on previous research.

Empirical evidence shows that some characteristics of auctions are significant at both decision points (reputation, current bid, and reserve price as noted above), but many characteristics, such as book value, psychological contract violations, and escrow services, are not (Bajari and Hortacsu 2003; Hu, Lin et al. 2004; Pavlou and Gefen 2005). These differences lead us to suspect that the set of heuristics used for the two decision points should be different. If they were not, then the two decisions would essentially be synonymous, affectively trivializing any comparison between the two. This would overturn our common-sense understanding of the process and years of research that has differentiated between the two. Because we see little likelihood this will happen, our first hypothesis is as follows:

*H1: Buyers will rate the importance of auction characteristics differently between auction selection and product valuation.*

Individuals employing a Contractarian perspective will evaluate the seller reputation in the product valuation decision. Individuals employing an Objectivist perspective will evaluate the seller reputation in the auction selection decision. Direct measures of one reputation heuristic, the feedback score, show that its affect on final bid price varies, depending on the context. In guitar auctions, feedback was largely insignificant in determining final sale price (Eaton 2002). For Rose Bowl game tickets, the seller's reputation was insignificant in influencing the final bid price (Ariely and Simonson 2003). Ba and Pavlou (2002) found that negative feedback scores significantly affected the price premium of various products when interacting with price. However, the number of negative feedbacks was insignificant in coin auctions, even though the overall reputation was significant. When product information, timing of bid, and other actions were taken into account, seller reputation became insignificant in affecting the final bid price of coin auctions (Kauffman and Wood 2006). These conflicting results that the feedback score has on the final bid price, along with its influence disappearing when other factors are taken into account, leads us to believe that seller feedback scores are not as important at product valuation as at auction selection. The findings of Bajari and Hortacsu (2003), that the number of bidders in coin auctions is partially dependent on the feedback score and that the final bid price is partially dependent on the number of bidders, supports the importance

of seller feedback in auction selection. The small affects feedback scores have on price are likely due to a residual affects, mediated through the number of bidders.

*H2: Buyers will rate the importance of seller's feedback score higher in auction selection than in product valuation.*

# Method

In the first phase of our study, 18 experienced online auction participants (whom have purchased at least five items in online auctions) identified 29 unique heuristics that affect either auction selection or product valuation. Of these 29 characteristics, 19 were specific to the auction itself, listed in table 1. The remaining 10 required knowledge outside of auction website, which went beyond the scope of our study.

**Table 1. Important auction characteristics**

| **Auction characteristics** | | |
|---|---|---|
| Current bid | Seller location | Buy now option |
| End time/time remaining | Return policy | Item quality |
| Rate of Bidding | Payment methods accepted | Product Description |
| Number of bidders | Proxy bidding | Photo of Product |
| Shipping costs | Reserve price | Security |
| Shipping options | Minimum bid | Seller feedback |
| Shipping insurance | | |

The second phase consisted of a pre-test and pilot test, which verified our instrument. The third phase involved a survey administered to users of online auctions. Participants came from two groups, 138 undergraduate students in an MIS class at a major southeastern university and a convenience sample of 104 participants outside a major college sporting event, for a total of 242 participants. Students were enticed to participate through extra credit offerings. For the second group, the researchers targeted attendees that appeared older than 25 and admitted to buying something on an online auction. The over age 25 heuristic eliminated many of the undergraduate population and was more representative of the general population of online auction participants. We found that trying to predict from which of the two samples an observation came using logistic regression resulted in a Goodness of fit ($\chi^2$ = 9.638, df = 8, p = 0.291) that was not significant and a -2 log likelihood ($\chi^2$ = 17.257, df = 19, p = 0.572) that was not significant. These results suggested that the two samples could not be distinguished from one-another. To double check, we ran each analysis separately and observed almost identical results. Because of this, our analysis combined the two samples. The combined sample consisted of 55% males, with a mean age of 31 years, a mean income between $40,000 and $60,000, and auction experience of over 3 years, participating several times a year, and spending between a half hour to a full hour every month on an online auction site.

We captured the importance of each of the 19 auction characteristics listed above on a 5-point Likert scale for both auction selection and product valuation by listing the characteristics and asking participants to rate the importance of each in their decision to select an auction and to value the product. We also captured general demographic data and online auction experience. Online auction experience was adapted from Danaher & Mullarkey's (2003) internet experience scale.

# Results and Discussion

Descriptive statistics for the auction characteristics can be found in table 2. A correlation matrix has been omitted to save space. Please email the author directly if you would like to see this data.

**Table 2. Descriptive statistics**

| Auction Characteristic | AS[a] Mean | PV[b] Mean | Mean Diff. | Std. Dev. | t | df | p-value |
|---|---|---|---|---|---|---|---|
| Current bid | 3.913 | 4.095 | -0.182 | .92 | -3.074 | 241 | .002** |
| End time/ time remaining | 4.091 | 4.046 | 0.054 | .85 | .988 | 239 | .324 |
| Bid rate | 3.038 | 3.204 | -0.181 | 1.06 | -2.635 | 237 | .009** |
| Number of bidders | 3.138 | 3.228 | -0.105 | 1.09 | -1.485 | 238 | .139 |
| Shipping costs | 3.893 | 3.740 | 0.153 | .93 | 2.564 | 241 | .011* |
| Shipping options | 3.307 | 3.249 | 0.050 | 1.02 | .761 | 239 | .447 |
| Shipping insurance | 2.921 | 3.025 | -0.109 | .96 | -1.753 | 238 | .081 |
| Seller location | 2.726 | 2.768 | -0.033 | 1.06 | -.488 | 239 | .626 |
| Return policy | 3.610 | 3.462 | 0.155 | .93 | 2.577 | 238 | .011* |
| Payment methods accepted | 3.992 | 3.806 | 0.187 | .77 | 3.761 | 240 | .000** |
| Proxy bidding | 2.776 | 2.854 | -0.064 | .92 | -1.058 | 235 | .291 |
| Reserve price | 3.439 | 3.454 | -0.008 | .99 | -.132 | 237 | .895 |
| Minimum bid | 3.328 | 3.536 | -0.210 | .98 | -3.294 | 237 | .001** |
| Buy now option | 3.508 | 3.606 | -0.096 | 1.00 | -1.485 | 238 | .139 |
| Item quality | 4.469 | 4.339 | 0.122 | .77 | 2.450 | 237 | .015* |
| Product Description | 4.364 | 4.258 | 0.104 | .76 | 2.106 | 239 | .036* |
| Photo of Product | 4.517 | 4.359 | 0.169 | .73 | 3.567 | 235 | .000** |
| Security | 4.204 | 3.959 | 0.238 | .84 | 4.396 | 238 | .000** |
| Seller feedback | 4.066 | 4.017 | 0.050 | .81 | .954 | 239 | .341 |

a) AS = Auction Selection
b) PV = Product Valuation
* significance at the $p < .05$ level.
** significance at the $p < .01$ level.

To test hypothesis 1, that buyers rate the importance of auction characteristics differently between auction selection and product valuation, we determined the difference between the importance of the auction selection and the importance of the product valuation for each characteristic regardless of individual. An F-test (table 3) showed that the differences are significantly distinct, supporting hypothesis 1. We can assume the importance of auction characteristics in auction selection differ from the importance of the same characteristics in product valuation.

**Table 3. ANOVA of the Mean Differences**

| Source | SS | df | MS | F | p-value |
|---|---|---|---|---|---|
| Between | 483.6955 | 18 | 26.87197 | 26.8166 | 0.000 |
| Within | 4588.454 | 4579 | 1.002065 | | |
| Total | 5072.149 | 4597 | | | |

To test hypothesis 2, where buyers will rate the importance of seller's feedback score higher in auction selection than in product valuation, we conducted a t-test on the difference in seller feedback to see if it was significantly different from zero (table 2). According to the test, the mean difference in the importance of seller feedback is not significantly different from zero. There is not enough evidence to support hypothesis 2. This suggests that seller feedback may be far more complicated than originally thought.

Although hypothesis 2 was not supported, suggesting that seller feedback is not more important in auction selection than in product valuation, there was also no evidence that it was more important in product valuation either. While we hypothesized that seller feedback is one of the most common reputation heuristics, it may not be the only one. Other auction characteristics, such as return policy or payment methods accepted, could contribute to reputation, signaling the propensity of the seller to accept responsibility for faulty products. When considering this, we observe that both return policy and payment method accepted are more important in auction selection than in product valuation. These may be viewed as a trustworthiness signals, building competence, benevolence, and integrity based beliefs (McKnight, Choudhury et al. 2002). There is no doubt that opportunistic behavior exists on

online auctions, but how participants react to this fact cannot be explained by the Contractarian perspective alone. When selecting auctions in which to participate, buyers consider seller feedback and other trustworthiness signals to make that decision.

Game theory has gained traction in online auction research due to the emergence of reputation in game theory models of informational asymmetries and repeated actions with the possibility of observing past behavior (Dellarocas 2003). However, game theory, based on the Contractarian ethical perspective, presents economic models that may not be as successful in predicting online auction behavior as expected. There are three types of behavior that violates expected-utility maximization of game theory; when the utility functions are inapplicable, when the subjective probability distribution is inapplicable, and when the economic model is inapplicable (Myerson 1991). Both the utility functions and the subjective probability distribution are violated because participants often consider seller reputation as a qualitative heuristic for auction selection, rather than as a quantitative variable in product valuation. Game theory may successfully represent the mindset of some auction participants who view auction participation as an inherent conflict of interest, but there is no evidence that this represents the majority.

Additional findings reveal that of the ten characteristics with the difference in means between auction selection and product valuation significantly different from zero, three of them were more important in the product valuation decision: current bid, rate of bidding, and minimum bid. The other seven characteristics - shipping costs, return policy, payment method accepted, item quality, product description, photo of product, and security - were more important in the auction selection decision.

The five most important auction characteristics in selecting an auction were photo of the product, item quality, product description, security, and end time/time remaining. The five most important auction characteristics in product valuation were photo of product, item quality, product description, current bid, and end time/time remaining. Interestingly, even though product description and photo of product are significantly less important in product valuation than in auction selection, they are still the two of the most important factors in determining the product valuation.

The five least important characteristics for both auction selection and product valuation were seller location, proxy bidding, shipping insurance, rate of bidding, and the number of bidders. In spite of the fact that rate of bidding is significantly more important in product valuation than in auction selection, it is still on average one of the least important characteristics in product valuation.

## Conclusion

The biggest contribution of this study is the discovery of the relative importance of particular auction characteristics to auction selection and product valuation and to the change in that importance. With these findings, we verified that a difference between the importance of auction characteristics in auction selection and product valuation is indeed significant. We also found that seller feedback is on average equally important in auction selection and product valuation.

The exploratory nature of this study offers many potential avenues for future research, exploring each of these characteristics and their relationships in more depth. There is also the possibility that the importance of particular auction characteristics may change based on personality, experience, age, type of product purchased, or the expected price of the product. Identification of common profiles of online auction participants can both help the auction marketplace owners develop tools to facilitate the auctions on their site and help sellers create auctions that best satisfy buyers' needs.

## References

Anwar, S., R. McMillan, et al. (2006). "Bidding Behavior in Competing Auctions: Evidence from eBay." European Economic Review **50**: p. 307 - 322.

Ariely, D. and I. Simonson (2003). "Buying, Bidding, Playing, or Competing? Value Assessment and Decision Dynamics in Online Auctions." Journal of Consumer Psychology **13**(1&2): 113 - 123.

Ba, S. and P. A. Pavlou (2002). "Evidence of the Effect of Trust Building Technology in Electronic Markets: Price Premiums and Buyer Behavior." MIS Quarterly **26**(3): 243 - 268.

Bajari, P. and A. Hortacsu (2003). "The Winner's Curse, Reserve Prices, and Endogenous Entry: Empirical Insights from eBay Auctions." RAND Journal of Economics **34**(2): 329 - 355.

Danaher, P. J. and G. W. Mullarkey (2003). "Factors Affecting Online Advertising Recall: A Study of Students." Journal of Advertising Research **43**(3): p. 252 - 266.

Dellarocas, C. (2003). "The Digitization of Word of Mouth: Promise and Challenges of Online Feedback Mechanisms." Management Science **49**(10): 1407 - 1424.

Eaton, D. H. (2002). "Valuing Information: Evidence from Guitar Auctions on eBay." Journal of Applied Economics & Policy **24**(1): 1 - 19.

Gauthier, D. (1986). Morals by Agreement. New York, NY, Oxford University Press.

Hu, X., Z. Lin, et al. (2004). "Hope or Hype: On the Viability of Escrow Services as Trusted Third Parties in Online Auction Environments." Information Systems Research **15**(3): 236 - 249.

Kauffman, R. J. and C. A. Wood (2006). "Doing Their Bidding: An Empirical Examination of Factors that Affect a Buyer's Utility in Internet Auctions." Information Technology and Management **7**(3): p. 171 - 190.

McKnight, D. H., V. Choudhury, et al. (2002). "Developing and Validating Trust Measures for e-Commerce: An Integrative Typology." Information Systems Research **13**(3): 334 - 359.

Myerson, R. B. (1991). Game Theory: Analysis of Conflict. Cambridge, MA, Harvard University Press.

Pavlou, P. A. and D. Gefen (2005). "Psychological Contract Violation in Online Marketplaces: Antecedents, Consequences, and Moderating Role." Information Systems Research **16**(4): p. 372 - 399.

Rand, A. (1964). The Virtue of Selfishness: A New Concept of Egoism. New York, NY, Signet.