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Consumers' Trade-Offs of Online Auctions Alternatives -- An Application of Conjoint Analysis

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ABSTRACT

As auctions buyers and sellers become proliferated on the Internet, there are considerable interests in investigating consumer behavior in the new marketing context. Much of the research on online consumer behavior has focused on the economic dynamics of bidding and offerings, technical mechanism and privacy, while consumer trade-offs between auctions alternatives are still lacking in literature. The research objective of this paper is to examine how consumers evaluate each seller's attributes and make bidding decisions. A conjoint analysis was used to investigate subject's bidding intention and trust for a variety of used textbook sellers that differed in terms of bidding price, seller rating (feedback score), payment type, and shipping charge. This article provides an experimental test of consumer's trade-offs in online auctions context. These findings are essential because they help identify the importance of those attributes of online auctions under the consideration of bidding intentions and seller's trustworthiness. Interestingly, this paper suggests auctions sellers may succeed by simply compete on price. However, this conclusion could only be generalized in used textbook category; further research could include additional product categories as exemplars and different auction attributes as factors. Although price and seller rating seem to be relatively more important factors, further research could examine factors in addition to payment type and shipping charge of the auctions.

Keywords: trade-off, online auctions, conjoint analysis, internet marketing

1. INTRODUCTION

In the past few years, online auctions have been the most profitable business model on the web. According to statistics reported by A.C. Nielson, online auction bidders grew three times over the past two years in Taiwan. Take the famous Internet auction site, eBay and Yahoo! Auction, for example, people visit the online auction marketplace to buy and sell items in thousands of categories including clothes, antiques, books, computers, DVDs, real estates, electronics & computers, etc. With huge arrays of choices, online auctions have not only changed the parameters of traditional auctions, but also provided the sellers with more degrees of freedom. The Internet provides consumers with multitude choices and convenience, at the same time, risks and uncertainties on the web are inevitably major concerns for buyers and sellers due to online anonymity and fraud threats.

Over the years auctions have become known as not only economic events, but also as socially and culturally significant affairs. As auctions buyers and sellers become proliferated and active on the Internet, there are considerable interests in investigating consumer behavior in the new marketing context. However, most of the research on online auction behavior focused on the dynamics of bidding and offerings, auction platform mechanism and privacy, while consumer's decision making for online auctions alternatives are still lacking in literature.

The research objective of this paper is to examine how

consumers evaluate each seller's attributes and make bidding decisions. In this paper, we examine subjects' preferences for a variety of auction alternatives that differ in terms of four major attributes, which are hypothesized to be important to consumer's bidding judgments and perceptions of seller trustworthiness, and compare how demographics and web experiences influence consumer's preferences.

In the following sections, we review the benefits of online auctions, and consumer's evaluation criteria that are used in this research. Then we develop hypotheses to explicate the factors that affect consumer's trade-off between attributes. We use conjoint experimental design to test the hypotheses, and the results will be reported. In the final section our conclusions of the study will be provided.

2. ONLINE AUCTIONS

2.1 Benefits of Online Auctions

As economic scholar Steve Kaplan (1999) of Chicago University pointed out that online auctions have greater economic advantages as compared to traditional auctions. Hanson (2000) contended that online auction sites improve the power and efficiency of auctions, because: (1) the Internet makes it easier to gather buyers and sellers together in the same place at the same time; (2) the Internet enables sellers to provide in-depth information, so buyers can evaluate the item being sold; (3) the Internet expands the number of bidders, which raises the price paid and the profitability of the auction.

Online auctions are very appealing from the viewpoints of both businesses and consumers. The auctions are a typical example of the ideal online business: they act as intermediaries between buyers and sellers; except for office space, they do not require extensive investments in physical property as well as inventory. For consumers, the online auctions websites offer access to tens of thousands of various goods around the world. On the other hand, the competitive nature of the online auctions' bidding processes enables sellers to achieve a better price than they might have using traditional media such as newspaper classifieds.

2.2 Attributes of Online Auctions

Although online auctions have many advantages for both consumer and seller as mentioned above, there are disadvantages that are obstacles for consumer to participate in an auction deal. First, there is the potential for fraud from dishonest or irresponsible sellers, which could cause buyer losses. Second, there are also concerns of financial privacy issues and personal information misuses. Third, consumer may have to accept undesirable restrictions because of failing to read the fine print. Forth, products may not always cheaper than a local store, especially when the cost of shipping is included.

To overcome the potential problems in online auctions, consumers have to evaluate the information given by sellers on the web, and make the decision. Our research goal is to examine how consumer tradeoff among different sellers under the consideration of bidding intention and seller trustworthiness for a given product. We select four attributes that are fundamental to consumer's decision making in evaluation of a seller under the context of online auctions. These attributes are price, seller rating, payment type, and shipping charges.

2.2.1 Price

The pricing mechanism is the most discussed issue in auctions. Increasing information on the web may lead to less willingness to pay. Common perception is that the Internet will raise consumer price sensitivity, especially when the websites enables instantaneous side-by-side price comparisons of available alternatives (Hanson, 2000). However, Preliminary research concerning the price of online items finds increased price dispersion (Brynjolfsson & Smith, 1999) with online prices often surpassing the price of similar products purchased through more traditional venues (Lee, 1997; Bailey, 1998). It remains to be seen if price competition significantly increases as electronic markets mature (Smith, Bailey & Brynjolfsson, 1999).

2.2.2 Seller rating

The most common type of consumer protection feature

offered by online auctions is a user rating service, in which buyers and sellers can rate each other based on how promptly product was received, how quickly a buyer provided payment, etc. These ratings are maintained on auctions' websites and are easily accessible by users. Auction participants can use feedback systems to publicly rate their satisfaction towards their trading partners. Specifically, the feedback system is a measure of a user's reputation in an auction community. The auctioneers encourage all users to check their trading partners' rating before transactions and leave feedback about their trading partners after their transactions. In essence, the system tries to use one's reputation as a deterrent for cheating behaviors. That is, if one develops a bad reputation, other auction participants may not transact with the person anymore (Ba, Whinston, and Zhang, 2003).

2.2.3 Payment type

There is a wide range of ways to pay on auctions websites, such as eBay or Yahoo, and most sellers offer more than one option. Some payment options offer more protection than others, so consumers are prompted to select a method of payment that makes them feel comfortable, especially when most of the auctions require buyers to pay in advance. There are three payment types that usually used in Taiwan, cash, bank transfer and credit card. In this study, we use these three options in the experimental design.

2.2.4 Shipping charge

For most of transactions on the Internet, payment and delivery rarely occur simultaneously. Notable exceptions exist where payment and delivery can occur nearly simultaneously for online purchases (e.g., when purchasing MP3 files). More commonly, the buyer is required to pay in advance for a product or service to be delivered sometime into the future, often with little or no ability to examine the product or service in advance. Specific shipping costs are noted in item descriptions approximately 50% of the time and almost every seller require buyers to pay for shipping and insurance fees (James H. Gilkeson and Kristy Reyonlds, 2003). From consumers' perspectives, shipping charges are additional costs occurred in auctions. Therefore, when making a bidding decision, consumers have to take these delivery costs and risks into account. In Taiwan, self-pickup is a common alternative to shipping services, so we include this option into this study.

3. RESEARCH HYPOTHESES

The goal of this study is threefold. The first one is to compare how consumer evaluate different sellers based on judgment of bidding intention and seller trustworthiness. The second is to understand how consumer trade-off between four auctions attributes. The third one is to examine demographic and web

experience affect consumer trade-offs. Accordingly, we propose and will test the following hypotheses:

H1: Consumer's preference for online auctions attributes will vary, depending on the type of evaluation (bidding intention and seller trustworthiness) being asked of the respondent

H2: In evaluated judgment of bidding intention, consumer's preference for online auctions attributes will vary, depending on the demographic variables and web experience of the respondent

H3: In evaluated judgment of seller trustworthiness, consumer's preference for online auctions attributes will vary, depending on the demographic variables and web experience of the respondent

4. RESEARCH METHOD

4.1 Subjects

There are 221 college students (122 men and 99 women), from two northeastern colleges in Taiwan, participated in this study, and their demographic variables and web experience variables were collected. The average age of the subjects was 21 years old, 44.3 percent of them had online auctions experiences.

4.2 Experimental design

A conjoint analysis was used to investigate subject's bidding intention and trust for a variety of used textbook sellers that differed in terms of bidding price, seller rating (feedback score), payment type, and shipping charge. A used computer textbook with list price of NT\$800 was used as the product auctioned on the web. In this experiment design, subjects were asked to consider and make preference choices among hypothetical seller profiles, and decide on their bidding intentions and seller's trustworthiness. In this study, each seller profile had four attributes, i.e. bidding price, seller rating, payment type, and shipping charge, and each attribute had three levels as shown below,

- (1) Bidding Price: a. NT\$480, b. NT\$400, c. NT\$320
- (2) Seller rating: a. 650, b. 350, c. 50
- (3) Payment types: Cash (or money orders), Bank transfer, Credit card
- (4) Shipping charges: a. Buyer pays shipping (NT\$80 dollars), b. free of charge, c. self-pickup

Because a full factorial design for this study would require 81 (3^4) profiles, an orthogonal fractional factorial design (of 9 profiles) was used to reduce the number of attribute combinations and thus make the task of decision making more manageable.

The experiment scenarios addressed were similar to that encountered in full-profile rank conjoint analysis; subjects were asked to give a rank order of preference

for the 9 full profiles constructed by using the orthogonal main-effect design as Table 1.

Table 1 : Full profiles constructed by using orthogonal design

No.	Price	Seller rating	Payment types	Shipping charges
1	NT\$240	350	Credit card	Buyer pays
2	NT\$240	50	Cash	Free of charge
3	NT\$320	650	Credit card	Free of charge
4	NT\$320	50	Bank transfer	Buyer pays
5	NT\$320	350	Cash	Self-pickup
6	NT\$400	350	Bank transfer	Free of charge
7	NT\$400	650	Cash	Buyer pays
8	NT\$240	650	Bank transfer	Self-pickup
9	NT\$400	50	Credit card	Self-pickup

Figure 1 is an example of profile card, and every respondent was given 9 profile cards to sort out his or her ranking.

Seller No.1
Bidding price : NT\$240 dollars
Seller rating : 350
Payment types : Credit card
Shipping charge : Buyer to pay shipment (Additional NT\$80 dollars shipment cost)

Figure 1 : Seller No.1 profiles card

5. RESULTS

5.1 Conjoint analysis

This research examined how various characteristics of auctions terms and the basis of consumers' evaluations affect their judgments about online auctions alternatives. The multivariate statistical method best suited for examining the trade-offs consumers are willing to make is a conjoint analysis. Conjoint analysis is a technique that requires subjects to make a series of judgments based on a set of attributes from which the underlying structure of their decisions can be decomposed. Conjoint analysis provides us with information about which attributes of an auction alternative are more important, and what trade-offs respondents are willing to make.

Table 2 shows the results of conjoint analysis. Bidding price is the most important attribute (28.60%) in respondent's bidding intention judgment; the next important factor is seller rating (25.25%); while payment type (22.41%) and shipping charge (23.73%) are relatively less important. Utilities of each attribute

level are also shown in the table. Figure 2 indicates the utilities of each level for four attributes. The utility lines of bidding price shows that consumer prefers low price, and there is an increase in the marginal utility from NT\$400-NT\$320 to NT\$320-NT\$240 price interval. Seller rating has positive correlation with respondent's utility, in a diminishing marginal utility form. In addition, bank transfer and free of shipping are most preferred in attribute of payment type and shipping charges.

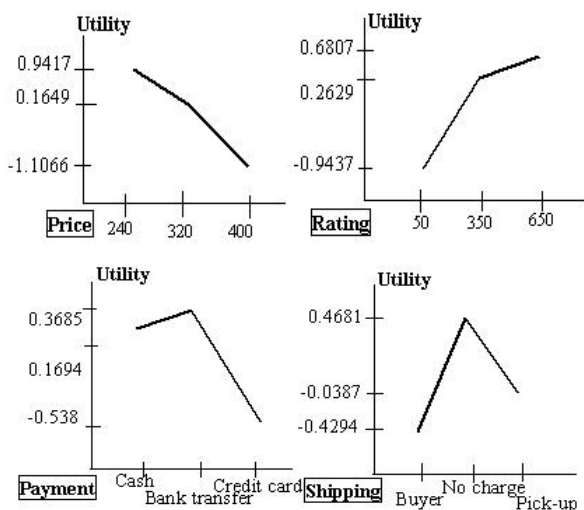


Figure 2 : Utility plot of four attributes in bidding intention evaluation

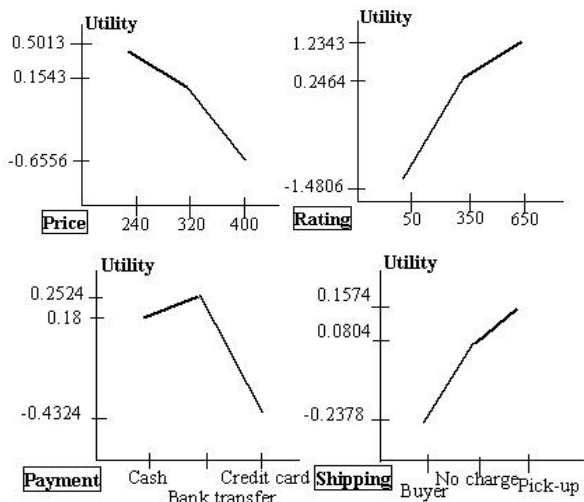


Figure 3 : Utility plot of four attributes in seller trustworthiness evaluation

When asked of seller trustworthiness, consumer weighs highly on seller rating (37.46%), while price (22.44%), payment type (20.26%) and shipping charges (19.84%) are far less important. Figure 3 shows the utility lines for each attributes. The only difference between bidding intention and seller trustworthiness evaluation is that respondents prefer self-pickup to other shipping charge options. The reason might be that self-pickup allows buyers to check the product before the deal is completed.

The results support hypothesis 1.

5.2 Test of H1

The data collected from respondent allow comparison of what online auctions attributes consumer desire when making judgment of bidding intention and seller trustworthiness. Since the two types of evaluations are within-subject data, we conduct a paired sample t test to examine whether the importance of each attribute is the same. The results show that the relative importance of bidding price (t=3.497, p=.001), seller rating (t=-6.838, p=.000), and shipping charges (t=2.696, p=.008) are significantly different, which means that when consumers consider of bidding for certain auctions, they focus on different auctions attributes than when they are asked to evaluate seller's trustworthiness. Table 3 shows that bidding price and shipping charge are weighed more when respondent intends to bid, while seller rating is significantly more important when respondent evaluate seller trustworthiness. Though seller rating might play an important role in consumer's bidding intentions, the results indicate that consumer's perceptions of these two concepts are quite distinct.

Table 2: Conjoint analysis of online auctions alternatives

Attribute	Level	Bidding Intention		Seller Trustworthiness	
		Utilities	Importance	Utilities	Importance
Price	NT\$400	-1.1066	28.60%	-0.6556	22.44%
	NT\$320	0.1649		0.1543	
	NT\$240	0.9417		0.5013	
Seller rating	650	0.6807	25.25%	1.2343	37.46%
	350	0.2629		0.2464	
	50	-0.9437		-1.4806	
Payment type	Cash	0.1694	22.41%	0.1800	20.26%
	Bank transfer			0.2524	
	Credit card			-0.4324	
Shipping	Buyer pays	-0.4294	23.73%	-0.2378	19.84%
	No charge	0.4681		0.0804	
	Self-pickup	-0.0387		0.1574	

Table 3: Paired sample t test for evaluation types

Attribute	Mean differences	St. error measures	t	p (2-tailed)
Price	5.8424	1.6706	3.497	.001
Seller rating	-12.0619	1.7640	-6.838	.000
Payment type	2.0519	1.4289	1.436	.152
Shipping charges	3.6361	1.3489	2.696	.008

5.3 Test of H2

In this study, respondents' demographic variables (such as sex and age) as well as web experiences (i.e. Internet experience, online purposes, Internet usage, online auctions experience, and spending online) were collected. We use ANOVA to test how these variables affect the preferences of each attributes when making evaluation of bidding intention. The results of this analysis are explicated in Table 4.

5.3.1 Sex. There is significant effect of sex on the preference of shipping charges ($F=5.902$, $p=.016$). Female respondents concern more on shipping charges ($\bar{x}=26.44$) than male respondents ($\bar{x}=21.46$) when being asked of bidding intention.

5.3.2 Age. Age has significant effect on both bidding price ($F=12.514$, $p=.000$) and seller rating ($F=5.074$, $p=.007$). The data indicates that older respondents are more concerned of bidding price, and less concerned of seller rating. Further analysis shows younger respondents are less price sensitive than older ones.

Table 4: ANOVA for evaluation of bidding intention

Attributes ^a	BP	SR	PT	SC
Sex	0.012 ^b	0.296	2.965	5.902*
Age	12.514*	5.074*	1.865	1.773
Internet experience	1.682	2.413	0.326	0.597
Online purpose	0.259	0.279	1.224	1.594
Internet usage	1.014	0.853	0.843	0.739
Online auctions experience	10.838*	13.092*	0.154	0.108
Spending online	4.866*	0.471	3.344*	1.562

Notes: numbers in cells are statistic F

^a BP: Bidding price; SR: Seller rating; PT: Payment type; SC: Shipping charges

* Significant at $p<.05$

5.3.3 Internet experience, online purpose, and Internet usage. Preferences of online auctions attributes are not significantly influenced by Internet experience, online purpose, and Internet usage.

5.3.4 Online auctions experience. Bidding price is significantly more important to consumers with auctions experience online, and less important to ones without any online auctions experience ($F=10.060$, $p=.000$). On the other hand, respondents with auctions experience weigh less on seller rating than respondents without any experience ($F=13.849$, $p=.000$).

5.3.5 Spending online. Respondents' spending amounts online per month significantly affect their utilities of bidding price ($F=4.866$, $p=.001$) and payment type ($F=3.344$, $p=.013$).

5.4 Test of H3

The following analysis will use demographics and web experience as independent variables to test if the utilities

of each attributes are the same, when respondents are asked of seller trustworthiness evaluation. Table 5 shows that sex, web experience, and spending online do not have significant effect on auctions attributes. The effects of age, online purpose, and internet usage, and online auctions experience are reported below.

5.4.1 Age. There is significant effect on bidding price by age ($F=8.079$, $p=.000$). Younger respondents weigh more on bidding price for cues of seller's trustworthiness than older ones.

5.4.2 Online purpose. The purpose of online has significant effect on bidding price ($F=3.088$, $p=.028$). Consumers with online purposes of finding product information concern more on bidding price.

5.4.3 Internet usage and online auctions experience. Shipping charge is a significant important factor for intensive web users ($F=3.155$, $p=.025$) and experienced auctions consumers ($F=7.252$, $p=.008$).

Table 5: ANOVA for evaluation of seller trustworthiness

Attributes ^a	BP	SR	PT	SC
Sex	2.837	2.067	0.446	0.078
Age	8.079*	1.393	0.030	2.533
web experience	2.636	0.468	0.592	0.528
online purpose	3.088*	0.259	2.667	1.847
internet usage	1.012	1.232	0.476	3.155*
online auctions experience	2.639	0.635	1.248	7.941*
Spending online	2.393	0.478	0.218	0.710

Notes: numbers in cells are statistic F

^a BP: Bidding price; SR: Seller rating; PT: Payment type; SC: Shipping charges

* Significant at $p<.05$

6. CONCLUSION

This article provides an experimental test of consumer's trade-offs in online auctions context. These findings are essential because they help identify the importance of those attributes of online auctions under the consideration of bidding intentions and seller's trustworthiness. The results indicate significant differences between the types of evaluative judgment. The findings indicate that the way consumer perceives trustworthiness of a seller is quite different from their bidding intention.

This research examined how various characteristics of auctions terms and the basis of consumers' evaluations affect their judgments about online auctions alternatives. Using conjoint analysis and ANOVA, we were able to examine subjects' utilities for sellers' offerings that differed along four attributes as well as how these utilities were affected by demographic variables and web experience variables. The results indicate that price is the most important factor in bidding intentions (relative importance: price 28.6%; seller rating: 25.25%;

payment type: 22.41%; shipping charge: 23.73%), whereas the seller rating plays a more important role in consumer's trust in online auctions (relative importance: price 22.44%; seller rating: 37.46%; payment type: 20.26%; shipping charge: 19.84%). Payment type and shipping charge are also important factors, since utilities for these two factors are significantly greater than zero. The demographic variables show some influences on the utilities, for instance, female buyers are more sensitive to shipping charges, and older consumers put more weights on seller's ratings. As for web experience, the more experienced consumers are more low-price prone, and have significantly different judgments as compared to less experienced ones.

Interestingly, this paper suggests auctions sellers may succeed by simply compete on price. However, this conclusion could only be generalized in used textbook category; further research could include additional product categories as exemplars and different auctions attributes as factors. Although price and seller rating seem to be relatively more important factors, further research could examine factors in addition to payment type and shipping charge of the auctions. Of course, further testing should go beyond the college student sample.

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