**REALISATION OF A REAL WORLD AUCTION SYSTEM**

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***Abstract:***

*Web-based auctions and negotiations have become quite popular due to their implementation and integration in electronic commerce applications. Despite the popularity among millions of users around the globe of selling, bidding for, and buying products using online auction websites, the existing literature provides little understanding of what causes users to choose one auction site over another. The objective of this study is to explore the intellectual development of consumer behaviour in online auction research through an analysis of the published auction research. The online auction system based on the campus network provides a trading platform for university students and does not deal with the trading process. So the online auction system must increase its quality of service to attract students. An online auction has become a prominent solution to the expectations of online buyers since it excludes the need of the physical presence of bidder at the auction place and the product can be obtained at the affordable price. This paper gives the overview of current going auction forms and the other related issues like designing of an effective, efficient and optimal system of offering single item, predicting the end-bid price and the major issue faced by online auction system i.e. shill bidding.*

***Keywords:*** *Auction, bidder, shill bidding, end-bid value*

**Introduction:**

Auction mostly meant to the sale of goods or property where people make higher and higher bids for each product until that get sold to the one who pays the most, which referred as “English auction”. It basically requires seller, bidders, and auctioneer who is supposed to conduct auctions by accepting bids and declaring goods sold. Naturally, bidders‟ bid is rejected if it is below the offer price”.Running the auction system: The system is divided into two distinct interfaces, the web interface for obtaining pre-auction data like the sale dates and catalogue as well as auction interface which provides access for the client to control the agent on the server. The auction interface accesses and modifies a run-time database. This database maintains the current state of the auction. The state of the auction is defined with the following parameters:

I) An item to be auctioned.

ii) The offered price of an item.

iii) The bidding messages.

iv) The current active user and its bid value.

v) The highest bid value and the user who made the bid.

The popularity of online auctions is likely to grow, as buying and selling is a very basic part of human nature. However, not every website has been able to attract the desired numbers of bidders into the auction process. Successful online auction website design can play a significant role in the overall marketing communication mix. Successful sites complement direct selling activities, present supplemental material to consumers, project a brand image, and provide basic company information and services to their global customers. Auctions are a popular form of price determination in e-commerce due to their simplicity and efficiency. Recent statistics showed that 80 percent of highly satisfied online consumers would shop again within two months, and 90 percent would recommend the websites to others. On the other hand, 87 percent of dissatisfied customers would permanently leave their Internet merchants without registering any complaints (Online Auction Survey Summary 2001). This has clear implications for a study focusing on user satisfaction.

**Literature Review:**

The concept of auctions has existed for many years, but the research literature on auction theory expanded dramatically after the seminal paper by Vickrey (1961). Since then, a rich set of related literature, both theoretical and empirical, has evolved. Auctions use the market mechanism to solve the most difficult business problem, that of pricing the product. With an auction, there is no guesswork for setting up the right price for the product or service, since the price is set by the market (above some minimum). Auction-based pricing is sometimes referred to as "dynamic" or "fluid" pricing, in contrast, to set or static pricing mechanisms.

In a traditional marketplace, auctions can be of the open-bid or closed-bid type. Classification into open or closed auction bidding is determined by criteria such as specific allocation rules, revealed number of ASBBS Annual Conference: Las Vegas February 2009 Proceedings of ASBBS Volume 16 Number 1 bidders, commodities, payment options, and phases of delivery. In an open-bid auction, the bids partially make public each bidder’s private information about the true value of the contract. Each bidder is thus able to learn from the bidding process and adjust their bid closer to the true value of the contract.

Online auction websites can be classified as web-based information systems and the bidders (as well as the sellers) as the system end-users. Consequently, the effectiveness of online auction websites can be measured in the context of user satisfaction for the bidders in the current study. Since the 1980s, user satisfaction has been considered an important measure of information systems success. The literature on user satisfaction of information systems is popularly classified into user information satisfaction and end-user computing satisfaction.

The auction system requires the information provided by the seller of an item to apply machine learning algorithms so that end-price can be accurately predicted. These algorithms are applicable to the products with hard features or specifications like speed, memory size, etc. But “soft” products such as clothing items vary in their attributes that used to compare different kinds of items. Features such as size, material, and colour do exist but they are not the kind of attributes that “define” the style of the product.

Once the end bid price is predicted, this price can be used against the bid placed by a bidder in the provided interval of time. The parameter such as the extreme allowable difference between successive bids may be used as a threshold and announced bid price may be treated as a function of the number of bid and end bid price in order to find the difference between the successive bids. This calculated difference can be compared against a threshold value, if the calculated bid value is greater than the threshold then bid owner can be simply treated as a shill bidder and bid can be ignored and bidder must be intimated by sending regarding message from the system.

**Benefits of Online Auctions:**

• Efficient, Targeted Effective Marketing

• Cost of Sale is reduced through scale

• Creating Markets

• Internet Auctions open for trade 24/7, 365 days/year

• Derive market value for lot items

• Easy comparison of bids

• Secure bidding environment

• The bidder can be monitored

• Ease and speed of communication to multiple users

• Preferred bidders are all contained within a single database

• Time benefits: reduction in paperwork, postage, photocopying

**RESEARCH METHODOLOGY FRAMEWORK:**

The focus of the current study is on the bidders’ overall satisfaction from auction website usage. The usefulness of an auction website for the bidder will depend on an aggregate experience of pre-bidding (i.e. product search), bidding (website interaction), and the post-bidding (transaction of product and payment).After taking into consideration the different factors which include the time constraint, budget and the complexity of the system that is to be constructed the build methodology proves to be the most appropriate methodology to use in the development of this system. The build research methodology involves building an artifact either a physical artifact or a software system to demonstrate that it is possible, this accelerates the development of the auction system as the system is built as part of the research methodology. This methodology involves the construction of the artifact must be new or it must include new features that have not been demonstrated before in other artifact and these new features involves the use of a matrix to determine the seller’s and the other feature is the use of the detailed feedback rating as opposed to the use positive, negative or neutral to provide the feedback.

Whenever a research question leads to the building of a software system, the researchers involved should consider the following set of good practices design the software system no matter how simple the system is. In choosing a programming language there are various factors that have to be considered which are reliability, expressiveness, run-time speed and available libraries. The build research methodology best suites this project because the working software is the end product and the project involves building an artifact that encompasses new software features which makes this methodology the most appropriate one.

A software development methodology or system development methodology in software engineering is a framework that is used to structure, plan and control the process of developing an information system. A software framework is a universal reusable software platform used to develop applications and solutions. The development of basic projects can be divided into different stages which are project planning, requirements definition, design, development, integration and testing, installation and acceptance.

Software development phases

The process of developing software generally involves a set of different phases. These phases involve planning and design, implementation, testing, documentation, deployment, and maintenance.

• Planning and designing: This is the first phase in the software development. The requirements and analyses are gathered from the buyers and the sellers in the auction system. Everything required for the development of the auction system is clarified from the different users of the system

• Implementation: This stage involves the translation of the system structure into an executable program. For the auction system, PHP is the programming language that is used to translate the system structure. The other programming languages used include JavaScript and CSS. The use of these programming languages allows for the development of an online auction system. The database management system that is to be used for this project is MySQL and Dreamweaver8 is the Integrated Development Environment (IDE). The program will be written in a certain programming language.

• Testing: This involves running the system and evaluating the defect that can arise and actions are carried out to correct the defects. The methods for testing the system involves unit testing which tests the different components of the system that is the system’s interfaces, data storage and how the different selling and buying activities are being carried out.

• Documentation: This phase involves taking note and recording all the activities during the development process. The documented information is relevant for upgrades or updates that may be required on the system and for future referencing when carrying out maintenance.

• Deployment and Maintenance: This involves the presenting of the final software product to the Computer Science department. The product can then be customized to meet the user’s required needs and put into operation. The newly discovered faults can be cleared and missed requirements can be added.

Shill Behaviour and Characteristics

The major aim for the process of shilling is to artificially inflate the price for a particular seller. The major gain for the seller is the difference between the final price and the inflated price. The shill’s main goal is to lose each auction that they participate in. Shills normally have the same characteristics as they all have similar goals.

The following are the characteristics of Shills:

• Shills usually participate in particular auctions only held by one particular seller, however, this may not be sufficient enough to rule one as a shill as the seller may the only supplier of the item.

• A shill is also characterized by a few or no wins for the bids that they participate in.

• A shill’s goal is to try and stimulate bidding. As a result, a shill will tend to bid more near the beginning of an auction. This entails that a shill can influence the entire auction process and furthermore shills avoid bidding towards the end of an auction as it is risky as their main goal is to avoid winning the bid.

• A shill usually bids the minimum amount required to outbid a legitimate bidder. If the shill bids an amount that is much higher than the current highest bid, it is unlikely that a legitimate bidder will enter more bids and this results in the shill winning the shill winning the bid

The most extreme shill bidding strategy is referred to as aggressive shilling. An aggressive shill usually continually outbids everyone thereby driving up the price as much as possible.

Shill Detection and Shill score

This section provides ways to detect shill bidding and the ways used to determine the shill score. The solution that is going to be used to detect the shilling activities observes the bidding patterns over a series of auctions for a particular seller looking for the shilling behaviour.

To determine the shill score a matrix is used that determines the skill scores for the different sellers on the online auction system. The matrix is based on the fact that shills have a huge number of repeated failed bids on the same seller.

The shill rating [y] is high for a particular shill. The shill matrix used is altered to permit a 20% loss to winnings ratio without penalty. This allows for bidders with a small number of losses to be ignored. As the number of auctions that a bidder participates in increases, the penalties for losing an auction increases.

The shill score is therefore calculated as follows:

Y= 1-((5\*(w+0.2))/l)

Where y=shill score, l=number of bids lost for a particular seller[s], w= number of bids won for a particular seller [s]

Where y<1

In the case where y<0, then y=0, thus 0<=y<1 (Trevathan, 2007)

**Analysis of Similar Existing Systems**

Three famous auction systems considered for this project are eBay, uBid, and Quibid.

**eBay Auction System**

Online auctions, in particular, exemplify a huge growth rate that was made possible by Internet technology. eBay, the premier online auction retailer with over 80% of the online auction market, boasts that, on any given day, there are more than 12 million items listed on eBay across over 18,000 categories. In the second quarter of 2003, eBay reported record net revenues of $509.3 million, up 91% from the same period in 2002 (Springer-Verlag, 2004). The major beauty of eBay has long been the fact that anyone can sign up and start selling without any experience or complicated storefront set-up. Even sellers without stores even get 100 free listings a month under its fee structure. This type of selling has attracted many smaller scale sellers over the years but rising fees and increasing feedback and customer service requirements have alienated many.

Profit Loss

eBay charges its sellers a listing fee, final value fee, and additional fees to enhance your listing’s visibility such as additional pictures, subtitle fees, and borders. Further, eBay uses Paypal, which is owned by eBay, as its only method of payment. Paypal charges the sellers fees for each transaction. All these fees can discourage sellers, particularly when they cut into their bottom dollar.

Scam Rate

On eBay, if a buyer encounters a fraudulent seller, it can take a very long period of time for him to get a refund, especially if he has to wait for Paypal to arbitrate the dispute. Buyers can be scheming, Phishing schemes are also frequent on eBay users receive false emails stating that their eBay account will be suspended, directing them to a fake login page. Once the user logs in, his login data and eBay identity are susceptible to theft.

Customer Service

The users who are dissatisfied with eBay’s undesirable policies or with any problems they have encountered cannot forward their opinions through this medium. This results in a lack of communication and users receive automated email responses because a direct communication link is not established.

**QuiBids.com**

It is a retail website that operates as a bidding fee auction, also known as a penny auction. The prices of auctioned products increase by one QuiBids penny with each bid. A QuiBids penny is equal to $.60. Bidding does not start until there are only 5 minutes left in the auction. The final prices are typically much lower than other auctions, but all bidders pay to bid. Losers of the auction have the option of paying the retail price, minus the cost of their bids. Users new to QuiBids often require some time and help before they completely understand our auction platform and start winning auctions

The Advantages

• Number of Auctions: There are literally hundreds of auctions every day at quibids, as compared to a few or a maximum of tens of auctions on other sites. If you are losing too much in the bidding process, you can have that amount counted towards buying that item at the full retail price. This is a great feature if you are bidding for something that you would even otherwise want to buy.

• Customer Service: Quibids provides huge remarkable customer services. It has representative answering questions posed at their forums and blogs, which is good.

The Disadvantages

• Higher bids: As the site grows in popularity, there are more and more people using the site. There is no proportionate increase in a number of items at the bid. This means increased competition among the bidders and a very high profit for the site, which of course means a lot of people are going to lose a lot of money here.

• Too many Limits: They prevent bidders from winning more than three auctions a day, more than 8 auctions a month, more than 1 high costing item a month and you cannot win the same item twice in a month. These limits seem too stringent. Penny auctions are also for fun, which means they can relax the limits for some cases at least - perhaps the smaller valued gift cards or the auction for bids packages.

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| **User Stories** | **eBay.com** | **UBid.com** | **Quibid.com** |
| Home Page | X | X | X |
| Registration | X | X | X |
| Login | X | X | X |
| Personal Page | X | X | X |
| Search | X | X | X |
| In a given category | X | X | X |
| Browse | X | X | X |
| Item Page | X | X | X |
| Bid | X | X | X |
| Post an auction | X | X | X |
| Help | X | X | X |
| Chat | | X | |

As shown in the table, all the three systems give the possibility to register, to login to the website and have a home page with a general description of the portal. They offer also a personal page, where each user can check the status of their auctions or of their offers. Another characteristic of these portals is to have an item page, a page that describes each item on auction.

The search functionality is also very important: in addition to a normal keyword search, eBay offers also the possibility to search excluding a given word, search in a given category. All the three systems give also the possibility to place a bid, to post an auction and have also some help pages that explain the aims of the portals and the functionality.

**Conclusion:**

This paper attempts to make a contribution to the research on consumer behaviour in online auctions. A research framework for online bidding behaviour, based on previous studies, is presented in the hope of guiding future research. Knowledge gaps and research opportunities have been derived from this framework, and suggestions for future research directions are made. Build methodology was chosen as the suitable research methodology for online auction. The products are placed rightly under proper categories and subcategories which make it easier to search and locate the desired product. The online auction does not take place face to face which creates anonymous bidders. The auctioneers cannot have a hold on who is participating in the bidding. This can lead to anonymity in identifying the bidders and further in shill bidding. By predicting the end-bid price of the product and keeping it concealed from bidders, bids can be analysed against the predicted price or range of it and if any unpredictable unexpected bid has occurred, then the respective bid can be treated as shilled or fake one and can be ignored.

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