行政院國家科學委員會專題研究計畫　期中進度報告

子計畫二:網路拍賣的拍賣制度設計與顧客忠誠之研究

(2/3)

計畫類別： 整合型計畫
計畫編號： NSC94-2416-H-004-002-
執行期間： 94 年 08 月 01 日至 95 年 07 月 31 日
執行單位： 國立政治大學國際貿易學系

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報告類型： 精簡報告
報告附件： 出席國際會議研究心得報告及發表論文
處理方式： 本計畫可公開查詢

中　華　民　國 95 年 5 月 26 日

行政院國家科學委員會專題研究計畫成果報告

電子行銷典範—子計畫二:

網路拍賣的拍賣制度設計與顧客忠誠之研究(2/3)

網路拍賣之招標策略、產品訊號及產品異質性對競標成功及願付價格影響之探討

An investigation of impacts of the auction strategy, product signal and heterogeneous product on auction success and willing to pay-Evidence from online auction

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Abstract

The reputation system created by online auction company was thought as an important factor to affect bidder's participated decision. However, reputation scores received by sellers may not attract bidder to bid amount of money marginally as it increasing. If auction items are not homogenous therein, the signal received by buyers may be valuable for helping them to make bidding decision. The research examines the effects of auction strategy and various signals on auction outcomes by using auction data from eBay. Results show that auction format is significantly related to auction success and amount of money gained by seller. As well as, signal such as seller's reputation, product condition and arguments presented on the web had impacts on auction outcomes. We conclude with a discussion of the practical implications of our proposal for sellers and suggestion of future study

1. Introduction

The advanced Internet technology created the enormous e-commerce market in which most transactions occur among entities that have never met (Ba and Pavlou, 2002) The potential impacts of the e-commerce evolution on business have largely investigated for past few years (e.g., Brown and Goolsbee, 2002; Pinker, Seidmann, and Vakrat, 2003). In spite of initial companies involving e-commerce were slowing down after the e-commerce bubble. The volume and variety of e-commerce is getting profited during recent years. There is no doubt that online auction is the most prosperous e-commerce on the Internet. Given many aspects electronic transaction that are proving superior to traditional modes of commerce (for example, their speed and convenience), there are some inherent problems such as information asymmetric influencing buyer's purchasing intention. Even though transaction party could inspect some digital information (for instance self-description or photo), user is very difficult to clearly discern the other transaction party's identity obtaining for

fraud purpose.

Increasing success of online auctions means that it is important to be able to understand relative success of the different strategies that buyers and seller employ in them. Previous work that estimates the returns to reputation in Internet auctions typically finds that auction outcome barely increase as sellers improve their reputation, if they increase at all (e.g., Lucking-Reiley et al. 2000; Melnik and Alm, 2002; Restick and Zeckhauser, 2002). Namely, the returns to the initial few positive reports can be large, but at some point marginal returns to feedback scores will begin to mitigate (Livingston, 2005). Empirical findings have also tended to support that minimum bid and reserve price tend to have positive effects on the final auction price, as well as decrease the probability of the auction resulting in an actual sale (e.g., Bapna et al., 2002; Lucking-Reiley, Bryan, and Reeves, 2000). Apparently, sellers' reputation ratings in online auctions are extremely useful to most bidders therein. Therefore, seller's reputation acts a proxy for quality characteristics that are unobserved prior to the completion of the transaction (Holt and Sherman, 1990; Houser and Wooders, 2000; Klein and Leffler, 1981).

Researches tend to select a data of homogeneous good for better controlling the characteristics of the analysis object, and to capture the unmixed relation. Nevertheless, in addition to the signal of reputation system, the condition of each product has sort of difference, individual bidders may react to bidder's product by evaluating the product characteristics. The major purpose of our study is to investigate the factors that influence participants' bidding strategy and behavior in the online context. Testing hypotheses including both main and moderating effects were developed based on theoretical foundation. The study gathered data from eBay auction site to examine the research hypotheses and provide meaningful implications and directions for both academics and practices.

2. Theoretical Background

Economists have been largely investigated auction theory for decades (e.g., McAfee and McMillan, 1987; Vickrey, 1961). McAfee and McMillan (1987) define that auction is a resource distribution mechanism under a clear rule to determine the price for the participants efficiently. Auction is prominent when the price of objects is difficult to determine. Hence, auction is usually employed in the market of antique or painting. Currently the English action is the dominant mechanism on the Internet. It is not surprising, because this mechanism is familiar and intuitive to buyer and seller, as well as reduces transaction cost. Besides, English auction has inherent disadvantage due to open cry multi-round nature (Milgrom, 1989), it may be susceptible to various forms of cheating (Pinker, Seidmann, and Vakrat, 2003).

Information asymmetry occurs when one party to a transaction has pertinent information that the other party lacks. Two type of information problems were mentioned under this circumstance, adverse selection or hidden information and moral hazard or hidden action (Arrow, 1971, 1985). Selection efforts may solve the adverse selection problem, but moral hazard

problems without enforcing may still prevail (Wathne and Heide, 2000). Signal theory demonstrates that if buyer could not evaluate a product's quality until actual use it, relying on signals to make inference regarding quality is an appropriate solution for buyer. Such as, advertising expenses (Kihlstrom & Riordan,1984; Kirmani, 1990; Milgrom and Roberts, 1986; Nelson, 1974; Schmalensee, 1978), brand or retailer reputation (Dawar and Parker, 1994), and warranties (Lutz, 1989) also deliver convincing signals indicating quality to buyer.

Perceived risk is the nature and amount of risk perceived by a consumer in contemplating a particular consumption decision (Cox and Rich, 1964). Research has long addressed the degree of perceived risk as a crucial factor in consumer behavior (Bettman 1973). The reduction of Internet shoppers' perceived risk is suggested beneficial for seller, which not only decreases the implicit purchasing cost incurred by them, but also increases consumers' reaction in terms of purchase intention (Mitchell et al., 1999; Liebermann and Stashevsky, 2002). Trust is especially critical when two situational factors are present in a transaction: first is the uncertainty that may lead to consumer's perceived risk. Second, the incomplete product information occurs under information asymmetry (Swan and Nolan, 1985). Electronic commerce is a new form of online exchange in which most transactions occur among entities that have never met. Building reputation can be thought as cost-added for a seller, but profits may consequently increase if it helps bidder to reduce transaction cost. Ba and Pavlou (2002) addressed calculus-based trust in one's credibility could facilitate online auction in which is lack of personal interactions and familiarity. Apparently, reputation may alleviate some information asymmetric problems in the context of online auction, and contribute an auctioneer to earn price premiums (Livingston, 2005; McDonald and Slawson, 2002; Mikhail and Alm, 2002, 2005;).

Higher starting price is an inhibition of bidders willing to bid especially a transaction involved high degree of uncertainty (Karkar and Lucking-Reiley, 2004). In addition, the high starting price implies that bidders have to pay more when bidding on an item, lead to bidders inclining toward risk aversion and avoiding high expenses or losses comes from this auction (Kahneman and Tversky, 1979). Bajari and Hortacasu (2000) also find minimum bid is the most significant determinant of whether a bidder enters an auction. When sellers set a lower opening price to attract bidder's bidding intention, they could also set reserve price to ensure their lowest accepted value to sell the good. This strategy may generate a lot of curiosity, which can translate into bids (Karser and Karser, 2000). The experiment conducted by Katkar and Lucking-Reiley (2004)

Experimental economics has observed that bidders' performance improves with experience (Kagel, 1995; Samuelson and Bazeman, 1985). Sophisticated bidders may learn to lower valuation to avoid winner's curse (Capen et al., 1971), and diminish made mistake through repeated participation (Andreoni and Miller, 1995). The informational highway as Internet not only fails to solve the information asymmetric

problems, it may even exacerbate them (Pekec and Rothkopf, 2003). Signal theory demonstrates that if buyer could not evaluate a product's quality until actual use it, relying on signals to make inference regarding quality is an appropriate solution for buyer. Such as, advertising expenses (Kihlstrom and Riordan,1984; Kirmani, 1990; Milgrom and Roberts, 1986; Nelson, 1974; Schmalensee, 1978), brand or retailer reputation (Dawar and Parker, 1994), and warranties (Lutz, 1989) will deliver signals indicating more precise quality to buyer.

3. Method

To test the prediction of the hypotheses, item completed in eBay auctions were used for empirical study. eBay is largest marketplace for online auction in the world, it allows researcher to gather data in specific product catalog. Thus, the analysis sample selected from eBay has the advantage of variety of item, bidder, and seller, and so the difference in the product characteristics, participants' bidding strategy, and the variation of price should be meaningful and easily analyzed. In addition, eBay also operate online auction site in Taiwan, remain the prospect of cross-culture study

We choose single unit auction of laptop for analysis because of large amount of bidding items that is publicity available. The product category of laptop was selected based on following reasons. First, there is sufficient occurrence of various laptops bidding on eBay auction site. Second, item could be compared with each other by its specification, characteristics, and condition that described by seller. Finally, compared to homogenous goods, the heterogeneous laptops especially used one may contain more asymmetric information that leads bidders to rely on extra cues to distinguish product quality. Sample was collect from eEay United States from August 13 through September 13, 2004. We excluded those items either is in a sale by using buy it now or there are more than two goods were sold in an auction.

Collected data were used to test three important outcomes: auction success and willing to pay. A reserved auction is successful if the reserve price is met or exceeded, In contrast, an item will not sell if the closing price is lower than bidder's reserve price even it received more than one bid. Logistic regression was used to test what factors affect auction success, that is, to know the signal that could attract bidders to place a bid and result in a sale. Willing to pay is calculated from the closing price less staring price. OLS may underestimate the effect without taking account of censoring problem when some auctions have a specified starting bid and receive no bids at all, 1344 observations out of 5013 samples are left-censored. Tobit maximum likelihood estimation could amend this censoring problem to ensure unbiased and consistent estimates. Logistic regression was used to test what factors affect auction success, that is, to know the signal that could attract bidders to place a bid and result in a sale.

4. Results and Conclusion

Table 1 shows the estimation results under a number of different product conditions. For the pooled data model, majority of seller's auction strategy, seller and product signals significantly affected

willing to pay except link and auction length. For individual specification, seller's positive feedback appears to be an impetus for bidder to bid more amounts of money except bidding items with brand new condition. In contrast, seller's negative feedback had significantly negative impact on willing to pay across all product condition. Setting a reserve price was positively related to willing to pay but only for used condition product. In addition, starting price was found to have a significant impact on willing to pay for all product condition, that is, lower stating price is more likely to receive a higher amount of money for seller. Number of bids and novice entering the auction would positively affect willing to pay. Shopping cost is positively related to willing to pay except brand new product condition. As expected, item with a longer warranty period had positive impact on willing to pay for four specifications. Damage item negatively influenced on willing to pay except mint condition product.

There are also a number of other signals that had significant effect on willing to pay. Picture of a bidding item and table are positively related to willing to pay only for used condition. Link had negative impact on willing to pay only in mint condition product. Number of words affected willing to pay significantly for both mind and brand condition items. Furthermore, reason for selling item had significantly positive effect on willing for both the products with used and mint condition. Reference price is positively related to willing to pay only in brand new condition. Shopping insurance was found to have negative impacts on used and brand new bidding item. Finally, auction length has no significant influence on any product condition.

Table 2 reports the results of logistic regressions of auction success. The results show that three factors are uniformly associated with auction success across all product conditions. First, seller sets a reserve price is less likely to result in an auction success. Secondly, higher number of bidders is associated with higher auction success. Thirdly, auction is more likely to be successful when novice enters an auction. The higher seller's reputation is more likely to be a successful auction for pooled sample and used product condition. In contrast, bidder is less likely to place a bid if seller has bad reputation except for used and mind condition product. Starting price is negatively correlated to auction success expect the brand new item. Shipping cost decreases the possibility that a used item results in a sale. Damage item is positively significant related to auction success. If an auction page provides the link for further information about the product will also decrease the possibility of auction success. For the used items, it is more likely to increase the possibility of auction success if the information of bidding item was tabled. In addition, the shipping insurance makes it less likely that the auction of used product will be successful.

The research provides empirical evidence of the importance of bidder's strategy and signals on auction success and outcomes. The symmetric information problem is widespread in the Internet transaction. Sellers have to make a better strategy which could mitigate the transaction cost resulting from information problem for buyers, and to receive extra profit. Besides,

designing an appropriate auction mechanism to arouse bidder's incentive to place a bid is also important for sellers. To the extent that the effects of seller's or product's signal on auction success and outcomes is different between each type of product condition. The used item has higher degree of uncertainty in terms of its status. Thus, the number of signals needed for used product will be more than mint and brand new product.

Our findings have practical implications for online seller operating a successful auction. However, what predeterminate relations between the factors that auctioneers employ for an auction is worth for future research. Future studies should investigate the comprehensive strategic process plotted by seller. In addition, since online auction is prevalent around the world, it provides researchers a potential opportunity to investigate the online auction worldwide. A deeper understanding of these differences would shed light on broad question what is difference across country.

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Table 1 Regression of Willing to Pay on Auction Features

	All condition	Used	Mint	Brand new
C	-108.873***	-74.680***	-91.42	-99.011
SEFEP	0.002***	0.002***	0.003*	-0.004
ln(SEFEN+1)	-19.255***	-10.638***	-34.626*	-49.896*
RESPR	109.123***	118.770***	82.340	110.989
STAB	-0.368***	-0.110***	-0.342***	-0.501***
NUMBR	14.593***	13.783***	13.886***	18.931***
SHCO	1.655***	1.238***	2.610*	0.250
NOVICE	60.651*	38.090*	145.104***	409.042***
WARLE	0.389***	0.423***	0.281**	0.349***
DAMAGE	-42.728***	-28.942***	-26.110	-417.515***
NUPI	4.225*	5.390**	-3.813	8.893
LINK	-16.360	2.627	-96.500*	-60.630
WORDS	0.061***	0.021	0.115**	0.270***
TABLE	22.186***	15.831***	18.710	28.376
REASON	137.238***	96.184***	208.158***	181.301
REFPR	83.370**	40.490	85.653	170.500*
SHIN	-31.340**	-17.006*	-29.978	-130.820*
PAYPAL	-59.826**	-42.856**	-3.198	-47.730
AUCLE	2.915	-1.221	10.605	9.659
COND	191.920***			
Left censored obs	1344	857	224	263
Uncensored obs	3669	2400	773	496

R-squared	0.63	0.54	0.55	0.68

* p < .05; ** p < .01; *** p < .001

Table 2 Logistic Regression of Auction Success on Auction Features

	All condition	Used	Mint	Brand new
C	0.815***	0.805***	0.899*	0.384
SEFEP	0.00002**	0.00005**	0.0002	-0.00003
ln(SEFEN+1)	-0.088***	-0.113***	-0.194*	0.009
RESPR	-1.901***	-1.820***	-2.471***	-2.097***
STAB	-0.001***	-0.001***	-0.001***	-0.0002
NUMBR	0.068***	0.070***	0.059***	0.067***
SHCO	-0.004	-0.007*	0.010	-0.004
NOVICE	0.801***	0.793***	0.943***	0.956104***
WARLE	0.0002	-0.00001	0.001	0.00006
DAMAGE	0.255***	0.208**	-0.748	-0.416622
NUPI	0.008	0.0123	0.012	0.026224
LINK	-0.184**	-0.169*	-0.405*	-0.237
WORDS	-0.0001	-0.0001	-0.0002	-0.0002
TABLE	0.052	0.0800*	0.199	0.051
REASON	0.040	0.072	0.446	-0.223
REFPR	0.011	-0.105	0.432	0.136
SHIN	-0.064	-0.102*	0.212	0.087
PAYPAL	-0.146	-0.025	-0.812**	-0.076
AUCLE	-0.002	-0.002	0.038	-0.040
COND	-0.061			
N	5013	3257	997	759
LR statistic	1751.617***	1294.712***	273.200***	247.037***

* $p < .05$; ** $p < .01$; *** $p < .001$