

## C2C ONLINE AUCTION WEBSITE PERFORMANCE: BUYER'S PERSPECTIVE

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### ABSTRACT

Despite the popularity among millions of users around the globe of selling, bidding, and buying products using C2C online auction websites, the existing literature on online auctions provides us with little understanding on important factors of the C2C auctioneer website performance. One way to understand the performance factors of C2C auction websites could be to extend the past theories of end user computing satisfaction from the buyer perspective. The current study develops a research framework for measuring C2C online auction website performance by identifying factors which influences C2C auction buyer's satisfaction and net benefit. Based on the research framework, we develop measurements and empirically test C2C auction website performance with a sample size of 131 C2C online auction buyers. Our empirical results indicate that the C2C auction website content, user friendliness (a combined measure of C2C auction format and ease of use), timeliness, security, transactions, and product varieties are positively related to the website performance for the auction buyers. Implications of the current study and potential for future studies are also discussed.

Keywords: online auction, EUCS, ISSM, website performance

### 1. Introduction

An interesting phenomenon of online sales had been the widespread usage of C2C online auction websites that attract millions of users around the globe to sell, bid, and buy everything from baby diapers to airline tickets. In 2007 alone, a total of US\$59 billion was transacted on eBay, one of the most popular C2C online auction websites.

The popularity of C2C auctions can be attributed to the simplicity and efficiency in price negotiation - one of the most frustrating parts of the purchasing process between the individual buyers and the sellers [Jin & Wu 2004]. Unlike the fixed or static purchase price offered at e-stores, online auctions create a dynamic or "fluid" pricing structure for the buyers. Ockenfels et al. [2006] contend that the transaction costs associated with conducting and participating (selling and bidding) in C2C online auctions have decreased substantially to the extent that such online auctions seem worthwhile even when the expected advantage of detecting the true market value of the item is relatively low.

The functional and operational characteristics of C2C online auctions are different when compared to other e-commerce businesses. Unlike other e-commerce websites, C2C auctioneers such as eBay and Amazon operate as unaligned third parties, creating a virtual platform for the auction users (i.e. buyers and sellers) to meet and conduct purchase transactions. At eBay alone, millions of sellers add 6.7 million auction listings per day across 50,000 product categories [eBay 2008]. Auction websites, therefore, do not participate in actual selling of the products or services [Chong and Wong 2005]. In contrast to consumers utilizing e-stores, C2C auction users are involved in dynamic, real-time and complicated decision situations to sell and buy not only regular products but also rare, discontinued, unique, and antique products [Ockenfels et al. 2006].

C2C online auction users are generally unknown to one another and a long-term buyer-seller relationship is less likely to be found [Ba 2001]. After the bidding is closed, the seller has to wait until the payment from the auction-winner is successfully transferred to his or her account before shipping the product. Because of such non-simultaneous exchange among the trading parties, C2C online auction is also characterized by the introduction of time asymmetry in the business transaction [Chong & Wong 2005] and additional risk for its participants [Chong & Wong 2005; Salam et al. 1998]. User authentication and product/service guarantee remains the greatest challenge in C2C auction environment [Bam et al. 2000; Chong & Wong 2005, Jones & Leonard 2007; Yen & Lu 2008a]. As an additional security feature and to keep fraudulent users away, many C2C auction websites now have a rating system and feedback mechanism that allows the buyer and seller to rate one another after the completion of auction transaction. This can, in turn, create a high lock-up cost for sellers and bidders to the auction site. Thus, compared to other e-commerce, C2C auction sites create a more sophisticated business environment characterized by a higher level of risk, uncertainty and complexity for its users [Yen & Lu 2008a 2008b].

Auctioneer website providers generate revenue through the small fee they collect from the sellers in exchange for auction listing and other services they provide. Determination and measurement of online auction website performance from the website usage by its users is therefore a critical strategic factor for a website's sustainability and growth. Statistics have shown that 80 percent of the highly satisfied online consumers would shop again within two months, and 90 percent would recommend the websites to others [NCL Online Auction Survey Summary 2001]. As the popularity of C2C online auctions has grown over the past decade, so has the rivalry among the auctioneers to attract and retain auction sellers and buyers. In the long run, customer-centric C2C auction websites that develop and maintain genuine customer relationship strategies and effectively manage the buyers' shopping experience will have a higher probability of surviving in the competitive, virtual C2C auction marketplace. Conversely, a failure to do so can lead to complete business failure, as have been the cases of SandCrawler.com, FirstAuction.com, and Auctions.com [Bandyopadhyay & Wolfe 2004].

The importance of website performance for its users as a determinant to e-commerce success has been a well-researched topic that has led to the development of several theoretical models and tools. Some examples include Web Assessment Tool by Selz & Schubert [1997], Extended Web Assessment Model by Schubert & Dettling [2002], and SITEQUAL by Yoo & Donthu [2001]. Because of the differences in its functional and operational characteristics when compared to other e-businesses, generalizability of previous studies on dimensions and measures of e-commerce performance to C2C online auctions may be limited or inappropriate [Straub 1989; Wang et al. 2001]. Jones & Leonard [2007] argue that C2C online auction warrants a separate research agenda on user (seller and buyer) satisfaction to enhance the current understanding of C2C performance.

The purpose of the current study is to explore important attributes of C2C online auction website performance from the perspective of the online auction buyers. The research model proposed in this study is based on the end-user customer satisfaction (EUCS) model developed by Doll & Torkzadeh [1988] and Information Systems Success Model (ISSM) developed by DeLone & McLean [1992 2004]. These models are very popular in the area of information systems and have been frequently used in empirical studies to test the performance of information-based systems and applications [Somers et al. 2003].

Online auction website performance from the buyers' perspective is an important theoretical construct for future studies in the area of C2C online auction because it can help us to Doll & Torkzadeh [1991]. It can be an independent variable when the focus of future research is downstream buyer behaviors (such as auction re-use intentions and complaining behavior) affected by the buyer's experience. It can also be a dependent variable when the focus of the future research is upstream buyer activities or perceptions. For the managers of C2C auction sites, knowledge related to important characteristics and features of the websites for the auction buyers can help them to create, manage, and enhance auction buyers' experiences from using the auction website. This can, in turn, help the auctioneer build a strong, competitive business in the online auction industry.

The remainder of this paper is organized as follows. The literature review section identifies related studies in the areas of C2C online auction and EUCS, discussion on key constructs, and development of hypotheses. We then propose our hypothetical model. Next, we explain the research methods we followed for instrument development,

data collection, and results from our empirical analysis that used primary data from 131 respondents. The interpretations from our empirical analyses are detailed in the discussion section. Limitation of the current study and theoretical and practical significance are also provided. Finally, we conclude the paper with the summary of our findings and provide potential topics for future research.

## 2. Literature Review

Extant literature on C2C online auctions have focused on distinct operational characteristics and e-purchasing behavior of online auction users, such as *buy-out options* [Anderson et al. 2004; Mathews 2003; Matthews & Katzman 2006; Hidvégi et al. 2006], *hard and soft auction close* [Brown & Morgan 2005; Houser & Wooders 2005], *online escrow services* [Hu et al. 2004], *winner's curse* [Bajari & Hortacsu 2003; Jin & Kato 2005], *snipping* [Simonsohn 2005; Roth & Ockenfels 2002], *competitive arousal* (auction fever, bidding frenzy, or bidding war) [Ku et al. 2005], *shill bidding* [Kauffman & Wood 2003], *cross-bidding* or auction-bargain hunting [Tung et al. 2003; Anwar et al. 2006; Zeithammer 2003], and *reputation system* [Lin et al. 2006; Livingston 2005; Dellarocas 2003; Melnik & Alm 2002; Ba & Pavlou 2002; Resnick & Zeckhauser 2002].

Collectively, these studies point out that the design and functionality of a C2C auction website is a complex and an important subject. The choices and decisions regarding the auction website's different parameters may systematically and significantly affect an auction site user's efficiency and participation. Studies in marketing, consumer behavior, and e-commerce agree that user satisfaction is one of the most important consumer reactions. Its importance is reflected in the ability to lead to repeat purchases [Reibstein 2002], build customer loyalty [Anderson & Srinivasan 2003], enhance favorable word of mouth [Bhattacharjee 2001] and improve the company's market share and profitability [Reichheld & Scheffer 2000]. In fact, the latter study showed that a 5% customer retention rate can lead to increase in the profit by 25-95%. The authors state that more than 90% of satisfied eBay auction users seem to recommend the auction site to a friend, which translates into lower advertisement and promotion cost per new customer for eBay.

Since the 1980s, user satisfaction has been recognized as an important measure of information systems success because of a high degree of face validity and the reliability of the measures [Ives et al. 1983; Bailey & Pearson 1983; Baroudi et al. 1986; Benson 1983; Doll & Torkzadeh 1988; DeLone & McLean 1992 2003 2004]. *User information satisfaction* (UIS) refers to the extent to which users perceive that the information system available to them meets their requirements [Ives et al., 1983]. User information satisfaction is often used as an indicator of user perception of the effectiveness of an information system [Bailey & Pearson 1983; Doll & Torkzadeh 1988] and measures the success or failure of the system [Galletta & Lederer 1989]. *End-user satisfaction* is "the affective attitude towards a specific computer application by someone who interacts with the application directly" [Doll & Torkzadeh 1988, p. 261]. In the area of e-commerce, the EUCS model has been used to assess customer satisfaction for online purchasing and to measure website success [Abbott et al. 2000; Cho & Park 2001; Eroglu et al. 2003; Ho & Wu 1999; Kim & Lim 2001; Kohli et al. 2004; Lam & Lee 1999; McKinney et al. 2002; Reibstein 2002; Shemwell et al. 1998; Szymanski & Hise 2000, Wang et al. 2001; Helm et al. 2005].

Chong and Wong [2005], in their theoretical study, identify customer satisfaction attributes and argue how the halo effect influences satisfaction of online auctions. Similarly, Yen & Lu [2008a 2008b] conducted empirical studies on C2C auction bidders to measure the effects of e-service quality on bidder's loyalty intentions and bidder's online auction repurchase intentions based on expectancy disconfirmation theory. Jones & Leonard [2007] used a sample size of 83 to replicate the user satisfaction study in business-to-consumers (B2C) of Devaraj et al. [2002] in the generic context of C2C e-commerce (such as e-mail groups, web-based discussion forums, chat room, etc.) including C2C auctions. The authors concluded that the user satisfaction in C2C environment is much more complex in comparison to the B2C with many more factors influencing user satisfaction.

According to Wang et al. [2001], an effective measure for e-commerce success must incorporate different aspects of customer experiences in order to become a theoretical and practical diagnostic instrument. In their empirical studies on C2C online auctions [Yen & Lu 2008a 2008b], the authors use satisfaction and net benefits as independent variables to investigate bidders' loyalty intentions and repurchase intentions. It follows that assessment and evaluation of C2C auction websites should include measures to capture auction buyers' intangible benefits (e.g., interaction experience with the website) and tangible benefits (e.g., cost and time). In the current study, we define C2C online auction buyer satisfaction as overall affective attitude of the auction buyer towards the online auction website. Similarly, we define buyers' net benefit as overall purchase benefits in terms of cost and time. Based on the past studies on measurements of system success, [e.g., Staples et al. 2002; DeLone & McLean 1992 2004; Wu & Wang 2006; Yen & Lu 2008a 2008b], we operationalize C2C online auction website performance in terms of auction buyer satisfaction and auction buyer net benefit.

The EUCS model of Doll & Torkzadeh [1988] uses 5 variables: *Content, Accuracy, Format, Ease of use, and Timeliness*. The EUCS instrument is a synthesis of Ives et al. [1983] UIS model, and has been widely used in studying the performance and success of various information-based systems [Gelderman 1998; Igbaria 1990; Somers et al. 2003]. However, Straub [1989] specifically cautions that regardless of how an instrument may have been carefully validated in its original form, excising selected items does not necessarily result in a valid derivative instrument. Because of the differences in C2C auction websites' operational and functional characteristics as well as differences in C2C participant behaviors during the bidding process, it would be highly inappropriate to limit the study and measures of C2C online auction website performance based on the original UIS or EUCS model alone. This requires adding, eliminating, or modifying some of the original items and dimensions of UIS and EUCS measures to the specific context of C2C online auction websites and its users.

*Content* of the C2C online auction website refers to the relevance and completeness of information available to the auction buyer on the website. An auction website contains various types of information from the seller (product description, shipment, return, etc.) and from the auctioneer (user information, feedback forum, policies, regulation, etc.). The clarity and completeness of this information is important for the customers to make decisions regarding different parameters of bidding such as which, when, and how much to bid. Madu & Madu [2002] argue that internet users rarely read web pages that are detailed. Further, Nah & Davis [2002] argue that consumers want to find the information quickly and with little effort. It is therefore important to deliver concise and relevant information on the product, seller, and transactional terms and conditions on the auction website effectively. Relevant and reliable information can also minimize the concern of fear about the website [Molla & Licker 2001; Palmer 2002], contribute to bidders' information requirements during bidding [Palmer 2002; Molla & Licker 2001; Yoo & Donthu 2001; Zeithaml 2000] and facilitate site navigation, information search, transaction processing, and product selection [Wofinbarger & Gilly 2003]. Therefore, we propose that:

*H1: C2C online auction website information content is related positively to the website performance.*

*Format* of the C2C auction website reflects the information presentation and the layout of the auction site for the buyer. When a consumer searches for products and auction listings, the search activity at the site can be influenced by the degree of difficulty and the amount of time required to navigate the website [Waite & Harrison 2002]. It is therefore important to provide relevant information to the auction site customers in a format that makes navigation and search easy [Palmer 2002; Molla & Licker 2001]. The media richness of the website in terms of graphics, text, and layout can make an auction site attractive and useful [Madu & Madu 2002; Waite & Harrison 2002]. Uncluttered websites can make online shopping pleasurable and satisfying to e-consumers [Pastrick 1997]. According to Bauer et al. [2006], visual appeal, professional design, and clarity and relevance of website components can enhance the website efficiency for the auction users [Parasuraman et al. 2005; Yen & Lu 2008a]. A good format of the website can translate into higher interactivity which can increase effectiveness and efficiency in delivering relevant information to enhance buyer satisfaction [Teo et al. 2003]. Therefore, it should follow that:

*H2: C2C online auction website format is related positively to the website performance.*

*Ease of use* is defined as the degree to which the C2C auction website is "user-friendly" [Doll & Torkzadeh 1988] for the auction buyer. In the context of online auctions, auction buyers may assess the website based on how easy it is to use and how effective it is in helping to accomplish bidding and winning activities. Jones & Leonard [2007] found that ease of use of the C2C web platform for the e-consumers was significantly correlated with user satisfaction. Ease of access for online auction sites is an important measure of user efficiency [Parasuraman et al. 2005]. Earlier studies by Liljander et al. [2002] found that ease of use affects online user satisfaction. An easy to use website can enhance the bidders' experience with an auction website [Stafford & Stern 2002; Palmer 2002; Molla & Licker 2001; Yoo & Donthu 2001; Zeithaml 2000] by making site navigation, information search, transaction processing, and product selection easy [Wofinbarger & Gilly 2003]. Therefore, we propose that:

*H3: C2C online auction web ease of use is related positively to the website performance.*

*Timeliness* of information on C2C auction website is the extent to which the auction-related information is updated for the bidders [Katerattanakul 2002; Madu & Madu 2002; Kim & Lim 2001]. Real-time or timely information helps the bidder with the status information before, during, and after the bidding process [Tiwana 1998; Molla & Licker 2001; Spiller & Lohse 1998; Palmer 2002]. In addition to ease, speed of accessing and using the online auction information is also considered to be a measure of website efficiency [Parasuraman et al. 2005]. Timely update of the highest bidder can be especially important during the closing minute of the auction. According to Simonsohn [2005], in the majority bids, bidders on eBay often arrive very near to the closing time (referred to as "snipping"). The loading speed of the auction page should be especially important for these last-minute bidders who

compete fiercely to win the auction. Page-loading speed has been reported as number one complaint of web-users [Hamilton 1997] and therefore should be a critical measure for the auction website performance. According to Madu & Madu [2002], when the website is not updated promptly, the website cannot deliver the expected performance and the added value to consumers is decreased. Bidders will experience frustration if they realize that the website is slow in reflecting the bidding status. Hence,

*H4: C2C online auction web timeliness is related positively to the website performance.*

*Security* of the C2C auction website refers to the ability to protect buyer's personal information and from fraudulent sellers [Parasuraman et al. 2005]. Online auction fraud can significantly deteriorate the still vulnerable consumer trust in electronic markets [Hu et al. 2004, p.237]. Online payment security, reliability, and the privacy policy of the site have been recorded as a customer concern while shopping online [Gefen 2000, Cheung & Lee 2000]. Devaraj et al. [2002], in their empirical study, caution that security has been an impediment to the acceptance of online purchasing. Similarly, studies by Urban et al. [2000] and Petersen [2001] confirm that online trust is one of the critical drivers of e-satisfaction. C2C online auction attracts millions of sellers and bidders around the globe. The auctioneer must protect buyers' credit card payments and personal information to ensure that online transactions are safe [Yen & Lu 2008a]. Reputation systems at many auction sites provide a means of evaluating sellers' past performance. This can be used to measure and strengthen the website's security system by keeping fraudulent sellers away, thus building the bidder's trust [Lin et al. 2006; Ba & Pavlou 2002; Resnick & Zeckhauser 2002; Wang 2004; Bruce et al. 2004]. Such security measures can have a significant impact on consumer intentions to shop online [Molla & Licker 2001; Limayem et al. 2000].

Based on these and other studies on e-commerce security [Madu & Madu 2002; Szymanski & Hise 2000], we argue that security of C2C auction websites is an important performance consideration. Therefore, we propose that:

*H5: C2C online auction web security is related positively to the website performance.*

*Transaction* refers to the post-bidding activities facilitated by the C2C auction website to transfer the merchandise from the seller to the auction buyer and payment from the buyer to the seller. This factor is similar to the traditional transaction-specific affective response [Halstead et al. 1994; Oliver 1989]. Since C2C online auctions attract millions of strangers from around the world to sell, bid, and buy, it needs to have specific policies, terms, conditions, and guidelines for the seller and the auction winner concerning payment, product shipment, return, etc. after the completion of the auction. The goal is to ensure that every transaction between a seller and a buyer is binding in terms of product condition, product payment, shipment, etc. [Ba & Pavlou 2002]. According to Yen & Lu [2008a], the auction marketplace needs to develop its technology infrastructure and control mechanisms to ensure that every transaction proceeds smoothly between the seller and the auction buyer.

In an effort to reduce the number of fraudulent transactions, many online services have emerged that provide information on seller's reputation, such as Bizrate.com, eBay's Feedback Forum, and the product review site Epinion.com [Ba & Pavlou 2002, p. 244]. In addition, many C2C auction websites use online escrow services (such as safebuyer.com and escrow.com), third-party debit account services such as PayDirect and PayPal, and credit card and insurance services [Hu et al. 2004]. The seller should deliver the bidding items, communicate with the auction buyer, and provide after-sales service [Yen & Lu 2008a]. Well established guidelines and protocols to safeguard the economic interest and timeliness of exchange for both the seller and the buyer will lead to greater auction website performance. We propose that:

*H6: C2C online auction web transaction is related positively to the website performance.*

*Product variety* refers to the different product categories (for example, bedroom furniture, shoes and apparel, plasma televisions etc.), different brands within each product category and different auction listings of the same product by different sellers on the C2C auction website. Park & Kim [2003] argue that rich product assortment can increase the probability that consumer needs will be met and satisfied. Online auctions have also become a popular venue for finding items that are not widely distributed, discontinued, produced in limited quantities, or unavailable at typical brick-and-mortar stores [Szymanski & Hise 2000; Chong & Wong 2005]. According to Reibstien [2002], product selection, information, prices, and presentation are important factors for e-business. Different brands listed within each product category can help the bidder to evaluate the bidding price among the several listings of the same product and set a maximum bid price for oneself. A more determined bidder can simultaneously bid on multiple listings depending on the maximum price the bidder is willing to pay, the delivery time by which the bidder wants to possess the product and the quality and condition of the product. Product variety can help the buyer in the post-bidding evaluation of the purchase should the bidder win the auction. Hence,

*H7: C2C online auction product variety is related positively to the website performance.*

Our focus in the current study is on the buyer's overall satisfaction from the C2C auction website usage. The usefulness of an auction website for the auction buyer will depend on an aggregate experience of pre-bidding (e.g., product search), bidding (e.g. website interaction), and the post-bidding (e.g. transaction of product and payment). Our hypothetical model is presented in Figure 1.

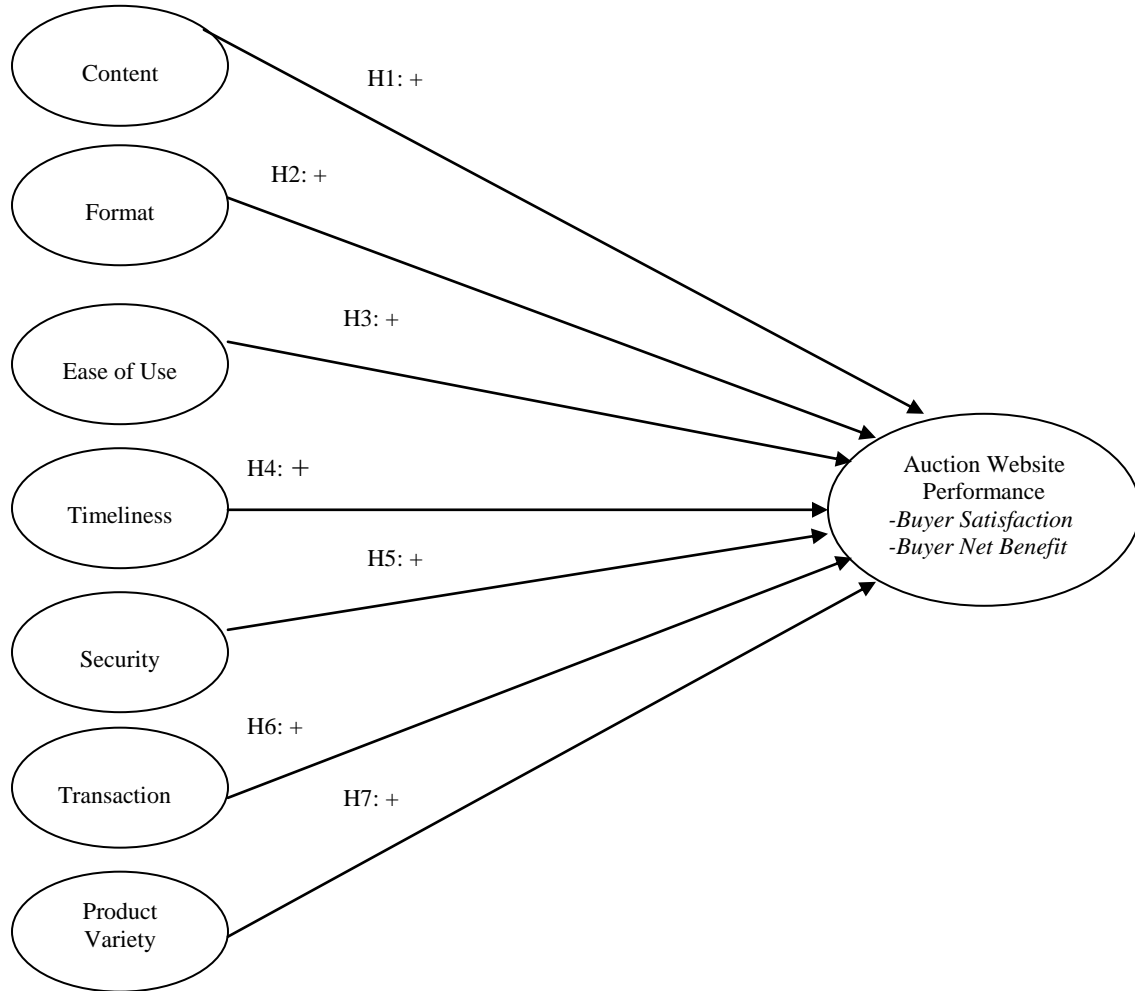


Figure 1: Proposed C2C Online Auction Website Performance Model

### 3. Data Collection and Results

The constructs of our research model were developed based on an extensive review of theoretical and empirical literature in EUCS, UIS, ISSM and other relevant studies in the areas of e-commerce and online auctions as discussed in the previous section. Additionally, structured interviews were conducted with one home-based e-business owner, two frequent online auction buyers, and one university professor teaching e-commerce related courses in a large size mid-west US university. As a result, the authors were able to define the domain of the constructs, facilitating item generation. A total of 51 items were generated in this initial stage.

Next, one doctoral student with a research interest in e-commerce and three academicians evaluated the items in a formal pre-test. All those involved in screening these items had significant research backgrounds in e-commerce and consumer buying behavior. Based upon their recommendations, the initial items were modified, dropped, and/or re-worded for clarity and relevance for this study. Out of 42 items finalized, four items measured content (CN), six measured format (FM), three measured ease of use (EU), four measured timeliness (TM), seven measured security (SE), three measured product variety (PS), five measured transaction processes (TP), four measured buyer satisfaction (CS), and six items measured buyer's net benefit (NB). The descriptions of finalized items are presented in Appendix I. A five-point Likert scale was used where 1 = strongly disagree and 5 = strongly agree to identify the

responses for each items. Some demographic items were also included in the questionnaire that used different measurement scales.

For our empirical study, a total of 430 full-time students from three business schools (one public university and two private universities) in the US were simultaneously requested for their participation in our online survey. These students were enrolled as full-time students in either the undergraduate or the graduate level program in their respective institutions. Jones & Leonard [2007] contend that college students represent greatest online segment, for shopping online and spending online. Our online survey asked respondents to answer the survey in reference to their bidding and purchase experiences from their most recent C2C online auction purchase. In order to minimize bias, no incentives were provided to the students for their participation in this study.

A total of 90 responses were received from the initial announcement requesting their participation in the study. Approximately 2 weeks after the first announcement, an e-mail reminder was sent to all the students to complete the survey if they had not yet done so. The reminder e-mail sent to the students generated an additional 69 responses. Out of a total of 159 responses, 18 responses were dropped because of multiple (more than 5) missing responses in the survey. The final sample for our study stood at 141 corresponding to a response rate of 32.79% (141 / 430). However, out of the 141 complete responses, 131 respondents reported that their response to our survey was based on their auction purchasing experience from the eBay.

Since its foundation in 1995, eBay has become world's a premier and the largest online auction site with 84 million active users worldwide engaged around the clock in auction selling, bidding, and buying [eBay 2008]. Because of its widespread popularity and industry dominance in C2C online auction business, it was no surprise to us that approximately 92% (131/141) of our respondents had used eBay for their latest online auction purchase. These respondents also identified eBay as the auction website of choice for auction bidding and purchasing. To provide more validity to our current study, it was therefore decided to exclude the 10 non-eBay responses and therefore the response rate for our data analysis stood at 30.46% (131/430). The demographics of the respondents are provided in Table 1.

**Table1: Demographics of the Sample Data ( $n = 131$ )**

<i>Gender</i>		
Male		49.60%
Female		50.40%
<i>Age</i>		
18-25		75.90%
26-35		20.40%
36-45		2.90%
>46		0.70%
<i>Work</i>		
Full time		23.90%
Part time		52.20%
Other		23.90%
<i>Average Winning Bid Amount</i>		
\$1-200		75.60%
\$201-500		7.80%
\$501-1000		5.20%
Over \$1000		1.50%
<i>Annual Income</i>		
\$1-15,000		65.40%
\$15,001-30,000		9.60%
\$30,001-45,000		8.10%
\$45,001-60,000		7.40%
Over \$60,000		9.60%

To evaluate early/late respondent bias of the sample, a  $\chi^2$ -test of differences between observed and expected (population) frequencies for gender (male and female) was analyzed. The  $\chi^2$  test showed that the distribution of our sample fits very well with the distribution of population (calculated  $\chi^2 < \text{critical } \chi^2$ ).

### 3.1. Item Purification and Exploratory Factor Analysis

Item purification was performed using corrected-item-total-correlation (CITC) analysis using SPSS 12.0. Items were eliminated if the CITC was less than 0.60. The reliability of all the scales was examined using Cronbach's alpha. In general, reliability above 0.80 would indicate that the scale performs well [Nunnally 1978]. During the test for reliability, CN1, FM4, EU6, TM7, SE5, SE7, SE8 were dropped because of low (<0.60) corrected item-total correlation (CITC) values. With the remaining items, the Cronbach's alpha of CN, FM, EU, TM, SE, PS, TP, CS, and NB were found to be 0.774, 0.877, 0.727, 0.758, 0.860, 0.559, 0.817, 0.825 and 0.836. Since the reliability for PS was 0.559, it maybe considered one of the weaknesses of the current study. Future studies may modify and/or add new items to this construct in order to establish a more reliable measure.

With the remaining 35 items, we next proceeded with factor analysis using principal component analysis in SPSS 12. All the items for net benefit loaded on Factor 1 and items for customer satisfaction on Factor 2. Against our expectations, all the items of format and ease of use loaded on a single factor, Factor 3. All the items for security loaded on Factor 4. SE4 had a poor factor loading along with cross-loadings with other factors. However, based on the practical significance of SE4 (measuring the authenticity of the seller), it was decided to retain SE4 although it had a factor loading of only 0.388. This is in accordance to the suggestions made by Dillon & Goldstein [1985] that an item's importance to the research objective needs be carefully considered before eliminating any items with a factor loading below 0.60 in an exploratory factor analysis. All the items for product variety loaded on Factor 5. TP2 and TP4 were dropped during the factor analysis because of poor factor loading and multiple cross loadings with other factors. Although TP5 was retained in the current study, factor loading of 0.51 may not be considered to be good by some researchers [Dillon & Goldstein 1985]. All three items for content loaded on Factor 7 and all three items for timeliness loaded on Factor 8. In conclusion, a total of two items were eliminated during the factor analysis. The result of the factor analysis is presented in Appendix II.

In our factor analysis, all the items for format and ease of use loaded on single factor. This was an interesting finding for us when compared to the EUCS model that separated them as two distinct factors. This may not be surprising considering that the format of an application or software can be inter-correlated with ease of use. Based on the results from factor analysis, we decided to treat them as a single factor, and named the new factor as *User Friendliness* (UF). Cronbach's alpha for this new combined construct was found to be 0.902. In the subsequent data analysis, a total of 33 items were considered.

### 3.2. Discriminant Validity, Correlation Matrix, and Descriptive Statistics

Discriminant validity is demonstrated when a measure does not correlate very highly with another measure from which it should differ [Venkatraman 1989]. The difference in chi-square values between restricted and freely estimated models provides statistical evidence of discriminant validity [Segars 1997]. To assess discriminant validity, differences in chi-square values were computed for each set of constructs, the result of which is presented in Table 2.

The chi-square difference between restricted and freely estimated models was high and significant at  $p < 0.01$  which suggests that the constructs are distinct and that their underlying scales exhibit the property of discriminant validity. To fully satisfy the requirement for discriminant validity, average variance extracted for each construct should be greater than the squared correlation between constructs. Results suggest that the items share greater common variance with their respective constructs than any variance the constructs share with other constructs [Fornell & Larcker 1981]. Table 3 represents the correlation matrix and also reports the average variance extracted in the diagonal of the table, and the descriptive statistics.

All the correlations were significant at  $p < 0.01$  levels. The diagonal values of Table 3 report the average variance extracted for the specific construct. As indicated in the table, the average variance extracted in each case was greater than the square of the correlation between constructs, which led us to conclude that our constructs indeed demonstrated discriminant validity for the constructs used in the research model. The mean for each construct in our data set varied from 3.93 to 4.39 with standard deviation ranging from 0.73 to 0.95.



Table 2: Discriminant Validity

Construct 1	Construct 2	Chi-Square Fixed	Degrees of Freedom	Chi-Square Freed	Degrees of Freedom	Δ Chi-Square	Δ Degrees of Freedom	<sup>a</sup> Significant?
User Friendliness	Transaction	110.8	35	51.6	34	59.2	1	yes
User Friendliness	Net Benefit	176.9	65	103.7	64	73.2	1	yes
User Friendliness	Security	142.2	44	73.9	43	68.3	1	yes
User Friendliness	Buyer Satisfaction	109.8	44	67.3	43	42.5	1	yes
User Friendliness	Product Variety	122.1	35	46.0	34	76.1	1	yes
User Friendliness	Timeliness	105.7	35	47.3	34	58.4	1	yes
User Friendliness	Content	118.4	35	59.0	34	59.4	1	yes
Net Benefit	Transaction	103.7	27	36.7	26	67.0	1	yes
Net Benefit	Security	97.5	35	52.4	34	45.1	1	yes
Net Benefit	Buyer Satisfaction	103.4	35	41.3	34	62.1	1	yes
Net Benefit	Product Variety	113.8	27	28.7	26	85.1	1	yes
Net Benefit	Timeliness	120	27	42.0	26	78.0	1	yes
Net Benefit	Content	103.8	27	36.6	26	67.2	1	yes
Buyer Satisfaction	Transaction	53.9	14	13.9	13	40.0	1	yes
Buyer Satisfaction	Security	83.4	20	44.9	19	38.5	1	yes
Buyer Satisfaction	Product Variety	70.6	14	15.0	13	55.6	1	yes
Buyer Satisfaction	Timeliness	76.1	14	19.3	13	56.8	1	yes
Buyer Satisfaction	Content	65.0	14	21.3	13	43.7	1	yes
Transaction	Security	104.9	14	39.2	13	65.7	1	yes
Transaction	Product Variety	92.1	9	5.0	8	87.1	1	yes
Transaction	Timeliness	81.8	9	15.2	8	66.6	1	yes
Transaction	Content	94.4	9	4.7	8	89.7	1	yes
Security	Product Variety	120.2	14	28.1	13	92.1	1	yes
Security	Timeliness	124.5	14	43.7	13	80.8	1	yes
Security	Content	104.9	14	30.9	13	74.0	1	yes
Product Varieties	Timeliness	86.1	9	3.4	8	82.7	1	yes
Product Varieties	Content	81.1	9	17.9	8	63.2	1	yes
Timeliness	Content	92.2	9	11.2	8	81.0	1	yes

Note: <sup>a</sup> Significant at  $p < 0.01$

Table 3: Correlation Matrix, Average Variance Extracted and Descriptive Statistics

	Content	User Friendliness	Timeliness	Security	Transaction	Product Variety	Net Benefit	Buyer Satisfaction
Content	(0.55 <sup>c</sup> )							
User Friendliness	0.59 <sup>a</sup> , 0.35 <sup>b</sup>	(0.58)						
Timeliness	0.47, 0.22	0.71, 0.51	(0.52)					
Security	0.43, 0.19	0.50, 0.25	0.49, 0.24	(0.60)				
Transaction	0.36, 0.13	0.58, 0.34	0.55, 0.30	0.66, 0.43	(0.44)			
Product Variety	0.40, 0.16	0.40, 0.16	0.36, 0.13	0.25, 0.06	0.49, 0.24	(0.34)		
Net Benefit	0.40, 0.16	0.39, 0.15	0.51, 0.26	0.53, 0.28	0.47, 0.22	0.28, 0.08	(0.47)	
Buyer Satisfaction	0.66, 0.43	0.70, 0.49	0.70, 0.49	0.51, 0.26	0.71, 0.50	0.60, 0.36	0.36, 0.13	(0.56)
<b>Mean</b>	3.99	4.16	4.34	4.18	4.11	4.39	3.93	4.25
<b>Standard Deviation</b>	0.76	0.85	0.75	0.86	0.85	0.73	0.95	0.8

Note: <sup>a</sup> Correlation, <sup>b</sup> Squared Correlation, <sup>c</sup> Average Variance Extracted

### 3.3. Measurement and Structural Model

Structural equation modelling (SEM), using AMOS 5.0 [Arbuckle 2003] was conducted to analyze the measurement and structural models. SEM, also referred as the second generation of multivariate analysis [Fornell 1987], has substantial advantages over other statistical techniques including multiple regression because of greater flexibility to model relationships among multiple predictor and criterion variables, model errors in measurement for observed variables, and statistically test a priori substantive/theoretical and measurement assumptions against empirical data (i.e., confirmatory analysis) [Chin 1998]. Although we used the SEM methodology, the study should still be considered exploratory in nature. Following Gerbing & Anderson's [1988] paradigm of testing SEM models, the measurement model was tested first, followed by the complete structural model.

Table 4: Results from Measurement Model

Items	Constructs	Standardized Regression Weight	S.E.	C.R.	p <sup>a</sup>
CN2	<--- CN	0.719			
CN3	<--- CN	0.675	0.197	6.487	***
CN4	<--- CN	0.798	0.195	7.046	***
FM1	<--- UF	0.754			
FM2	<--- UF	0.658	0.133	7.528	***
FM5	<--- UF	0.829	0.123	9.739	***
FM6	<--- UF	0.784	0.141	9.147	***
FM7	<--- UF	0.738	0.137	8.547	***
EU1	<--- UF	0.811	0.109	9.498	***
EU4	<--- UF	0.776	0.103	9.043	***
TM1	<--- TM	0.739			
TM2	<--- TM	0.672	0.151	6.785	***
TM3	<--- TM	0.750	0.122	7.438	***
SE1	<--- SE	0.780			
SE2	<--- SE	0.827	0.130	9.650	***
SE3	<--- SE	0.860	.0144	9.991	***
SE4	<--- SE	.0581	0.150	6.507	***
PS1	<--- PS	0.525			
PS2	<--- PS	0.654	0.317	3.701	***
PS4	<--- PS	0.445	0.332	3.258	***
TS3	<--- TS	0.681			***
TS5	<--- TS	0.657	0.221	5.795	***
TS6	<--- TS	0.619	0.189	5.558	***

Note: p<sup>a</sup> = \*\*\* denotes significant at p<0.01 level

Table 4 reports the parameter estimates and standardized regression weights resulting from the measurement model analysis. The first column of the table represents the relationships between the indicator (or item) and the respective construct. The unidimensional direction, for example from CN to CN2, suggests that the score values are each influenced by their respective underlying factors [Byrne 2001]. The second column represents the standardized regression weight, the third column represents the standard error (SE), the fourth column represents the critical ratio (CR, interpreted as z-scores), and the last column represents the significance at the p < 0.01 levels. All significant relations are represented by “\*\*\*”.

In SEM, a value of CMIN/df < 2.00 is considered to be a good fit [Wheaton et al. 1977]. The Tucker-Lewis Index (TLI), yet another incremental index for goodness of fit, of closer to 0.95 [Hu & Bentler 1999] represents a good fit between the data and the research model. Similarly, a CFI value above 0.9 for the model is an indicator of a good fit [Bentler 1992]. Values ranging from 0.05 to 0.08 for RMSEA (root mean square error of approximation) are

considered a reasonable fit [Browne & Cudeck 1993]. The CMIN/df, TLI, CFI, and RMSEA indices for the measurement model fit for the constructs in Table 4 were reported to be 1.343, 0.932, 0.942, and 0.052.

Our C2C auction website performance construct was conceptualized in terms of buyer satisfaction and buyer's net benefit. Therefore, we conducted a second-order measurement analysis of auction website performance (PERF) construct. The second-order measurement model resulted in significant loading of CS and NB on PERF at  $p < 0.01$ . The standardized regression estimates of CS on PERF was found to be 0.521 and of NB on PERF to be 0.677. Also, all the items for CS and NB loaded on the respective constructs and were significant at  $p < 0.01$  level. The fit indices for PERF with CMIN/df of 1.214, TLI of 0.981, CFI of 0.986, and RMSEA of 0.039 indicated a very good fit of data with our second order construct of auction website performance.

The overall measurement model fit was adequate to proceed to the next phase of analyzing the structural model without any modification to the items underlying the respective constructs. Using SEM methodology, we then used structural model analysis to test the hypotheses presented earlier. The result of the structural model data analysis is presented in Figure 2.

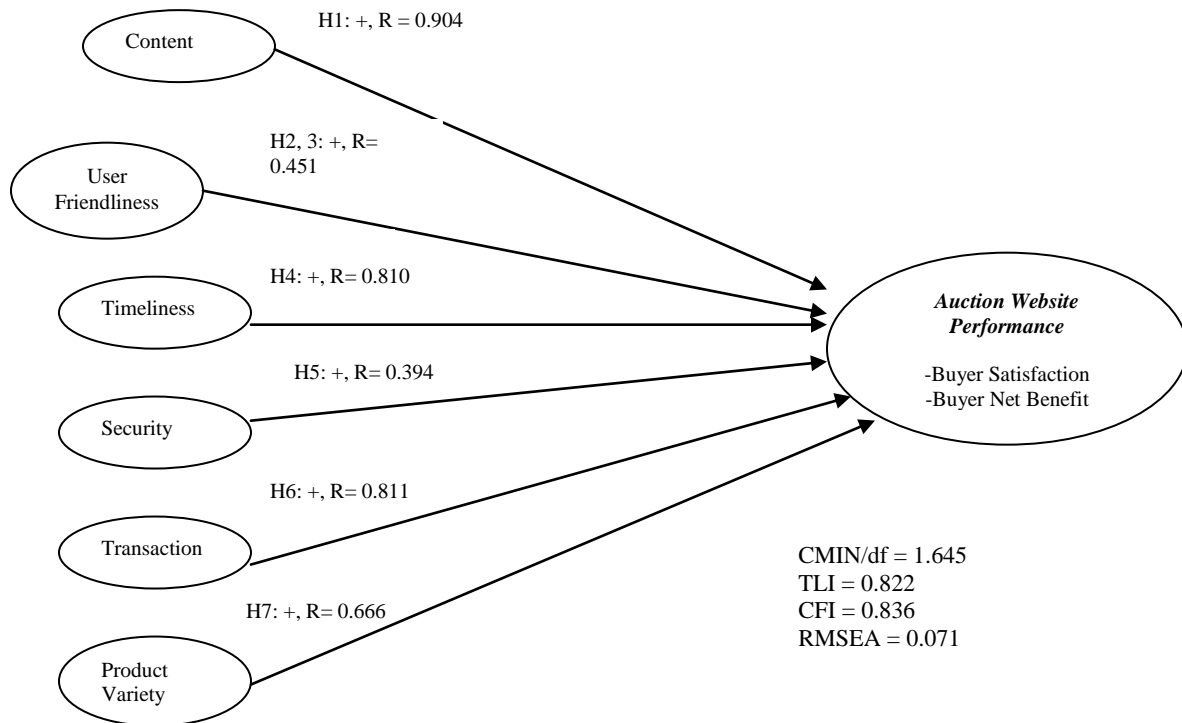


Figure 2: Results from the Structural Model Analysis

The results from the structural model in Figure 2 indicate that all the hypotheses were supported by the data. The first hypothesis, H1, suggested that there was a positive relationship between the content of the auction website and C2C auction website performance. The standardized regression estimate of 0.904 was found to be significant with p-value reported at 0.003.

The next hypothesis (H2, 3) suggested that a positive relationship existed between user friendliness (format and ease of use) and C2C auction website performance. The standardized regression estimate at 0.451 was found to be significant at p-value of 0.016. Similarly, the H4 suggested that there was a positive relationship between the timeliness and C2C auction website performance and the H5 suggested a positive relation between the security and C2C auction website performance. Both hypotheses four and five were found to be significant with regression estimates of 0.810 and 0.394 and p-values 0.002 and 0.039 respectively. Hypotheses H6 and H7 that identify positive relationship between transaction and C2C auction website performance and product varieties and C2C auction website performance had regression weight of 0.811 and 0.666 and p-values of 0.004 and 0.023 respectively. At  $p < 0.05$  levels, all the hypotheses were found to be significant.

With CMIN/df, TLI, CFI, and RMSEA values at 1.645, 0.822, 0.836, and 0.7, we were comfortable to conclude that there was a good fit of our research model and data.

#### 4. Discussion and Limitations

In the earlier sections of this paper, we proposed a hypothetical model for measuring the success of C2C online auction website performance for auction buyers. Our research model was based on grounded theories of EUCS [Doll & Torkzadeh 1988] and ISSM [Delone & McLean 2004] that have been very popular among the research community interested in measuring the success of information systems. We then performed systematic data analysis to empirically test the model. However, the current study used responses from the eBay auction buyers and therefore readers are cautioned on the generalizability of the current study. Nevertheless, the current study provides several theoretical and practical contribution for the online auction website researchers, managers, and users.

As suggested by Churchill [1979] and Gerbing & Anderson [1988], defining a construct's theoretical meaning and conceptual domain are necessary steps in developing scientific measures and obtaining valid results. According to Wang et al [2001], developing context-specific items for EUCS becomes difficult given the fact that the conceptual definition of customer satisfaction is not clear. By using multiple-item rating scale and not relying on single-item rating scale that most of the past empirical studies in the area of EUCS have used, the current study has attempted to define theoretical construct and measurements in the specific context of online auction website. The study has determined the validity and reliability of constructs proposed by previous literature on information systems in the context of C2C online auctions. Various researchers have advocated replication of past theories to re-validate it with new data or apply it in a new context [Berthon et al. 1996; Boudreau et al. 2001]. As such, the current study represents the first comprehensive examination of the EUCS and ISSM instruments, based on a large-scale survey using multiple informant responses from eBay online auction buyers. For researchers, the major contribution of this study lies in the area of measurement of C2C online auction website performance by rigorously validating previous instruments of user satisfaction and thus enabling future research in the C2C online auction area to use our instrument with some confidence.

Using both exploratory and confirmatory techniques, our study indicates acceptable to high reliability of all the constructs. However, the reliability of one construct, product varieties, was found to be low at 0.559 and maybe considered for re-evaluation in future studies. A high Cronbach's alpha of the instrument is a good indication that our measurements are highly reliable. According to Galletta & Lederer [1989] a test-retest data analysis is necessary for establishing the reliability of an instrument over time. Therefore, the stability of C2C auction website performance instrument, including short- and long-range stability, should be further investigated using the test-retest correlation method.

An interesting finding in our data analysis of factorial validity was that the constructs *Format* and *Ease of use* loaded on a single factor. This is in contrast to results reported in previous empirical studies on user satisfaction that identifies it as two separate factors [e.g., Somers et al. 2003]. A possible explanation could be that the format of the C2C auction site and the ease of use of the auction site are highly correlated and the buyers do not realize the difference between the two theoretically separate constructs. In the current study, we combined these two constructs to measure the extent of user friendliness of the auction website. Future studies can re-evaluate the generalizability of the current finding on these two constructs with a new data set.

In this study, we use our research model to assess forward links in a causal chain of buyer satisfaction and buyer's net benefit. Studies in information systems relating user attitudes (e.g. satisfaction) to success (e.g., intention to use the system) bear some resemblance to the downstream research domain in the assumed direction of influence (attitudes → behavior) [Melone 1990]. Mehta & Sivadas [1995] proposed that customer attitudes are important measures of e-commerce success. Molla & Licker [2001, p.7] emphasize the importance of "customer e-commerce satisfaction" and define it as "the reaction or feeling of a customer in relation to his/her experience with all aspects of an e-commerce system". Other studies [Westbrook & Oliver 1991; Bearden & Teel 1983] could be extended to use buyer satisfaction to mediate buyer learning from prior experience and to explain post-purchase behaviors such as loyalty, re-bid, re-use, complaining, and word of mouth. Our results indicate that auction website performance for the auction buyers is influenced positively by the online auction website's content, user friendliness (format and ease of use), timeliness, security, transactions, and product variety. These factors seem to be crucial for enhancing the buyer's experience when interacting or using the auction website for auction purchase. In addition to buyer satisfaction, these six factors of C2C auction websites also improve the net benefit in terms of cost and purchase time. Therefore, the current study establishes causal relationships of factors contributing to C2C auction buyer satisfaction and net benefit to explain the success of C2C online auction websites for the auction buyer.

C2C auctioneers are generally third parties that facilitate selling and buying activities through their website. Merely providing a platform for individuals to engage in the C2C auction trade is not going to suffice to attract more buyers and sellers auctioning through their website. The empirical results from this study should provide important guidelines to the auctioneer who wants to provide a better purchasing experience for the auction buyers and improve its competitive advantage over other C2C auction websites. Buyer satisfaction and net benefit are important

performance measures in the C2C online auction environment [Yen & Lu 2008a]. A C2C auction website's content, user friendliness (format and ease of use), timeliness, and security are positively related with website performance. Auction website performance measurements developed in the current study can be used as a feedback instruments in buyer surveys by the auctioneers. For the auctioneers, the results from such buyer surveys can provide insights for improvement in the website to enhance buyer benefits.

Based on our current study, managers of C2C auction websites can analyze the various components of their auction mechanism to enhance user experience and enhance customer loyalty. Building on the system view of a business, C2C auctioneers may have to collaborate with its upstream and downstream value chain members to improve the buyers' satisfaction and buyers' net benefit from auction purchasing. This will most likely require the managers of C2C auctions to work with the buyers, sellers, and other third party service providers. Auctioneers may want to work closely with the auction sellers, for example, to improve the auction listing content, listing format, product offerings and transaction procedures. Similarly, working with well recognized, third party solution providers can help auctioneers to further improve the timeliness and security features of the auction website. Buyer-focused auctioneers can improve their business performance by retaining their existing buyers and attracting more auction buyers, which seems to be the key in the highly competitive online auction business [Chong & Wong 2005].

As with any validated instrument, future research in C2C online auction websites can benefit from the current study in analyzing the relationship of constructs that are key in determining the design, development, and improvement of C2C auction websites for its users. Many online auctioneers invest heavily in advertising and marketing to promote their website for new new sellers and buyers but may neglect to retain existing customers. According to Reichheld & Sasser [1990], it is common for a business to lose 15 to 20% of its customers each year. In order to keep customers buying from their auction websites, a C2C auction website must deliver a high level of buyer satisfaction and tangible benefits from the auction buying process. These activities, adding value to the buyer's purchasing experience, will not only affect the buyer's next purchase but will also affect the buyer's recommendation. In fact, eBay gets more than half of its customers by referral [Chong & Wong 2005], which helps eBay to spend less on acquiring each new customer.

## 5. Conclusion

Existing instruments that measure user information satisfaction are geared towards the traditional data processing, end-user computing environments, and general e-commerce sites. This study makes a significant contribution in extending past research on EUCS and developing an instrument for measuring C2C online auction website performance. Extending empirical research in the context of C2C online auctions makes the current study valuable despite its several limitations. The current study uses data collected from eBay auction buyers to measure the auction website performance. Future studies can replicate and investigate our research model with large-scale non-eBay auction buyer data set. Future studies can replicate our research with the C2C online auction sellers to measure the perceived auction website performance. It may be interesting to compare the results on the auctioneer performance from the buyer and the seller perspectives. Different C2C auction websites use different auction mechanisms. A study comparing auctioneer performance based on different auction mechanisms can be fruitful in enhancing the current understanding of C2C auctions. Other meaningful ways to extend the current study could be to compare the website performance of different popular C2C online auction sites based on large-scale data collected from the users of the respective auction sites or to ask respondents to rate different, popular C2C online auctions that they have used using the measurements developed in the current study.

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## APPENDIX I: Item Description

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### **Content (CN)**

- CN1: The auction website provides the precise information I need
- CN2: The auction website information content fits my needs
- CN3: The auction website provides me with information that is true
- CN4: The auction website provides sufficient information

### **Format (FM)**

- FM1: The auction website is well organized
- FM2: The auction website is pleasing to the eye
- FM4: The information in the auction website is presented in useful format
- FM5: The auction website format is easy to read
- FM6: The organization of auction website information is very clear
- FM7: The sequence of auction website screen very clear

### *Ease of use (EU)*

- EU1: The auction website is user friendly
- EU4: The auction website is easy to navigate
- EU6: Experienced and inexperienced users' needs are always taken into consideration

### **Timeliness (TM)**

- TM1: The auction website homepage loads quickly
- TM2: The bidding status on the auction website refreshes quickly
- TM3: The search engine of the auction website generates results quickly
- TM7: The auction website provides up-to-date bidding information

### **Security (SE)**

- SE1: The auction website provides security of my transaction data
- SE2: The auction website provides security of my privacy
- SE3: I feel safe in my transactions with the auction website
- SE4: The auction website verifies/certifies the authenticity of the seller
- SE5: The auction website provides protection program against fraudulent sellers
- SE7: The auction website has a mechanism for seller certification (e.g. "Power Seller")
- SE8: The auction website provides summary feedback of a particular seller

### **Products (PS)**

- PS1: The auction website has multiple product categories
- PS2: For each product categories the auction website has major brand titles
- PS4: The minimum incremental bidding for the same product by different sellers vary

### **Transaction (TP)**

- TP2: I'm satisfied with the overall transaction procedures
- TP3: The sellers provide clear payment instructions
- TP4: The sellers provide clear shipping instructions
- TP5: The sellers provide multiple secure methods for payment
- TP6: The auction website has its own secure payment method

### **Bidder Satisfaction (CS)**

- CS1: I am satisfied with the overall operation of the auction website
- CS2: I am satisfied with the products offered on the auction website
- CS3: I am satisfied with the prices of the products I bid on the auction website
- CS4: I am satisfied with the products I bid from the auction website

### **Net Benefits (NB)**

NB1: The auction website reduces my total cost of purchasing the product

NB2: The auction website improves the efficiency on purchasing the product

NB3: The auction website improve the decision making of the purchase

NB4: The auction website provide an overall successful purchase of the product

NB5: I am loyal user of the auction website

NB6: I would refer my friends and relatives to the auction website

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**APPENDIX II: Factor Analysis**

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
<b>Content</b>								
CN2: The auction website information content fits my needs								0.700
CN3: The auction website provides me with information that is true								0.810
CN4: The auction website provides sufficient information								0.840
<b>User Friendliness (Format / Ease of use)</b>								
FM1: The auction website is well organized					0.771			
FM2: The auction website is pleasing to the eye					0.764			
FM5: The auction website format is easy to read					0.718			
FM6: The organization of auction website information is very clear					0.817			
FM7: The sequence of auction website screen very clear					0.717			
EU1: The auction website is user friendly					0.810			
EU4: The auction website is easy to navigate					0.742			
<b>Timeliness</b>								
TM1: The auction website homepage loads quickly								0.863
TM2: The bidding status on the auction website refreshes quickly								0.713
TM3: The search engine of the auction website generates results quickly								0.672
<b>Security</b>								
SE1: The auction website provides security of my transaction data					0.830			
SE2: The auction website provides security of my privacy					0.909			
SE3: I feel safe in my transactions with the auction website					0.822			
SE4: The auction website verifies/certifies the authenticity of the seller					0.388	-0.352		
<b>Products</b>								
PS1: The auction website has multiple product categories						0.558		
PS2: For each product categories the auction website has major brand titles						0.768		
PS4: The minimum incremental bidding for the same product by different sellers vary						0.683		
<b>Transaction</b>								
TP3: The sellers provide clear payment instructions							0.710	
TP5: The sellers provide multiple secure methods for payment							0.510	
TP6: The auction website has its own secure payment method							0.790	
<b>Customer Satisfaction</b>								
CS1: I am satisfied with the overall operation of the auction website					0.867			
CS2: I am satisfied with the products offered on the auction website					0.894			
CS3: I am satisfied with the prices of the products I received on the auction website					0.766			
CS4: I am satisfied with the products I purchased from the auction website					0.695			
<b>Net Benefits</b>								
NB1: The auction website reduces my total cost of purchasing the product					0.678			
NB2: The auction website improves the efficiency on purchasing the product					0.795			
NB3: The auction website improve the decision making of the purchase					0.694			
NB4: The auction website provide an overall successful purchase of the product					0.766			
CS5: I am loyal user of the auction website					0.713			
CS6: I would refer my friends and relatives to the auction website					0.798			

**Note:** \* Eliminated because of low CITC ( < 0.60) during reliability analysis; \*\* eliminated because of high cross-loading (> 0.50) during factor analysis