

December 2007

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Recommended Citation

Tarmizi, Halbana and Najjar, Lotfollah, "RETHINKING E-COMMERCE RESEARCH BY CONNECTING IT TO ACTIVITIES IN ONLINE COMMUNITIES" (2007). *MWAIS 2007 Proceedings*. 21.
<http://aisel.aisnet.org/mwais2007/21>

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RETHINKING E-COMMERCE RESEARCH BY CONNECTING IT TO ACTIVITIES IN ONLINE COMMUNITIES

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ABSTRACT

The Internet has helped businesses and consumers in conducting online commerce (e-commerce). Online auctions are one of the most popular forms of online commerce. At the same time, the Internet has helped people in forming online communities. However, the extensive research on e-commerce, especially online auctions, has not paid attention to activities in online communities and their possible impact on e-commerce. In this paper, we look at this issue and show empirical evidence why we should look at the relationship between online communities and e-commerce.

KEYWORDS

E-Commerce, Online Communities, Online Auction, Regression Analysis

INTRODUCTION

Various aspects of online auction on eBay have been studied. Those aspects include public versus. secret reserve prices (Katkar & Lucking-Reiley 2001), seller's reputation (Melnik & Alm 2002; Resnick et al. 2006; McDonald & Slawson 2002), the effect of negative feedback on auction prices (Lee, Im, & Lee 2000), the relationship between starting prices and end prices (Kamins, Dreze, & Folkes 2004; Brint 2003), and last-minute bidding (Roth & Ockenfels 2002). Most of the studies tried to relate those factors to auction end prices, and to draw a conclusion regarding the significance of each of those factors.

While those factors could have significant affects on eBay auctions, they only consider issues that are directly observable during the auction period. However, the nature of the Internet as a mass media (Morris & Ogan 1996) and information source (Ratchford, Talukdar, & Lee 2001), combined with proliferation of online communities, make us wonder whether there are indirect factors, unobservable during the auction itself, that could have influence on eBay auctions. Some of those factors could be potentially important and therefore need to be considered in studying online auctions or e-commerce in general. Therefore, the goal of this study is to identify one of those factors by looking at the relationship between online auctions and online communities and by showing empirical evidence supporting it.

BACKGROUND

The Internet

The Internet has been hailed as a medium for conducting business without borders (Gianforte 2004) and has reduced, if not eliminated, several constraints found in traditional business, such as the constraints of distance and search cost (Steinfeld & Whitten 1999). At the same time it has the capacity to spread information at a minimal cost (Fisher 1998) enabling information exchange among people worldwide (Rothaermel & Sugiyama 2001). This leads to the Internet's capability to connect people and to form communities (Wellman et al. 1996). The Internet has changed our ideas about communities, which were traditionally formed by people living in the same geographic area (Barnes 2003). Now, people who share the same interest can find each other on the Internet, not limited by space or time. Those online or virtual communities then become one venue where members can exchange information. It enhances the Internet capacity to spread information. Those communities combined with electronic mail (e-mail) enable information to travel across the globe within seconds.

While e-mail was originally developed for one-to-one communication (Ng 2001), it is currently also used for one-to-many communication with the help of mailing distribution lists. However, this ability has created a destructive behavior among internet users, who use the Internet to send millions of solicitous messages, also known as spam (Kleinrock 2004). Although there is no scientific study indicating the percentage of spam e-mails, a recent estimation in 2006 approximates that 95% of all e-mails are spam (Jacques 2005). This scary number will definitely overwhelm our limited attention capability in dealing with incoming e-mails and at the same time could diminish the effectiveness of e-mail as a one-to-many communication system. Therefore, online communities become the only viable alternative to spread useful information over the Internet in a timely manner. In this paper we will show empirical evidence on the significance of online communities toward e-commerce by looking at end prices on eBay auctions.

Online Communities

Through the advancement in information and communication technology (ICT), people are now able to expand their capability of finding others who share similar interests with them. They are no longer limited by geographical proximity in their search (Preece & Maloney-Krichmar 2005). The Internet, especially, has facilitated people's needs to meet those with shared interests around the globe. Online communities, also called virtual communities, have complemented local-based or geographic communities, if not replaced them. In this paper, online communities can be defined as groups of people who share common interests and communicate through an electronic medium such as the Internet, overcoming space and time barriers. Much of the interaction on online communities involves information exchange (Wellman et al. 1996). Furthermore, Wellman, Salaff, Dimitrova, Garton, Gulia, and Haythornthwaite (1996) noted that online communities also offer social support, companionship and a sense of belonging. Due to relatively low cost to become online community members, individuals often belong to several communities at the same time (Wellman et al. 1996). This cross-membership will help in spreading information through cross-posting or forwarding information from one community to another.

Researchers have differentiated several types of online communities, based on their purposes. Hummel and Lechner (2002) differentiate five types of communities based on the business perspectives: 1) Gaming, 2) Communities of Interest, 3) Business-to-business,(B2B) 4) Business-to-consumer (B2C), and 5) Consumer-to-consumer (C2C). Other typologies of online communities have also been proposed; Stanoevska-Slabeva & Schmid (2001) used the following typology: 1) discussion communities (dedicated to the exchange of information with a well defined topic), 2) task- and goal-oriented communities (strive

to achieve a common goal through cooperation) 3) virtual worlds (provide virtual setting of the complex world as in virtual games) and 4) hybrid communities (a mixed of different communities). From the five Hummel and Lechner's community types, three are directly or indirectly related to commerce or trade, since they involve the exchange of goods. B2B and B2C are definitely geared toward conducting business transaction. A C2C community is merely a forum for individuals to exchange or to trade their unneeded stuffs. One of the prime examples of C2C communities is Craigslist, where anybody can list what he or she is offering or looking for. This type of community is normally geared toward exchanges/business among individuals living in the same locality, so that the exchange or transaction will occur face-to-face, instead of using a courier as an intermediary. In this case, the community provider, Craigslist, does not charge any fee for their service. While eBay could also have been thought of as a C2C community in its early days, it has shifted more and more toward a B2C type of community. Many traditional businesses have seen eBay as another outlet to reach potential customers. For example, Sears (eBay name: sears) and Circuitcity (eBay name: trading_circuit_liquidation) have listed their products on eBay.

Online Auctions

One of the most popular types of e-commerce is an online auction, where an item will be sold to the highest bidder. And the most popular site for online auctions is eBay. One of the shining stars in online business, eBay's recent financial data shows that its sales have reached \$5.58 billion, with profits of \$1.06 billion and assets of \$13.46 billion (Forbes.com). The uniqueness of eBay is that it empowers anybody to start his or her own business immediately and to reach a global audience instantly. At the same time, it increases the risks of fraudulent activities either from buyers or sellers. Chua, Wareham, and Robey (2002) listed several types of fraud in online auctions, including bid shielding, failure to ship by sellers, failure to pay by buyers, and counterfeit goods. A report indicated that in 2005 fraudsters took up to \$2.8 billion out of e-commerce (CyberSource 2005).

Studies related to e-commerce as well as online auctions have been conducted in the recent years. Most of the studies have been focusing on eBay, the largest online auction on the Internet. The focus of the study includes seller reputation (Dellarocas 2001; Resnick et al. 2000), price shilling (Kauffman & Wood, 2003), price and feedbacks (Lee, Im, & Lee 2000; Standifird 2001), and fraud (Bywell & Oppenheim 2001; Chua, Wareham, & Robey 2002). Other studies dealt with specific features available on eBay, such as buy-it-now (BIN) (Standifird, Roelofs, & Durham 2004) and dispute resolution (Katsh, Rifkin, & Gaitenby 2000).

In sum, online auctions, or e-commerce in general, and online communities are two prevailing success stories on the Internet. However, empirical research connecting activities in both fields is still a rarity. Therefore, we collect data about activities on an online community and look at their significant impact on online auction on eBay.

METHOD AND DATA ANALYSIS

Method

A quite popular online community (pseudo name: HOTDEALS) was observed. This community fits Stanoevska-Slabeva and Schmid's description as a discussion community, since its activities are mainly exchanging information about finding good bargains. This community was initially created in 1999, and quickly became a community of savvy shoppers. As of December 2006, it has more than 630,000 members and more than 6,000 postings daily. In average, it has around 150,000 unique visitors per day. The following figures show the statistics of this community for November–December 2006:

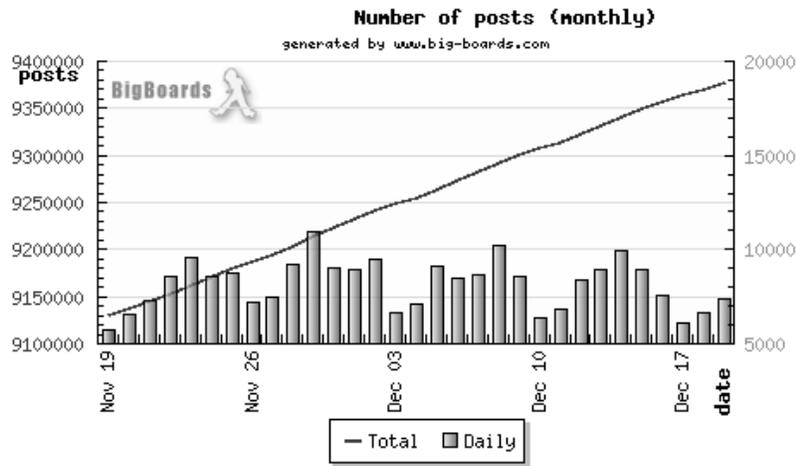


Figure 1. Number of Daily Posts on the Community

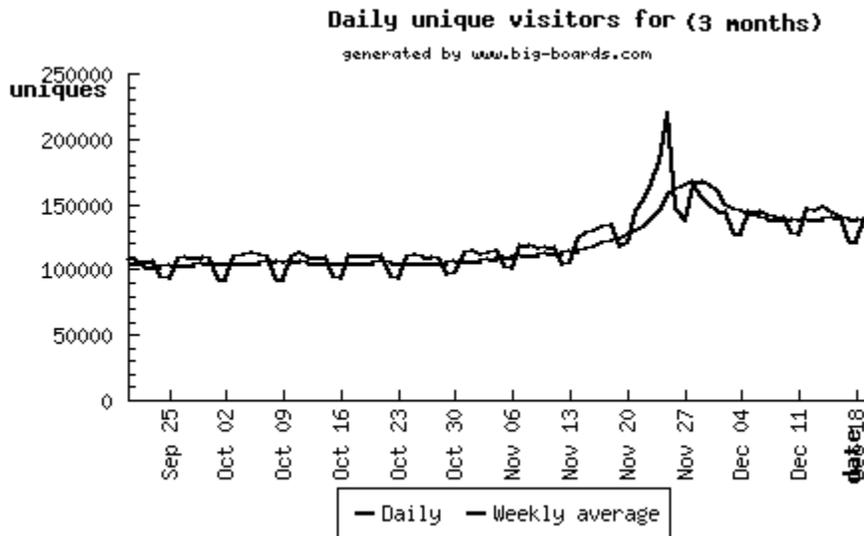


Figure 2. Number of Daily Unique Visitors on the Community

For this study, we observed information posted on this community. One particular posting that we used was a posting about an all-in-one EPSON printer. The information about this product was posted for the first time on January 21, 2006 at 9:42 p.m. The original poster informed the community about getting the product, sold elsewhere for \$299, for \$30,. The time when this deal was posted was recorded, as well as the number of replies and lurkers after certain period of time. Within 12 hours of the original posting, 372 replies and more than 7,000 viewers were recorded. The replies ranged from suggestions, reports of success or failure to get the deal, discussions of compatibility of this product to certain computer operating systems, as well as experiences of using this product.

Next, we collected sample data from eBay about the listing of the product. We observed its selling prices between January 7, 2006 and February 18, 2006. We deliberately chose the starting point of the first time frame, January 7, to minimize the effect of the Christmas shopping period that could have distorted the selling prices. The following information is recorded:

- *END PRICES*: price of an item at the end of an auction (in US\$)
- *SHIPPING RATE*: additional fee that a buyer has to pay for shipping (in US\$)
- *STARTING PRICE*: price of an item at the start of an auction (in US\$)
- *NUMBER OF FEEDBACKS*: number of feedbacks that a seller has from his/her previous transactions
- *NEGATIVE FEEDBACKS*: number of negative feedbacks that a seller has from his/her transactions in the last six months
- *BIN*: a dummy variable indicates whether there is an option for potential buyer to purchase an item immediately without waiting till the end of the auction (BIN: 1—this option is available, BIN: 0—this option is not available)
- *LISTING TIMING*: timing of an auction in relation to the initial posting about the product on the observed online community. In this study we observed auctions *before* the initial posting, *right after* initial posting, (i.e., within ten days after the posting), and *long after* initial posting, (i.e., more than ten days after the posting)

Data Analysis

A total of 52 samples from eBay listings was collected during the time period. A linear regression operation was performed with *END PRICES* as the dependent variable. Coefficient of determination r^2 is used as an indicator of goodness of fit. The first linear regression procedure is conducted with *SHIPPING RATE*, *STARTING PRICE*, *NUMBER OF FEEDBACKS* as independent variables (IVs). The SPSS output for this linear regression shows that if we only consider those three variable as IVs, then *SHIPPING RATE* (p-value = .000) and *STARTING PRICE* (p-value = .002) are significant at $\alpha=.05$, while *NUMBER OF FEEDBACKS* (p-value = .445) is not significant at all. This contradicted Melnik and Alm's (2002) finding that seller reputation is statistically significant. Although they, at the same time, concluded that it has only a small impact on the price of the observed \$5 gold coin. One possible cause of this contradiction is that we have two different types of items, (i.e., collecting good and technology), and different types of buyers for each of the items, (i.e., collectors and technology users). The goodness of fit for this model is low, with r^2 adjusted equal to .259. Additionally, since our initial finding about seller reputation seems at odds with some existing studies, (e.g., McDonald & Slawson 2002), additional research focusing on seller reputation on eBay could hopefully bring more clearance to this issue.

The BIN option has been discussed in several publications, (e.g., Mathews 2004; Yoo, Ho, & Tam 2006). Therefore, we will include the BIN option as a dummy variable, (i.e., 0: no BIN available and 1: BIN available). Furthermore, due to the insignificance of *NUMBER OF FEEDBACKS*, we will drop this variable. Instead, we consider the number of negative feedbacks the sellers received in the last 6 months. Negative feedbacks in the eBay rating system have been studied in various ways. Resnick, Zeckhauser, Swanson, and Lockwood (2006) found that one or two negative feedbacks for the sellers did not affect buyers' willingness-to-pay. The result of this regression indicated that *SHIPPING RATE* (p-value = .019) and *STARTING PRICE* (p-value = .004) are still significant, while *BIN* (p-value = .064) and *NEGATIVE FEEDBACKS* (p-value = .065) are relatively insignificant at $\alpha=.05$. However, those two insignificant variables have p-values that are relatively close to .05. Still, this regression model can only explain 31.1% of the variability in the auction end prices (r^2 adj= .311). This low goodness of fit indicates that there are other important variables that we should consider.

Therefore, next we considered the spread of information on the Internet as a crucial factor toward the end price. For this purpose, we added a qualitative variable, called *LISTING TIMING*, as an additional variable to the existing variables. This variable represents correlation of the listing with the time of the initial information posted on the online community. In this case we have three possible values for this variable, (i.e., "before," "right after," and "long after"). The value "before" represents those eBay listings

made and ended before the information about the item was available on the Internet. The value of “*right after*” represents those listings started within the ten days after information was posted, while “*long after*” was used to represent those listings that came after that. For the purpose of analysis, we used the dummy variables “*TIMING1*” and “*TIMING2*” to represent those three possible values. The following table shows the coding of our dummy variables:

VALUE	<i>TIMING1</i>	<i>TIMING2</i>
<i>before</i>	0	0
<i>right after</i>	1	0
<i>long after</i>	0	1

Table 1. Coding of the Dummy Variables

As the regression with these IVs indicates, those two dummy variables (*TIMING1* and *TIMING2*) representing the new variable (*LISTING TIMING*), each with p-value = .000, are significant at $\alpha=.05$, while the *STARTING PRICE* (p-value = .526) is no longer significant. The only variable that is still significant is the *SHIPPING RATE* (p-value = .000). This new regression has an excellent goodness of fit, with significantly higher coefficient of determination r^2 adjusted = .795, compared to .311 in the previous one.

DISCUSSION

Our regression analysis has shown the potential importance of information traveling on the Internet through online communities in relation to e-commerce. That information could change the dynamic of online auctions on eBay significantly, as seen above. Without considering traveling information or activities in online communities, we will probably never be able to get the whole picture of e-commerce or online auctions. As our regression analysis shows, the level of explainable variability in the dependent variable END PRICES was quite low if we consider only variables or factors that are typical to online auctions, (e.g., shipping rate, initial prices, seller reputation). However, by taking into account activities in online communities, here captured in a variable called LISTING TIMING, the goodness of fit has improved significantly.

This new knowledge about the importance of online communities should help both sides, (i.e., consumers and online retailers), in conducting online commerce. For consumers, online communities could help them in educating themselves about products and their alternatives, before their purchase. Furthermore, it would help them in maximizing their benefits by getting a better bargain. For online retailers, online communities could help them in sensing consumers’ preferences and motivations. Furthermore, it could help them in reaching to potential consumers and in educating them about new products. Those online communities could become an effective communication channel between retailers and consumers.

This study has a significant limitation, since we only consider one product in our study. Additional studies are needed to verify our findings and to extend this study to other products. Furthermore, we have not considered any theories or models related to e-commerce or online auctions in other fields, such as marketing. Therefore, future studies should look at existing theories in various fields and consider more variables related to online auctions that might not have been studied. They should also start looking at other auction sites, such as Amazon auctions or Yahoo! Auctions. This will help in verifying whether our initial findings can contribute in improving theories related to e-commerce as well as online communities, and whether our findings can be generalized or they are only specific to eBay auctions. Non-auction types

of commerce should also be included in future studies. This will help in generalizing these initial findings to other types of e-commerce.

CONCLUSION

The study of e-commerce is still far from over; however, we need to expand our focus by looking at the relationship of e-commerce and online communities. This preliminary study has shown that there is a significant relationship between them. And therefore, more potential research streams in this field are possible. Researchers and practitioners of e-commerce as well as online communities could start collaborating in revealing some of the issues thought to be important for them.

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