

Research on the Purchase Behavior of Customer-to-Customer Online Auction

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Abstract

Many Customer-to-Customer (C2C) online auction providers still do not have a good understanding of Customer-to-Customer trade in Taiwan. The Customer-to-Customer online auction providers still do not have a good understanding of Customer-to-Customer trade behavior and are unable to provide satisfied and effective outcomes for an online auction trade. It is difficult to propose a standard trade strategy without a basic understanding of current trade capacity and of the critical gaps in customer's trade evaluation. The purpose of this survey article is to address these behaviors in the literature and to provide an overview of the current state in Taiwan. Using qualitative data collected from customers, this study provides insight into what can be done to build effective Customer-to-Customer online auction trade in Taiwan.

Keywords: Online Auction, Trust, Decision-Making, Web-based Auction

Introduction

As the population of Business-to-Customer (B2C) online purchase, the Customer-to-Customer (C2C) auction is becoming popular everywhere with various types of merchandise to sell. The situation of extended C2C commerce over the Internet has an effect on a broad range of transactions for people and causes a significant change in social operations for traditional society of Taiwan. Though the technology acceptance model (TAM) is one of the most widely used models of information technology implementation, it is not enough to explain the Behavior of online auction. What's more, there are few of Behavior in the published literature concerning the solutions of Online Auction. As TAM, we try to extend it and explain it to the situation of online auction commerce of Taiwan.

Literature Review

As Hawkins said, shopping orientations are consumers' purchasing styles that place particular emphasis on certain activities (Hawkins, 1989). Accordingly, numerous scholars have conducted research toward in-home shopping and have made contributions to the understanding of changing consumer purchasing habits. However, few have investigated consumers' Internet auction activities in Customer-to-Customer e-commerce market. This study attempted to investigate consumers' Internet auction activities of Taiwan in the C2C e-commerce market. To do the task, the traditional behavioral model was utilized. Attitude has been the most important and central concept in contemporary American social psychology (Allport, 1968). Attitudes are learned predispositions toward a behavior, whereas subjective norms are general measures of the influence of referents on an individual's willingness to perform the behavior (Fishbein and Ajzen, 1975). Goods attributes have been an important factor as it was used as criteria for choice. Numerous studies have identified a wide array of goods attributes which influence purchase decisions. Consumers considered the given product and service information when making purchases decision (Kwon and Lee, 2003; Chen *et al.*, 2006; Tien *et al.*, 2006). Useful information, especially the amount and types of goods information available is significantly influencing the attitude of the shoppers (Kim and Lennon, 2000). It suggests that sellers should create effective listing template with appropriate product information that would meet consumers' information needs. Among the information, price and security (Watchravesringkan and Shim, 2003) are deemed to the most important factors influencing the purchasing intention. Eastlick and Feinberg (1995) identified company clientele, information services, reputation, company responsiveness, and interaction with catalog personnel which are the factors influencing the attitude of toward catalog retailers of apparel. Among the identified attitudinal attributes, thirty-three items are selected to be used to this study. They were the most widely used to measure consumers' attitude in the context of direct marketing and in-home shopping including the Internet auction shopping. They are Product knowledge, trade security, problem solutions, sellers' reputation, low price, purchase intention, trust, decision, C2C shop and etc.

Theory and Hypothesis

The auction theory is hypothesized as the following:

Customer purchase intention

If a customer needs something at auction website, then he will: (1) Searches it online; (2) Compares the price and evaluates it; (3) Decides to buy it. The law of customer purchase intention defined as “when other things remaining the same, the higher the price of a good, the lower is the customer’s purchase intention; and the lower the price of a good, the higher is the purchase intention.” As it is shown on the Table 1, the purchase intention is the degree of willingness to buy during a given time period at different auction prices. The purchase intention at the high price is smaller than it at the lower price.

Table 1: The Purchase Intention

	Price	Buyer-A intent	Buyer-B intent	Sellers' Intent
A	1	5	5	1
B	2	4	4.67	2
C	3	3	4.34	3
D	4	2	4	4
E	5	1	3.67	5

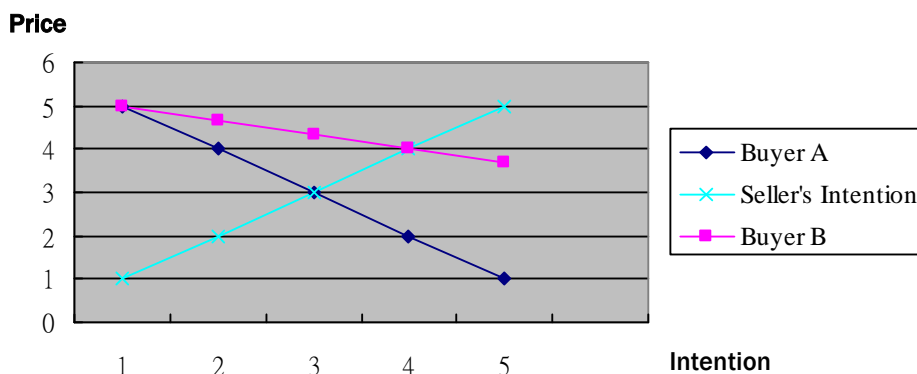


Figure 1: The Purchase Intention

On Figure 1, if there is only buyer A in the auction trade, the price will coordinate the intentions of buyer and seller and achieve equilibrium. Equilibrium is a situation in which opposing forces balance each other. Equilibrium in an auction market occurs when the price balances the intentions of buyer and seller. The equilibrium point is the price at which the sellers’ intention equals that of the buyers’. The equilibrium intention is the purchase intention and sells intention at the equilibrium price. Based on the above deduction, the following hypotheses are proposed:

- H1a:** The Trade Value of purchasing on web auction is positively influenced by product perception, Service and Price perception.
- H1b:** The Buyers’ background of purchasing on web auction is positively influenced by Communication Skill, Law Perception, Product perception and C2C auction Attitude, and Search skill.
- H1c:** The intention of purchase on web auction is positively influenced by Trade Value and Buyers’ background attitude.

Trust and Sellers’ Reputation

We know sellers’ reputation is important in a trade, which is considered one of the precursors of trust in buyer-seller relationships. In addition, reputation or word-of-mouth referrals are proposed to impact initial trust (Kim and Lennon, 2000). There are many different ways of defining and measuring trust: security, trade risk, permission and problem solution (Bhattacharjee, 2002). In the E-commerce circumstance, there is no face-to-face contact of product or seller. Thus, a sellers’ reputation and an effective communication system are

essential to improve the degree of trust and affect customer's online auction intentions or decisions. The online shoppers favor seller that guarantees valid transaction. Consequently, consumer perceptions of the value of these web assurances are important determinants of trust in the online business. "Safe transaction" was considered a more significant predictor to the purchasing intentions in the C2C e-commerce apparel market (Jee, 2005). Based on the above deduction, the following hypotheses are proposed:

H2a: The Trade Security is positively influenced by Delivery security, Buyers' concern of trade procedure and Security function of web auction.

H2b: The trust to purchase on web auction is positively influenced by Trade Security and Sellers' reputation.

As a first step in empirical investigation, and according to the general flow of E-auction transactional procedure, this paper develops a purchase decision model of online auction (see Figure 2), in order to examine auction Behavior between buyers and sellers. The concerns of how the buyers' background knowledge and price affect online auction intention, and how product presentation and transactional procedure gained from the web-shops affect on going trade intention, trust degree, and final decisions. Based on the above deduction, the following hypotheses are proposed:

H3a: The decision to purchase on web auction is positively influenced by buyers' trust.

H3b: The decision to purchase on web auction is positively influenced by buyers' purchase intention.

Model Analysis

This research model partially refers to but differentiates from four models that explain a model of online auction decision which include: A Model of User Acceptance by Davis (1989); A Model of Initial Trust Formation in New Organizational Relationships by McKnight *et al.* (1998); Internet Customer Trust Model by Jarvenpaa *et al.* (2000); and the Website-Oriented Model by Chau *et al.* (2000). But in our model, there is difference from Jarvenpaa *et al.*'s model. We focus on the consumer's perceptions of price, trust and purchase decision-making in online auction stores, which includes intermediaries or third parties that might mediate between the buyers and the sellers. In the research of E-auction, we presume that the measurements of price level, purchase intention, security system, and buyers' perception are the factors that would affect the customer's decision and confidence in online auction purchase. Based on the procedure of online purchasing, personal background, worth evaluation, and purchase decision, we have derived a customers' online auction Trust-Decision model from four factors (see Figure 2), which includes: Buyers' Background, Trade Security, and Trade Value, and Sellers' Reputation. Buyers' Background includes Communication Skill, Law Perception, Product Perception and C2C auction Attitude, and Search Skill. Trade Security includes: Delivery security, Buyers' concern of trade procedure and Security function of web auction. Trade Value includes product perception, Service and Price perception. In a real online auction model, we found that customers always evaluate the security of that transaction after product searching from the Internet, and then making the judgment of trust or purchase decision. So we put the evaluation of transaction as the antecedent of trust. For the factor of trust, in McKnight's trust model, he assumes that web-community members only communicate with each other with web tools. But in our online auction model, trust means that the customers trust the information of sellers' presentation, and security of transaction.

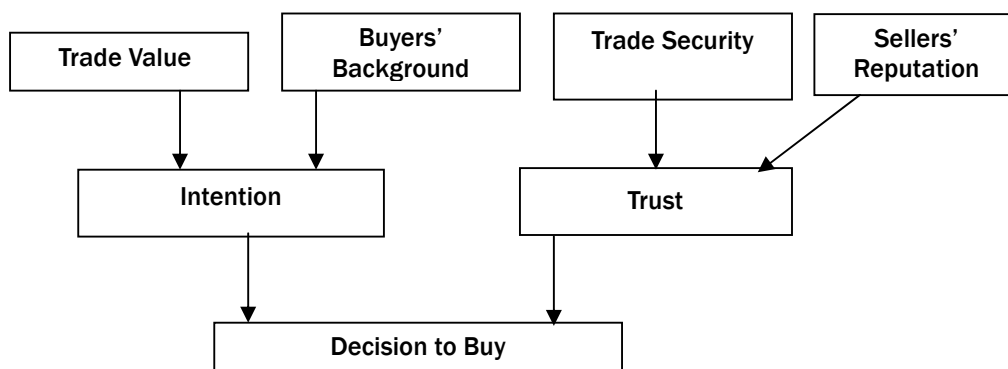


Figure 2: The Research Model

Methodology

Participants

For the data collection, the subjects include customers who have some Customer-to-Customer auction experience. Subjects were collected from the customers between 19 ~ 64 years old. A total of 270 participants were surveyed from the face to face interview.

Independent and Dependent Variables

Independent Variables include Buyers' background (Communication Skill, Law Perception, Product Perception and C2C Auction Attitude, and Search Skill), Trade Security includes (Delivery security, Buyers' concern of trade procedure and Security function of web auction), Trade Value includes (Product Perception, Service and Price Perception) and Sellers' reputation. In the first section of the model, there were four independent variables: Trade Value, Buyers' Background, Trade Security, and Sellers' Reputation. To ensure the validity of the measurement, these independent variables are dependent variables which were derived from several independent variables and were explained by latter factor analysis. In the second section of the model, there were three dependent variables: Buyers' purchase intention, trust, and final decision. Trust was measured by one question in the final questionnaire; "decide to buy this product online".

Data Processing and Analysis

The purpose of this study is to test the E-auction cognition of the people by developing a research model of the online auction process as documented in the current literature.

Factor Analysis

The first process is to prove the construct validity that involves the verification of predictions made from the test. Factor analysis is one of the good tools used to verify the construct validation for a model (Hair et al., 1998). SPSS 13.0 was used to run the factor analysis to evaluate the construct validity of the model's scales. A PRINCIPAL COMPONENTS FACTOR ANALYSIS with varimax rotation was performed to establish convergent and discriminant validity of primary constructs: Product Perception-F1, Buyers' C2C Auction Background-F2, Trade Security-F3, Concern in Process Safety-F4, Search Skill-F5, Communication Skill-F6, Law Perception-F7, Trade Value (Service and Price perception)-F8. The factor analysis presented in Table 2 shows 8 orthogonal factors with eigenvalues above 1.0, together accounting for 62.2% of the variation, with item communality ranging between 0.47 and 0.84.

The KMO (Kaiser-Meyer-Olkin) Measure of Sampling Adequacy is 0.86. Bartlett's test is significant at $**P < 0.05$, which implies that our research model is good fit to factor analysis. As in the first row of Table 2, five of eight factors (Product perception, buyers' C2C auction background, Trade Security, Search skill, Service and Price perception) exceed the cutoff point of 0.7, The high Cronbach's α values for these factors that imply the measure of this 5 factors are reliable and valid. However, a Cronbach's α value of 0.17 for Concern in process safety is unacceptable low and suggests that the statements used to measure this variable were unreliable. Together with the factor analysis results, the low Cronbach's α value suggests that the two items (AD, AM) for Concern in process safety are measuring differing factors. The same unreliable situation includes Communication Skill (0.13), Law Perception two factors (0.12).

Table 2: The Factor Analysis and Cronbach's α

α value	0.87	0.77	0.72	0.17	Question item	Communality
Factor	F1	F2	F3	F4		
EB_Learn		0.71			F	0.68
C2C_Shop		0.55			H	0.47
Goods		0.87			I	0.79
IntStsfy		0.84			K	0.76
B_intention		0.86			L	0.84
Brand		0.62			M	0.47
SrchClear	0.77				S	0.67
P_knwldg	0.71				T	0.74
BrandAware	0.72				U	0.66
Pd_Expln	0.84				V	0.71
Advertise	0.73				W	0.55
Presentation	0.53				X	0.61
Privacy			0.50		AK	0.57
Reputation			0.76		AG	0.64
Payment			0.77		AH	0.59
Delivery			0.60		AI	0.53
Trust			0.44		Trust	0.56
Regard				0.44	AD	0.58
Traditional				0.65	AM	0.46
Variance explained	25%	9%	6%	5%		

Note: Extraction method: Principal Component Analysis (PCA).

Table 2 indicates the factors extracted. In this case, nine factors are extracted from a combined dataset during the factors analyses process. As a result, it seems that nine different factors mostly describe the contrast situations across this research model. According to the theory of correlation and factor analysis, the correlations of nine categories are able to show above 62% of valid variance across this research model. In the analysis from Table 2, the nine factors can be named as the following:

1. Twenty five percent of variance shows that buyers' Product perception has a positive relationship with buyers' product knowledge, brand awareness, product explanation, product advertisement, and satisfying web presentation.

Table 2: The Factor Analysis and Cronbach's α (Continue)

α value	0.71	0.13	0.12	0.71	Question Item	Communality
Factor	F5	F6	F7	F8		
SearchMthd	0.72				J	0.72
Skill	0.77				N	0.83
Familiar site	0.57				O	0.64
Finded Pd	0.46				R	0.65
CommSkil		0.69			Q	0.67
Seals		-0.67			Z	0.58
TimeSpnt			0.51		P	0.56
KwnLaw			-0.51		G	0.61
IntTraditinl			0.61		AB	0.60
Cheaper				0.70	AE	0.68
Service				0.70	AF	0.65
GoodPrice				0.77	Y	0.69
Decision				0.64	Decision	0.77
Variance explained	4%	4%	4%	3%		

2. Nine percent of variance shows that buyers' C2C auction background has a positive relationship with buyers' knowledge on how to auction on Website, habit of shopping in traditional store, having an ideal product in mind, satisfying the performance of Internet, and buyers' Auction online intention.
3. Six percent of variance shows that Trade Security has a positive relationship with personal security of trade, sellers' reputation, security of payment, delivery convenience, and buyers' trust of this trade.
4. Four percent of variance shows that Search skill has a positive relationship with buyers' knowing of search method, having good search skill, familiarity of Websites, and finding ideal product.
5. Four percent of variance shows that Price perception has a positive relationship with cheap price, auction service and purchasing decision.

Construction of Online Auction Model

In this study, there are 33 variables used. To test the hypothesis above, simple regression was used. Trust, purchase intention, and final decision are considered dependent variables. The antecedent variables (personal background, site presentation, and system security) are independent variables. The model hypothesizes that price, personal background, sellers' reputation, and worth evaluation will affect the trust or purchase intention and online final decision. The customers will avoid risks with those that they have a not good experience with (Heider, 1958). They will build relationships with sellers because of trust and trade for the events that are likely to bring more pleasure than pain (Thibaut and Kelley, 1959). It is the responsibility of the online business to promote perceptions, such as trust, which eventually result in successful exchange. We have created a purchase model and will describe the relationship of those variables for an enterprise to evaluate different factors of a successful online auction model of an electronic website. Thus, there are three simultaneous relationships presented in this research as follows:

$$\text{Trust} = 0.18 \times \text{Trade Securities} + 0.38 \times \text{Sellers' reputations} + \dots$$

$$\text{Intention} = 0.34 \times \text{Price} + 0.23 \times \text{Perceptions} + \dots$$

$$\text{Decision} = 0.55 \times \text{Intentions} + 0.02 \times \text{Trust} + \dots$$

According to the regression analysis, we found that all variable loadings were significant at $**p < 0.01$. The explained variance (R square) for each dependent variable in the Figure 3 model is given in italics inside its dependent variable's rectangle. The model explains (as Figure 3 illustrates) the association among trust, intention, and decision, which is stated as the following: (1) Online auction decision is significantly related to purchase intention (the coefficient 0.55 is higher) but not to trust in the auction-seller (the coefficient 0.02 is

low); (2) Trust in the auction-seller is significantly related to personal evaluation with that trade (0.18) and sellers' reputation (0.32); (3) Purchase intention is associated with price (0.34) and the knowledge of product (0.23). This study provides a number of important findings, which supports the model presented in Figure 2 and also confirms the hypotheses regarding the directional linkages among the model variables, which were described as the following:

1. Purchase intention is strongly determined by the product price and personal knowledge of the product, but it is less directly determined by trade security or the experience of Internet.
2. Sellers' reputation and trade security strongly influence trust in a seller.
3. Trust in a seller explains more online auction decision than purchase intention.

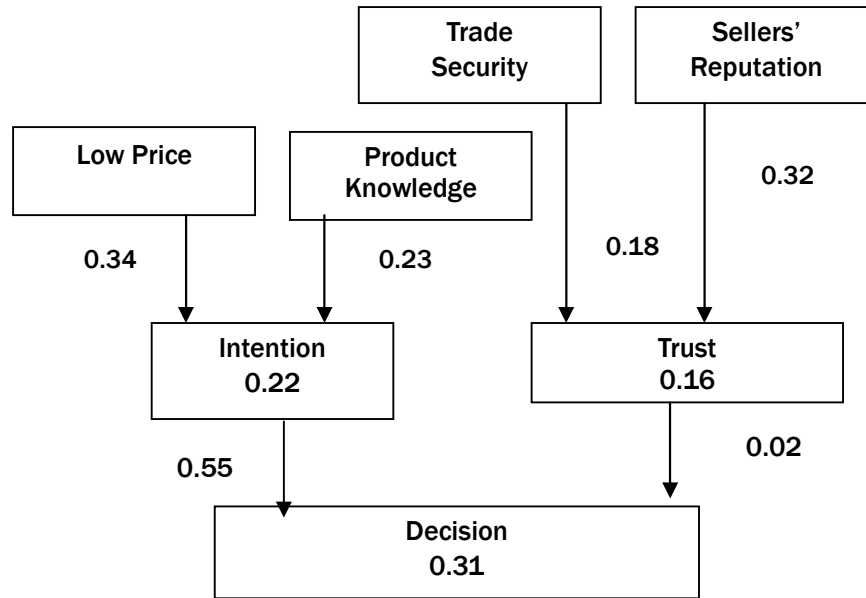


Figure 3: The Research Results for Online Auction Decision Model

In looking at the scores from testing the effects of antecedent variables of trust in a seller and purchase decision, which were produced from the result of regression analyses (Table 3), we confirm that these antecedent variables significantly ($**p < 0.01$) affected purchase decision and trust in a seller. Product value, sellers' reputation and trade security were found significantly ($**p < 0.01$) to affect both purchase decision and trust (see Figure 4). Trade security, Product value and sellers' reputation are significant ($**p < 0.01$) antecedent variables of trust in a seller, however most variables are significant antecedents of purchase decision. According to the coefficient in Figure 3, online auction decision was not strongly affected by trust in a web-seller (0.02). This finding may be interpreted to mean that when these factors are present (i.e., good price of product, trade value, customer intention), though customer's trust confidence is not strong, most customers still do the trade decision. The finding that sellers' reputation was significant to auction decision may be interpreted as that many web buyers know how to evaluate sellers' trust levels shown at the auction web pages.

Table 3: Compare the Coefficients for Trust and Decision

	Decision		Trust	
	t	Sig	t	Sig.
Good Price	2.822	0.005	1.654	0.112
Product value	3.638	0.000	4.205	0.000
Intention	3.014	0.003	1.624	0.109
Trade Security	7.558	0.000	8.781	0.000
Sellers' reputation	4.245	0.000	5.627	0.000

Note: Dependent Variable: Decision, Trust.

Independent Variables: Price, Product value, Intention, Security, and Sellers' reputation.

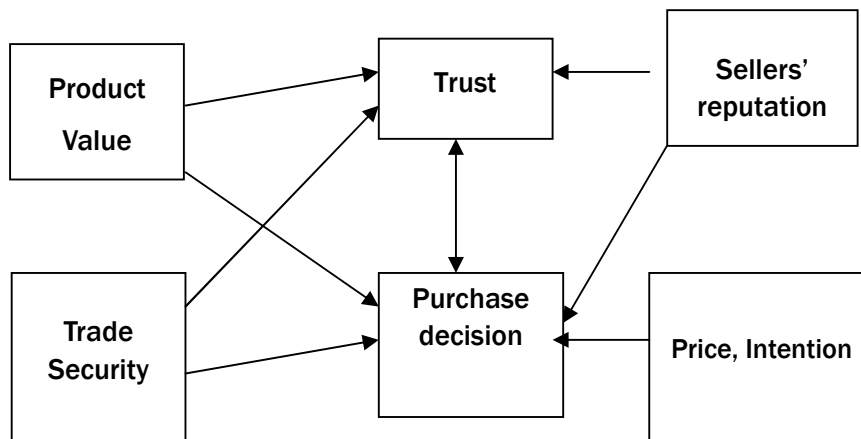


Figure 4: The Relationship between Trust/Decision and Its Antecedent Variables

Conclusion

It was found that low price and good presentation of a product always attract customer's auction intention after search, but do not directly affect the final online auction decision because of low trust. Product value, trade security and the seller evaluation strongly influence personal trust in web-sellers which is necessary for the completion of electronic transaction. We also confirmed that buyers decide to take a risk purchasing online if the: (1) product price is low; (2) customers purchase intention is high; (3) buyer think it is safe as they have no experience of E-auction when the sellers' reputation is good. Except the findings above, many online buyers are still afraid of Internet fraud and concerned about security, product quality, customer service, and unfair contracts. Customer studies on getting background knowledge of E-auction are some of the important strategies to prevent dissatisfying online purchasing. As found in the literature, government and organizations can help further popularize Internet performance by improving the legislation of customer service or protection, setting more legal and secure requirements, and providing people with a satisfactory Electronic Business System. Also, the legislation and management of fair trade, customer service, security fraud solution, dispute arbitration, and the obligation of Internet Services Provider are the basic factors that can improve customer's confidence when auction online. The development of third party of escrow function is deemed as the most useful strategies to improve online auction environment.

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