

Electronic Auction Market in Croatia

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Abstract—Online auctions are not very popular in Croatia. The main reason for this is a very limited number of services which can be used by Croatian users. Until recent times, even selling through the most popular online auction site eBay wasn't possible because PayPal services could not make payment to bank or debit card accounts in Croatia. Furthermore, many foreign sellers do not offer delivery of their products to Croatia which means that large quantities of goods initially offered on such sites are not available. With that in mind, it is necessary to analyze the buying and selling habits of Croatian users and existing online auction sites, both Croatian and foreign, and create a model for new domestic site. This site will have to exploit every positive aspect of existing models and neutralize every negative perception indicated by users in the survey so that, hopefully, it would attract new users.

Keywords—online auction, eBay, safe payment, product delivery

I. INTRODUCTION

ELECTRONIC auctions are becoming a very popular way of trading goods and services, especially of those goods which can't be found in conventional stores. In particular, this applies to products whose production has been discontinued, and as such cannot be found in shops, as well as specialized products for which there are no distributors in the territory or maybe even the whole country. The use of foreign electronic auction sites such as eBay has been limited for Croatian users until recently because there was no possibility to sell, rather just buy goods. Currently it is possible to sell, but the only way to receive payment is thought a single debit card (Visa) or to an account in an American bank.

For those reasons it is necessary to consider an alternative by analyzing existing domestic auction sites. Although they are not popular, their number is increasing and they claim to have constant growth in the number of offered items as well as the number of successfully completed auctions. Therefore it is important to discover the experiences of online auction users, both domestic and foreign, and to analyze what attracts them to a particular model and which improvements of domestic sites would attract them. This paper will propose a specific new model which combines the positive aspects of existing models while trying to annul certain organizational, technical and security problems perceived by users.

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II. GAME THEORY

Game theory analyzes strategic interactions in which the outcome of one's choices depends upon the choices of others [1]. Game theory studying started in the 18th century by analyzing simple card games and has been present ever since [2]. Although not very familiar to many people, game theory has always been more present than they could imagine. It is a very useful instrument in economic analysis of market behavior and strategic positioning of companies.

The most popular use of game theory in economics is at duopoly and oligopoly markets in which two or more competitors try to take as much market share as they can [3]. In recent times game theory has become a very important tool for marketing specialists who try to interact with their potential customers by analyzing human interaction via social networking sites [4].

III. AUCTIONS THROUGH HISTORY

Although there is much information about the history of auctions, Professor Ken Steiglitz [5] gave a very good overview of all the major steps which led to the development of today's auction models. First known records of the auction styled trade date from the first century BC (around 500BC) and are related to trafficking in the Roman Empire. It is believed that the word *auction* is derived from Latin word *auctus* meaning increase. This would suggest that those auctions were carried out by increasing the starting price until there was only one person willing to pay it.

Next relevant records of auctions are dated from the 17th century England and give us information of selling artwork and ships. Two of the most known auction houses, Sotheby's and Christie's started out only in the mid-18th century, in 1744 and 1766, respectively. With the colonization of the North American continent auctions spread further more when ship-owners started selling unnecessary inventory after unloading their ships. The most famous and also the most notorious use of auctions date from that time. It was the slave trade.

All those auctions were organized like the Roman auctions, where the starting price increased in steps until there were interested parties. Later they were named the English auctions.

During the 19th century first records were made about the Dutch auctions [6]. They were used to sell fruit and vegetables, and nowadays they are much more famous for tulip trade. This type of auction is just the opposite of the English auction because seller sets a very high starting price and then lowers it until someone is willing to pay the spoken amount.

Other notable auction types are *first-price sealed-bid auction* [7] and *second-price sealed bid auction* better known

as *The Vickrey auction* [8] because it was created by Professor William Vickrey. Like their names say, in both of these auctions seller collects sealed bids for the previously presented and described object or service. The only difference is the amount of money paid by the winner. In first-price auction the highest bidder pays the full amount of his offer, but in the Vickrey auction the highest bidder pays the amount of second highest bid. This encourages the bidders to submit sincere offers and protects them from a potential bidding war which can occur in classic English auction.

IV. ONLINE AUCTIONS

The online auctions business model opens up a whole new field in auction theory. Just by using the Internet, participants can buy and sell goods and services as if they were at the conventional auction, only without having to be physically present at the auction house. Most online auction sites do not require installing additional software on the user's computer [9]. It is only necessary to complete a simple registration process.

After examining many electronic auction models it is evident that there are some differences in terminology compared to conventional auction models. For example, when it was available on eBay [10], the Dutch auction did not represent the price-lowering auction but rather an auction with more than one identical item offered for selling. Also, although they all use the name English auction for their bidding type, the majority of these sites actually use a system called *automatic* or *proxy bidding* [9],[11] which is actually more similar to Vickrey's sealed bid model. When placing a bid, the potential buyer does not see the highest bid but only the second-highest one. Then he gives his offer which should be equal to his valuation of the item (independent private value). If his offer is not the highest one, he will be informed of that and asked to give another offer but if his offer is the highest one the site will not show the amount of money he offered but the amount of second-highest offer increased by minimal step set by the auction creator.

Online auction models offer their users many advantages [12] like the time and distance independence and the increasing number of both buyers and sellers which results in the constant model growth. The distance independence has already been mentioned and explained, but as important as that is the time independence. Online auctions give the opportunity for people from different parts of the world (time zones) to compete for the same items because of their bidding system. In this way every interested party can place her/his bid in her/his most convenient time and wait until the bidding ends. Of course, if someone else gives a high bid in the last moments, bidder should be online to respond, but if she/he wants to compete sincerely then this is the way to do it.

As the number of buyers increases because they feel there are many great offers that can be found on electronic auctions, this will simultaneously help increasing the number of sellers, and vice versa.

Negative aspects of electronic auctions are being reduced every day and there are really only quite a few of them. First of them is, of course, payment security [9] which can be described more as a user's fear than a real threat, especially if you use well known payment systems and use some caution steps while giving information about your cards or accounts. Next on the list of negative aspects is surely the opportunity to sell stolen goods [13]. This is a threat because buyers don't see the item until they buy it, but the law enforcement agencies are trying to cut down such activities, although it is not always easy to do that due to the user anonymity and user data retrieval rules.

Surely the most notable negative aspect is incomplete or faulty item descriptions. On most sites users give feedback on sellers so those who are not sincere have lower ratings, but there is always a risk that someone will try to hide a bit of information about her/his product, especially if it is not new or can potentially achieve a high selling price. Bidders can protect themselves from these situations by carefully examining the photos (if they are authentic) and by contacting the seller and asking for extra information about the product.

V. RESEARCH: CROATIAN USERS AND NON-USERS OF ELECTRONIC AUCTIONS

In order to be able to carry out a qualitative analysis of the Croatian electronic auction market, it was necessary to conduct the research on domestic users and non-users habits.

The research was formed as a questionnaire. There were separated questions for users and non-users. Users had to answer 16 questions, 3 of which were demographic and 12 about their online auction experience. Non-users had to answer 12 questions, also 3 demographic and 9 about their familiarity with the model and reasons of not using this shopping model.

The survey was conducted via KwikSurveys online survey service during February 2011. Respondents were selected from a circle of friends, neighbors and colleagues in order to establish a reliable sample of people who will approach this task with the required responsibility. They were given a link for accessing the survey, and the survey settings allowed them to complete the survey once. To most of the questions it was possible to give multiple answers. Also, most of the questions didn't require answering in order to give respondents as much freedom as they needed in filling in the survey.

Detailed analysis is provided in the text but some data is provided in tables to simplify the view of the most important results.

A. Age group 18-24

A total of 120 responses were collected, including 58 male and 62 female. Juvenile subjects were not included in the survey due to inability to use credit and debit cards (although they can have some cards linked to their parents' accounts). Age groups were divided according to certain life stages so that first group included people from 18 to 24 which mostly includes students and those with little or no work experience

and therefore have limited budgets. It was the most represented group in the survey with 37% of all subjects. Most respondents (77%) are familiar with the electronic auction model but 39% of them doesn't use this kind of shopping while 10% of them are regular users who visit these sites daily or even several times a day. Just 15% of them use domestic sites only, 44% uses foreign sites only and 41% uses both domestic and foreign auction sites. Still, most users (81%) prefer foreign sites. The most popular foreign site is definitely eBay and the most popular domestic site is aukcije.hr.

The most preferred payment method in this group is a specialized service such as PayPal (53%) while direct payment by credit card, pay slip, directly through bank account and cash-on-delivery are equally represented. There were not many negative experiences (59%). Those who had them said it was delivery related (28%) and only 15% of the respondents think they were deceived by bad item description. Two respondents indicated that once a product they ordered did not arrive. Domestic auction sites are criticized for payment safety, lack of payment methods and too much inaccurate product descriptions.

Non-users from this age group state that they don't know much about the model (48%), 30% of them is skeptical towards the payment safety, 18% consider there might occur some problems with delivery or customs duties for products from abroad, and only one respondent is skeptical because of other user's bad experience. They consider other user's positive experience as the most influential in their potential start of using auctions, but also it would be very important for them to learn more about safety and delivery options.

It is interesting to see that they would prefer to use domestic auction sites, mostly due to faster delivery, followed by greater confidence in domestic sellers and non-existing language barrier during communication with sellers. Around one third of respondents think that domestic auctions don't have any advantage over foreign models and 48% think that foreign auctions offer much more products and better descriptions because of the feedback scores left after the transaction and delivery.

None of the respondents has excluded using electronic auctions in the future, 25% of them think that they probably won't be using this shopping model, "maybe" says 35%, and "probably yes" and "sure" add up to 41%.

B. Age group 25-34

This age group is interesting to analyze because it consists of more electronic auction users than the previous group, due to higher employment rate. There's 49% employed respondents and 38% students. A total of 78% people are familiar with the auctions, but 41% do not use them, neither for buying nor selling. The most popular foreign site is, as expected, eBay, and domestic aukcije.hr. Foreign sites are much more appreciated (70%), and a total of 78% of the respondents compete in auctions.

The rest of the answers give the results similar to these given in the previous group with only one difference, non-

users are not so sure they'll start using electronic auctions in the future. "Maybe" answered as much as 69% of the respondents, "probably yes" only 13%, "probably no" almost one fifth (19%), but no one answered "definitely yes" and "certainly no." This last question tells us that it would be necessary to inform people about the online auctions and try to attract them to this trading model.

C. Age groups 35-44, 45-55 and Over 55

Given that these last three age groups added together to a total of one third of all respondents or as many as each previous group individually, they can be grouped together for a joint analysis. In these groups all of the respondents are employed, but almost half of them (46%) don't know anything about electronic auctions and a staggering 73% doesn't visit online auction sites.

Those of them who use auctions prefer domestic sites (44%). Foreign sites get only 22% answers and exactly one third of them uses both auction models. Only 5 out of 37 respondents' bids in an auction and the rest of them prefer *Buy-it-now* option which secures them the item they want without the risk of the bidding game. These age groups prefer credit cards (45%) and specialized services like PayPal (36%) for paying their items. Maybe more than expected (18%), they like to pay for their items cash-on-delivery.

In terms of possible improvements 25% of them feel that current models work fine but a total of 41% think that some delivery improvements are possible. It is interesting to see that people in these age groups are not concerned with the payment security but 25% of them would like to increase the seller reliability.

Non-users in this groups state that the main reason why they don't use electronic auctions is the lack of information (43%). They're not too skeptical towards payment security (27%). Most of them (39%) would be attracted to the auctions by user's positive experience. More knowledge about the model would help them overcome the fear of payment security (17%). The most important question in this section was would they rather prefer domestic or foreign auction sites and domestic sites were given 85% answers. They realize that foreign sites offer more items but prefer domestic sites because of shorter item delivery time and not having to know foreign language. Quite a lot of the respondents (52%) are not sure whether they'll start using online auctions, 29% think they "probably will" and 19% of them "probably not."

D. Total results

When viewing all age groups together the collected data will provide the foundation for creating a new domestic online auction site.

There is a high rate of knowledge about the online auction sites (70% of the respondents have heard about it) but only 50% of the respondents visit them. Only 11% of users visit these sites daily or more. Over a half of all users (51%) prefers foreign auction sites, while domestic sites get a sympathetic 14%. It is interesting to see that 32% of them don't bid in

auctions but they rather use some sort of buy-it-now option and only 7% bid regularly. This can mean that users are interested in these kind of sites but don't use them unless they find something they really want or need.

TABLE I
ONLINE AUCTION VISITING FREQUENCY

| Frequency | Respondents | Percentage |
|-----------------|-------------|------------|
| Rarely | 19 | 16% |
| Periodically | 28 | 23% |
| Regular | 8 | 7% |
| Few times a day | 5 | 4% |
| I don't | 60 | 50% |

Most users (45%) try to buy something that is cheaper than when bought through regular channels and something highly specialized which is hard to find (31%). They prefer specialized paying services (47%) and credit card payment (19%). Cost of delivery depends on the item they're buying (67%). More than a half of the respondents (58%) say they didn't have bad experiences while using online auctions and the thing that bothers them most is slow delivery (28%). Only 13% of them received the item in worse condition than described and 5% of the items were delivered different than ordered. It is very pleasant to see that no user data was stolen.

TABLE II
PREFERRED PAYMENT METHOD

| Method | Respondents | Percentage |
|---------------------|-------------|------------|
| Credit card | 15 | 19% |
| Bank account | 10 | 13% |
| Specialized service | 36 | 47% |
| Pay slip | 6 | 8% |
| Pay-on-delivery | 10 | 13% |

Users would like to see improvements in all prospects of the online auction models: 26% of them would like faster delivery, 25% higher seller confidence. Not much of them (14%) think it is necessary to increase payment security. Those who used domestic auction sites are mostly concerned with item description quality (19%) and payment security systems (17%).

TABLE III
POTENTIAL IMPROVEMENTS OF EXISTING SITES

| Improvement | Respondents | Percentage |
|-----------------------|-------------|------------|
| None needed | 7 | 8% |
| Delivery speed | 24 | 26% |
| New delivery channels | 13 | 14% |
| Seller quality | 23 | 25% |
| Payment security | 13 | 14% |
| New paying solutions | 10 | 11% |
| Something else | 2 | 2% |

Non-users don't know enough to start using online auctions (41%) and they are skeptical toward the payment security (28%). Just 3% of them have had or heard of a bad experience and don't bid because of that. They would start using auctions if they heard positive users' experiences (35%) or would be convinced that paying is safe (21%). As mentioned before, most of them would prefer domestic auction sites (70%)

because of faster delivery (27%) and nonexistent language barrier (19%). One third of non-users think that domestic sites don't have advantages over foreign sites.

TABLE IV
REASONS OF NON-USING ONLINE AUCTIONS

| Reason | Respondents | Percentage |
|---------------------------------|-------------|------------|
| Don't know enough | 39 | 41% |
| Heard bad experience | 3 | 3% |
| Had bad experience | 0 | 0% |
| Skeptical toward payment safety | 27 | 28% |
| Possible delivery problems | 9 | 10% |
| Risk of VAT | 13 | 14% |
| Something else | 4 | 4% |

The last question for non-users gives quite a positive result. Although only 5% of them is sure that they'll start using online auctions, 23% of them says that they probably will. None of them say they surely won't be bidding in the future and 20% thinks they probably won't. This leaves us with 52% of those who might start using this model and they're the ones who should be addressed and drawn to the new domestic model.

TABLE V
WHAT WOULD ATTRACT NON-USERS TO ONLINE AUCTIONS

| Reason | Respondents | Percentage |
|----------------------------|-------------|------------|
| Users positive experience | 40 | 35% |
| More offered items | 13 | 11% |
| Cheaper delivery | 19 | 17% |
| Increased payment security | 24 | 21% |
| More payment options | 17 | 15% |
| Something else | 1 | 1% |

VI. THE NEW DOMESTIC AUCTION SITE

Based on the research results and a detailed analysis of the existing auction sites, this paper will provide a suggestion of how should the new domestic online auction site be organized. This model will include as much positive aspects of existing sites as possible while trying to neutralize all fears and negative aspects stated in the respondents' answers. The proposed model will include guidelines for creating a web site, paying solution and delivery channels.

A. Web site

Modeling process for an auction service must begin with a web site which must be easy to use and understand. It may seem different, but even eBay could do some improvements of their site. For instance, eBay doesn't offer a clear explanation of their bidding system. Instead, they just invite users to bid sincerely and offer the exact amount of money as the item is worth to them. Also, the help section of the page is not always organized in an intuitive way so users have to lose a lot of time to get the information they want. In the new model these details would be corrected.

Using the new auction site would start with a simple registration process just like the other sites have. This step requires providing some basic information about the user like

name, date of birth, address, email address and phone number. That information must be gathered in order to secure a high level of confidence for both buyers and sellers. Gathered data must not be available for anyone to see except the participants of the buying and selling process (the seller and the highest bidder).

After entering personal data users need to choose their identification name (username) and password for logging in to service. Account creation process must be protected by CAPTCHA challenge response system in order to block automated account generating. At the end of the process, a verification email is sent to user in order to confirm the registration.

While browsing the site, user must find all of its elements as fast as possible. This means that all information must be sorted and grouped logically. Sections of the page must be clearly divided so that information could not be mistaken into a part of the page it does not belong to.

Product categories should be sorted over a few levels so that users can find wanted items just by selecting categories and sub-categories closest to the item. At each level of categorization it is necessary to be able to search products on that level so that user doesn't need to scroll down to exact category. Next to every item's name should be a seller feedback score to show potential buyers the level of seller's trustworthiness.

Seller must define only one category for the offered item to avoid redundant offers in multiple categories. Item name, description, delivery and payment options must be filled in to provide potential buyers all with relevant information.

A very important part of the auction site is surely the help section of the page. As stated before, good help sections are rare and this is a great opportunity to get closer to customers. Help should be accessible from every page of the service and it might be a good idea to create a page recognition system which would open the help section for the specific area of the site, depending on where the user is when asking for help.

The final site option should be a communication area where users could exchange messages. These messages could be about the items offered in an auction or any other subject, but this system should be integrated into the model so that users can communicate with ease and speed.

B. Payment security system

Research results revealed that users are happy with the current paying solutions but non-users' biggest fears are in this department. They stated that there should be more paying options and they are skeptical towards the security of their data (card and account numbers). That's the detail which will require most effort while implementing the new auction site. Croatian users prefer specialized services like PayPal for sending their money to sellers and this means that a system like this one would probably be the best solution. The biggest advantage of this services is the fact that user sends his personal information only once to the service provider which

increases security. When paying, user just has to log in to the site and confirm payment from his account to the seller.

There is a similar system on the domestic market which is used by some web shops and it works very well but it has one big flaw. The system can process payments from several credit and debit cards (American Express, Diners, MasterCard and Visa) but can only be used for payments to people but rather just to companies.

Therefore it is necessary to develop a new service which would be able to send and receive payments to and from people as well as companies. It would also require a simple registration process in order to become a user, but with one difference of entering you bank account or credit/debit card number. To increase data security, it is crucial to use an official digital certificate. Of course, absolutely most important thing is to make contact and try to secure as much paying methods as possible.

C. Product delivery

Further important part of the new model is certainly the delivery system. Since only one domestic site offers a delivery system which doesn't leave the delivery process as a part of the seller-buyer agreement, this new site could adopt a similar model. Some postal and express delivery companies offer a free package pick-up so this would ensure that seller can dispatch the item promptly after receiving payment. For most parts of the country except for some islands they all guarantee delivery within 24 hours.

D. User feedback

Surely the most important information in an online buying process is the one about the seller. When buying from an established company web shop that is not an issue, but most of us would like to know who they're buying the item from in an online auction. Therefore a user feedback system must be created in which the seller and the buyer would rate each other after the transaction. Seller would rate communication with the buyer and say if the transaction went well. Buyer would give his feedback after receiving the item and inspecting it. Then he would rate the dispatch speed, description accuracy, communication quality and speed and his thought of the item price, was it set correctly.

The system would display its average grade with every created auction from that user so that potential buyers see the grade as soon as possible. This would reduce the chance of buying from bad sellers and reduce their number to the minimum.

VII. CONCLUSION

Electronic auctions are becoming increasingly popular in Croatia. Although not all services can be used at the existing foreign sites, and domestic sites are often submitted to serious criticism, the number of auction users is constantly increasing. There is still a huge part of population not familiar with this

model of buying and selling goods and services. Therefore it was necessary to research the users' habits and non-users fears, analyze them and propose a new model which would attract even more of them to this type of trade.

The research has given an encouraging result which indicates that most of the non-users would like to use a domestic model rather than a foreign one. They're also very positive about the possibility of using online auction sites in the future. Users named their preferred paying and delivery options and by combining these preferences it was possible to create a proposal for the new domestic model.

Creating a good online auction site has definitely the potential for success. It would be necessary to approach every mentioned aspect with great responsibility but it is very certain that this model would quickly become popular.

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