

DETERMINANTS OF EFFECTIVENESS AND SUCCESS FOR EBAY AUCTIONS

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ABSTRACT

This research investigates eBay auction properties that influence auction outcomes: effectiveness (ability to attract bidders) and success (whether the item was actually sold in the auction). Hundreds of auctions (1,273) for three popular financial calculators—the HP 12c, the HP 10b and BA II plus—were examined to assess the impact of these auction properties. Findings show that utilization of certain auction features influence both outcomes. These features include starting price and reserve price for both calculators. Other features impact only auction effectiveness: wear and the presence of a picture for the HP10 and BA II plus; and wear and ability to pay with credit cards for the HP 12c. Further, others auction factors influence only auction success: abnormally high first bids and whether the seller is a recognized company rather than an individual for the HP 10b and BA II plus; and the length of time the seller has been selling on eBay, the presence of a picture, and whether the seller was a recognized company rather than an individual for the HP12c.

INTRODUCTION

Electronic commerce is becoming increasingly more important to consumers, to retailers and to entire economies. Though still considered to be in its infancy, Internet usage and on-line marketing are growing explosively. During 2003 alone, approximately 40 million households in the U.S. alone made at least one consumer purchase from the Internet, up from only six million in 1994 (Hof 2003). At least 30 million people bought and sold more than \$20 billion in merchandise on eBay in 2003 (Hof 2003; Lucking-Reiley 2002). This is more than the gross domestic product of all but 70 countries' economies (Hof 2003). Somewhere between 150,000 and 200,000 entrepreneurs will earn a full-time living selling everything from new and used underwear to homes on eBay (Adler 2002; Hof 2003). On-line retailing has become, and will continue to become, a full and complete business model for some companies.

Electronic commerce and brick-and-mortar retailers must attract customers and complete transactions. Marketing practices by traditional retailers have been studied extensively. However, a considerable gap exists between the practice of internet-based marketing and sound theory-based insights and principles for guiding that practice. This study attempts to understand the factors which impact electronic commerce's ability to attract customers and the likelihood of a transaction occurring.

BACKGROUND

Parasuraman and Zinkhan (2002) suggest that understanding online customer behavior is one of the key factors for electronic commerce success. These authors suggest factors that influence online consumers including marketing mix differences on the Internet, customer loyalty, online relationship marketing, e-tailing issues and online delivery of services (Parasuraman and Zinkhan 2002).

A recent study by Swinyard and Smith (2003) identified four categories of online shoppers and four categories of online non-shoppers, along with characteristics for each of these eight categories. Characteristics shared by these online consumers (about 42% of the U.S. population) were average household incomes of \$58,300-\$64,400, average ages of 44.0-49.6 years, above average education levels, an enjoyment of Web browsing, a preference for merchandise being delivered to their homes, a desire for keeping purchases private, a propensity to search for the lowest prices possible, a sensitivity to high shipping prices, and a concern about online credit card risk (Swinyard and Smith 2003).

In a study of Internet pharmacies, Yang, Peterson and Huang (2001) identified and examined six dimensions of consumer perceptions of service quality. These included ease of use, content on the Web site, accuracy of the content, timeliness of responses, aesthetics or attractiveness of the site, and privacy. Other researchers also echo concerns over similar issues that have a significant impact on online consumer behavior. For example, there is concern among consumers for being able to assure the security and privacy of Internet transactions (Rust, Kannan, and Peng 2002; Zeithaml, Parasuraman, and Malhotra 2002). Also, managing customer relations and influence on consumer behavior through effective online communication has been examined (e.g., Stewart and Pavlou 2002). Further, the ease of navigating a Web site has been shown to influence consumer behavior (Luna, Peracchio, and de Juan 2002). Another study provided evidence that the content of the Web site was a factor in determining consumer behavior and satisfaction (Burke 2002). There have even been attempts to identify what the differences should be in the marketing mix for online businesses (e.g., Kalyanam and McIntyre 2002).

Research has shown that Internet shoppers use caution when purchasing and paying for products purchased over the Internet. Also, the extent to which on-line businesses can build trust significantly influences the willingness of consumers to make on-line purchases. The findings of a recent study indicated that a well-written and prominently displayed assurance of security encryption on a website increased consumer trust (Grewal, Munger, Iyer, and Levy 2003). Other research found evidence that consumer beliefs about privacy and Internet trustworthiness help determine attitudes toward the Internet. These attitudes, in turn, affect intent to make Internet purchases (George 2002). Chellappa and Pavlou (2002) found a significant impact of consumer perceived information security and trust in electronic commerce transactions. Other studies find similar relationships between perceived risk of on-line purchasing and the likelihood of making on-line purchases (e.g., Miyazaki and Fernandez 2001; Udo 2001).

This study hypothesizes that successful electronic commerce as defined as the ability to attract customers and complete the transaction is influenced by the perception of risk.

METHOD

This study attempts to understand the factors which impact the ability to attract customers and the likelihood of a transaction occurring. Ebay was selected as the on-line retailer. Ebay has achieved success and the managers at EBay actively research and implement measures to make eBay user-friendly, for both sellers and customers, and to give sellers tools or options from which to choose to make each seller as effective as possible.

EBay began as a trading site for collectibles and through 2000, collectibles still accounted for up to 60% of all auctions on eBay. However, by 2002, collectibles accounted for only 30% of eBay auctions. Buyers and sellers of almost every possible product are finding eBay to be a viable marketplace (Hof 2003; Lucking-Reiley 2002). In fact, more automobiles are sold on eBay than are sold by AutoNation, the volume leading car dealer in the United States (Hof 2003). In addition, diverse businesses, such as pawnshop dealers, are now selling more merchandise on eBay than they are in their brick-and-mortar stores. In a report sent to Power Sellers (a category of eBay seller averaging \$1,000+ in sales per month), eBay itself reports 95 million registered users, buying and selling in over 45,000 unique categories in 28 different global marketplaces. EBay also reports in 2003 that it had more than 971 million auctions and on single days, it supported more than 720 million page views, 175 million searches and 10 million bids (EBay PowerSeller Newsletter 2004). Of the 45,000+ categories of products, at least eight have annual sales of over \$1 billion each (Hof 2003).

This study hypothesizes that successful electronic commerce as defined as the ability to attract customers and complete the transaction is influenced by the perception of risk. Risk determinants include starting price (starting bid plus shipping fee), presence/absence of a reserve price, description of wear, possibility of paying with a credit card, number of months the seller has been active, whether the starting price was abnormally high (at least one standard deviation above the average of the ending prices of auctions for the same model of calculator), the inclusion/exclusion of a picture, and whether the seller is a recognized company rather than an individual.

HYPOTHESES

Clearly, any e-business must have sophisticated security systems to prevent hackers from stealing money and personal information. Because transactions are not face-to-face, consumers have to trust that their credit card numbers, or information about their bank account, if using the e-check option, are safe from hackers. A recent study by Light (2001) examined how eBay handles matters involving privacy and security. According to this study, eBay continues to invest in state-of-the-art security configurations and is constantly upgrading hardware and software whenever a new feature enhancing security becomes available. In 2002, the company bought PayPal, the most used on-line payment processing company, for \$1.5 billion to have further control of the security of eBay transactions (Hof 2003). In effect, eBay has created its own

banking system in a further attempt to enhance security. EBay should be perceived as one of the safest electronic commerce options.

A lower starting price should make potential consumers more willing to bid because of the perception of less financial risk. Thus, a lower starting price should increase the number of bidders (attracts more customers), and is likely to also have a positive impact on the item actually selling in the auction (transaction occurs).

Using a reserve price is an option for eBay sellers to safeguard them from having to sell products unless the bidding reaches the reserve price. Reserve prices make it possible for items to get bids, but not to actually sell in the auction. Therefore, the presence of a reserve price will likely decrease both the number of customers/bidders and likelihood of the transaction occurring.

Another detail the potential buyer may look for in a product is whether the seller describes the product using a term that indicates less-than-new condition. Therefore, a seller using a term such as “wear” in the auction should decrease both auction effectiveness and success.

Prior to 2003 sellers could give the buyers an option of paying with a credit card directly, or through the Payroll or Billpoint systems. Providing the option of using a credit card instead of using a money order reduces the transaction costs of the auction and should also increase the number of bidders and the likelihood of a transaction occurring.

Another determinant that should increase auction success is how long the seller has been active. eBay offers potential buyers the option of looking at how long the seller has been active. This information can be valuable because eBay will not tolerate dishonest selling practices and will ban such sellers from using eBay. Thus, longevity of eBay use is an indicator that the seller is honest, according to eBay standards.

Sellers must set a starting bid (price) for the product. Some sellers set the starting bid abnormally high. For this study, starting bids that were at least one standard deviation above the mean of the ending prices for each model of calculator were identified as abnormally high. This practice should attract fewer bidders and reduce the number of completed transactions.

The inclusion of a picture with the auction is another way for potential buyers to “window shop” before bidding, so a picture should decrease the uncertainty associated with buying products from eBay and should increase the auction’s success.

Finally, if the seller is a recognized company, success should be increased because buyers should have more confidence in a company than they would in an individual. A well-known eBay seller is Take to Auction.

Based on the reasoning above, the following hypotheses are offered. See Figure 1 for a model of these relationships.

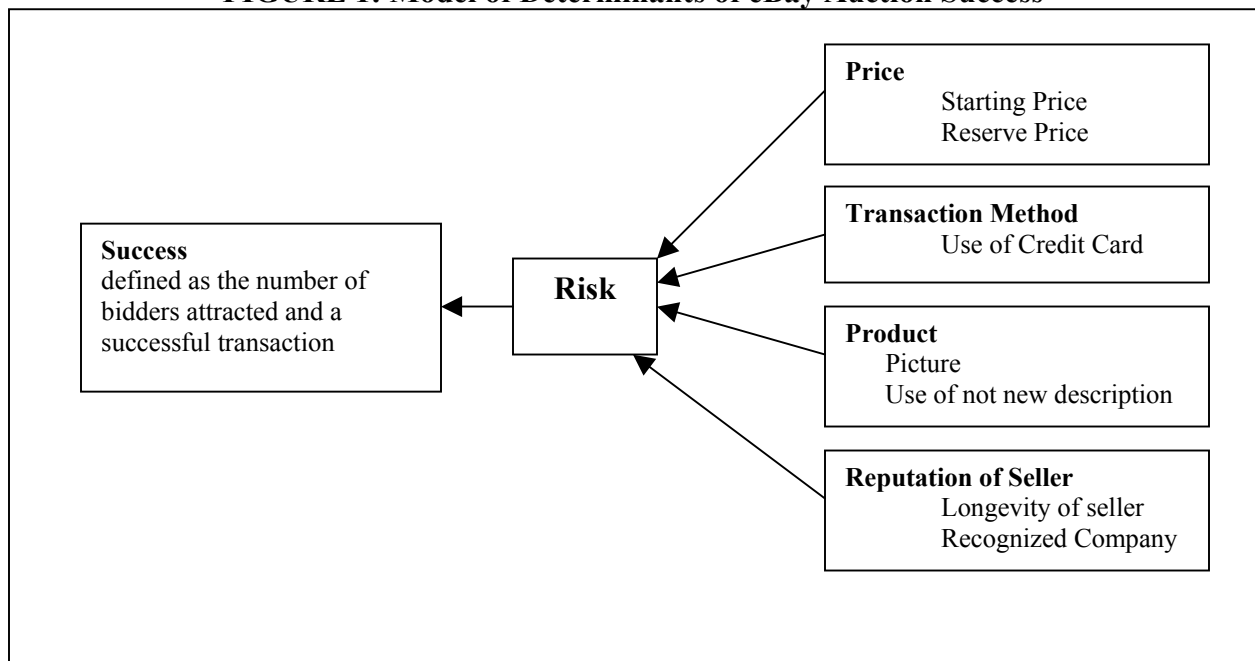
H1: Ability to Attract Customers (number of bidders attracted to the auction) is

- a. increased by a lower starting price;
- b. decreased by the presence of a reserve price;
- c. decreased by the mention of “wear;”
- d. increased by the ability to pay with a credit card;
- e. increased by the longevity of seller activity;
- f. decreased by an abnormally high starting bid;
- g. increased by the presence of a picture; and
- h. increased if the seller is a recognized company.

H2: Likelihood of transaction (whether the item actually sold during the auction) is

- a. increased by a lower starting price;
- b. decreased by the presence of a reserve price;
- c. decreased by the mention of “wear;”
- d. increased by the ability to pay with a credit card;
- e. increased by the longevity of seller activity;
- f. decreased by an abnormally high starting bid;
- g. increased by the presence of a picture; and
- h. increased if the seller is a recognized company.

FIGURE 1: Model of Determinants of eBay Auction Success



METHODOLOGY

Between September 2000 and March 2001, we searched eBay daily for new auction

listings for three calculators. The first two calculators used are the HP 10b and BA II Plus, which are inexpensive financial calculators with a MSRP of \$29.99. The third calculator used is the HP 12c which is a mid-range financial calculator with a MSRP of \$69.99. New listings were added to one of several “Watch Lists.” As these auctions ended the relevant information was entered into the data set.

We excluded several auctions from our data set. When the auction included multiple items it was eliminated. For example, if the auction included the HP 12c and another calculator, it was excluded. We also eliminated any “Dutch Auctions.” Dutch Auctions occur when a seller lists multiple calculators for sale to multiple bidders where the selling price for all of the calculators is the lowest winning bid price. Auctions that ended with the “Buy it Now” feature were eliminated since the feature was not available the entire period and the auctions did not have the full period of exposure. Our data set included 1,273 completed auctions meeting our requirements. Of these auctions, 509 were for the HP 10b or BA II plus, and 764 were for the HP 12c.

TABLE 1: Descriptive Statistics

Calculator	Variable	N	Mean	Std Dev	Minimum	Maximum
HP 10b and BA II Plus	# of Bidders	509	5.1571709	5.0305027	0	33
	Failed	509	0.3123772	0.4639187	0	1
	Starting Price	509	16.4643026	9.7090038	2.01	48
	Reserve Price	509	0.1355599	0.3426574	0	1
	Wear	509	0.0294695	0.169285	0	1
	Credit Card	509	0.740668	0.4386993	0	1
	Seller Active	509	15.540275	10.137871	0	55
	High First Bid	509	0.2082515	0.4064571	0	1
	Picture	509	0.8742633	0.3318786	0	1
	Company	509	0.1689587	0.3750841	0	1
HP 12c	# of Bidders	764	10.1871728	5.884898	0	52
	Failed	764	0.0968586	0.2959589	0	1
	Starting Price	764	20.011466	14.086648	2.75	76
	Reserve Price	764	0.1099476	0.3130294	0	1
	Wear	764	0.1596859	0.3665544	0	1
	Credit Card	764	0.7002618	0.4584434	0	1
	Seller Active	764	16.2604712	10.963012	0	56
	High First Bid	764	0.0615183	0.240436	0	1
	Picture	764	0.8193717	0.3849619	0	1
	Company	764	0.0863874	0.2811193	0	1

For each completed auction, the listing was printed and analyzed to extract the necessary information for this study. For each auction, we collected information on the following variables: 1) whether the item actually sold during the auction, 2) number of distinct bidders who had placed a bid during the auction, 3) starting price of the auction (starting bid plus the listed shipping cost), 4) presence of a reserve price, 5) presence of the word “wear” in the item description or auction title, 6) possibility of paying with a credit card, 7) number of months the

seller has been active on eBay, 8) abnormally high starting bid, 9) presence of a picture with the listing, and 10) if the seller was a recognized company (Take to Auction).

Logistical regression analysis was used to determine which factors had significant influence on the auction outcomes. Table 1 provides the descriptive statistics for the study.

RESULTS

The hypotheses were examined using logistical regression analysis. Full support was found for many of the predictions related to H1—that these determinants would influence auction’s ability to attract bidders. The results in Table 2 indicate a lower starting price resulted in more bidders for both calculators, fully supporting H1a. Also, a reserve price was shown to negatively impact the number of bidders for both calculators, fully supporting H1b. Further, including the word “wear” in the item description or auction title negatively impacted the number of bidders for both calculators, fully supporting H1c.

Table 2 also indicates partial support for other predictions related to H1. Having an option to pay with a credit card increased the number of bidders for the HP 12c, but not for the HP 10b or BA II plus auctions. This partially supports H1d. In addition, having a picture was found to increase the number of bidders for the HP 10b and BA II Plus, but not for the HP 12c. This finding shows partial support for H1g. No support was found for auction effectiveness being influenced by how long the seller had been active on eBay (H1e), an abnormally high first bid (H1f), or whether the seller was a recognized company (H1h).

TABLE 2: Results of Hypothesis Testing: Auction Effectiveness (H1)

Calculator	Hyp.	Independent Variable	Estimate	Standard Error	t-value
HP 10b And BA II Plus	1a	Starting Price	-0.1555	0.01509	-10.31*
	1b	Reserve Price	-0.64001	0.31615	-2.02**
	1c	Wear	-1.71780	0.48996	-3.51*
	1d	Credit Card	0.16011	0.19944	0.80
	1e	Seller Active	-0.00504	0.00913	-0.55
	1f	High First Bid	-0.52529	0.36314	-1.45
	1g	Picture	0.45896	0.25730	1.78***
	1h	Company	-0.36742	0.31034	-1.18
HP 12c	1a	Starting Price	-0.12705	0.00878	-14.48*
	1b	Reserve Price	-0.93402	0.32470	-2.88*
	1c	Wear	-0.84400	0.23048	-3.66*
	1d	Credit Card	0.33027	0.18768	1.76***
	1e	Seller Active	0.00775	0.00802	0.97
	1f	High First Bid	0.20807	0.55717	0.37
	1g	Picture	0.18290	0.22037	0.83
	1h	Company	-0.40488	0.41717	-0.97

* $p \leq .01$
 ** $p \leq .05$
 *** $p \leq .10$

Full support was also found for many of the predictions related to H2—that these determinants would influence auction success. The results in Table 3 indicate a lower starting price resulted in higher success for both calculators, fully supporting H2a. Also, a reserve price was shown to negatively impact the success of the auctions for both calculators, fully supporting H2b. Further, if the seller was a recognized company rather than an individual, the auction had more of a chance of success for both calculators, fully supporting H1h.

Table 3 also indicates partial support for other predictions related to H2. The length of time that the seller has been active on eBay had a positive influence on auction success for the HP 12c, but not for the HP 10b and BA II plus auctions. This finding partially supports H2e. In addition, having an abnormally high first bid had a negative impact on auction success for the HP 10b, but not for the HP 12c. This finding partially supports H2f. Further, including a picture with the auction made an auction more likely to be successful for the HP 12c, but not for the HP 10b. This finding partially supports H2g. No support was found for auction success being influenced by either the word “wear” being included in the item description or the auction title (H2c) or by the option to pay by credit card (H2d).

TABLE 3: Results of Hypothesis Testing: Auction Success (H2)

Calculator	Hyp.	Independent Variable	Estimate	Standard Error	Chi-Square
HP 10b and BA II Plus	1a	Starting Price	0.2152	0.0379	32.1642*
	1b	Reserve Price	3.9031	0.6419	36.9706*
	1c	Wear	0.3712	1.1316	0.1076
	1d	Credit Card	-0.1939	0.4055	0.2287
	1e	Seller Active	0.0095	0.0202	0.2195
	1f	High First Bid	0.9508	0.5686	2.7957***
	1g	Picture	-0.3965	0.5343	0.5507
	1h	Company	2.2327	0.5937	14.1418*
HP 12c	1a	Starting Price	0.0904	0.0211	18.4549*
	1b	Reserve Price	2.7553	0.6018	20.9613*
	1c	Wear	-1.2174	1.0631	1.3112
	1d	Credit Card	0.5294	0.5009	1.1170
	1e	Seller Active	-0.0656	0.0265	6.1373**
	1f	High First Bid	-0.1706	0.8278	0.0425
	1g	Picture	-0.8094	0.4897	2.7323***
	1h	Company	2.6540	0.5891	20.2971*

* $p \leq .01$

** $p \leq .05$

*** $p \leq .10$

DISCUSSION AND CONCLUSIONS

In general, consumers are becoming increasingly sophisticated and have higher expectations than consumers in the past. Marketers can expect consumers who make purchases

over the Internet to be even more sophisticated than average consumers. These consumers are computer literate and they are aware of the dangers of purchasing items over the Internet, both in trusting the seller to deliver the product as represented and in making payment and exposing personal information on the Internet. Because of this knowledge and these justified concerns, Internet consumers in general, and eBay consumers specifically, will naturally look for ways to minimize their perceived risks when making a purchase.

This study shows there are several different determinants that help attract these wary consumers and that may help sellers find success on eBay. A lower starting price resulted in more bidders willing to bid on the item and greater likelihood of a transaction occurring. This may be due to a lower perception of financial risk eBay sellers should keep this in mind as they search for success.

The impact of including a reserve price was also verified in this study. Having a reserve price negatively impacts both auction success, by attracting fewer bidders, and transaction success, actually selling the item during the auction. Since the actual reserve price is not revealed to bidders, they may perceive this to be riskier than bidding on an item without a reserve price. The price must be bid up to equal or exceed the reserve price in order for the item to actually be sold, so not knowing this price likely increases the perceived risks to the buyers.

This study reveals differences in auctions between the two classes of calculators. For example, the possibility of paying with a credit was a factor in auction success for the more expensive calculator (HP 12c), but not for the less expensive ones (HP 10b and BA II Plus). People were likely to be more willing and able to pay the lesser amount without relying on credit, but they may have to rely on credit to buy the more expensive calculator. Also, a picture was important in auction effectiveness for the HP 10b and BA II Plus, but not for the HP 12c. This finding may be related to the perception that since the HP 10b and BA II Plus are less expensive calculators, they may receive more usage or that their quality is not as good. Thus, the picture becomes important to the buyer. Finally, for the more expensive calculator (HP 12c), auction success was impacted by the length of time the seller has been active on eBay. This finding is probably partially caused by the more expensive price of that calculator. When there is more financial risk, consumers are more likely to pay attention to more of the details that will decrease their uncertainty. The ability of a seller to continue to sell on eBay, given the strict values and rules of eBay, is a positive indicator of the reliability of the seller and the seller's products.

Many other factors impacting outcomes of eBay auctions exist. The possibility of further research to continue discovering and examining these factors can be useful to researchers, eBay sellers, and eBay buyers. In addition, this research examined only calculator sales. It is likely that the determinants identified in this study have a different impact, or no impact at all, on auctions for others types of products. Further research is needed to examine these determinants in relationship to the thousands of other products being sold on eBay.

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