Factors Affecting Online Auction Price:
Empirical Analysis of Taobao in Chinese Market

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Abstract

Online auction, as one way of the online shopping has become increasingly popular. During the process of online auction, there are many factors influencing the final auction price. This dissertation will focus on the factors influencing the online auction price. Thus, the sellers and buyers in online auction process will be much more clear how to make decision in future auction process.

The conceptual framework of this study mainly contains auction price and the factors of reputation system, starting bid and customer security plan. These concepts are put together in an analytical model with five hypotheses, which are raised to explore the impact of them on the auction price.

The quantitative research strategy is employed in this dissertation. TaoBao, the largest Chinese online shopping company was chosen as a case. The empirical data was gathered through the website page everyday. Then, SPSS was utilized to analyze the data collected on TaoBao from March 2012 to May 2012.

The conclusion can be drawn from this study is that seller's overall rating and positive rating have a positive impact on auction price in Chinese market. However, there is no direct impact of negative rating and starting bid on auction price. In addition, the customer security plan, which is a unique service provided by Taobao.com, has a positive impact on auction price in Chinese market.

Key words:

Online auction; Online auction price; Reputation system;
Starting bid; Customer security plan
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List of abbreviations

C2C customer-to-customer
CNNIC China Internet Network Information Center
CSP Customer Security Plan
BIN Buy-it-Now
AVE average variance extracted
1. Introduction

1.1 Background

Auctions have existed for centuries (Engelbrecht-Wiggans, 1980), but it has only been in recent years that distance has been able to exist between the buyer and seller (Beam & Segev, 1998). The advent of internet with online auctions brings a tremendous change in the market. Different from the traditional auctions, online auctions are not limited by the geographic barriers of traditional auctions. Buyers and sellers may be located on different continents and still conduct business since the online auction marketplace is always open and available (Hyde, 2007).

According to Bapna et al (2003), online auctions provide sellers with the potential for finding new markets and also represent a cost-effective means for businesses to sell-off aging inventory. Online auction providers may be seen as intermediaries between buyers and sellers that are potentially geographically remote. New intermediaries between sellers and the online auction providers are forming and growing rapidly (McDonald, 2004; Wolf, 2002 b), creating a new service market segment. The popularity of online auctions has led many small retailers, who initially explored online auctions as an additional alternate channel, to move their businesses to be solely online and to employ additional staff to handle their volume of online auction and auction generated sales (Siskos & Stevenson, 2003; Kettinger & Hackbarth, 2004).

The popularity of customer-to-customer (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 & Kato, 2004; Wu & Wang, 2006). In 2007 alone, a total of US$59 billion was transacted on eBay, one of the most popular C2C online auction websites. Unlike the fixed or static purchase price offered at e-stores, online auctions create a dynamic or "fluid" pricing structure for the buyers.

Meanwhile, online auction is becoming increasingly popular in the world. For instance, online auctions have been growing rapidly in the US, where they are forecast to sell $3.2bn (£1.97bn) of merchandise by 2002, according to Jupiter Research, the market research group. In the UK, online auction houses are proving popular with bargain-hunters. QXL, the online auction house which recently announced plans to float with a price tag of £500m, is estimated to be expanding its turnover at a rate of 25 per cent a month. Moreover, the auction catalogue concept has been popular in Israel, where it was launched four years ago by National Tender. It is estimated that 40 per cent of Israeli households have purchased at least one item through the magazine, which has sold $600m of goods.

The fast development of C2C market brings people benefits as well as risks. The popularity of C2C market is due to its convenience and interesting qualities. On the
one hand, sellers and buyers can complete the transaction by using computers at home. The Internet has dramatically lowered the costs of organizing markets (Houser & Wooders, 2006). On the other hand, buyer and seller can take the advantage of Internet to communicate through online message or voice at the same time, which makes the transaction more interesting and attractive. However, the popularity of online auction also brings with some problems. With the growth of online markets comes an increasing need for buyers and sellers to engage in transactions with counterparts with whom they have had little or no previous interaction (Houser & Wooders, 2006). As the information provided online is limited, information asymmetry are more likely when buyers and sellers are separated by time and space -- as they typically are in electronic markets (Dewan & Hsu, 2004), which would also lead to unfair transaction. For example, the winner of the auction might not deliver payment, the seller might not deliver the good, or the good delivered might not be as the seller described (Houser & Wooders, 2006).

Hence, online auction, with its popularity in the world, has played an important role in auction market. The emergence of online auction brings with convenience and interesting experience to sellers and buyers. Of course, problems also appear during the auction transaction process. People will react to different factors and make different decisions, which will affect the auction price. It will be an interesting exploration to conduct a research on the relationship between different factors and their influence on auction price.

1.2 Problem discussion

As a result of this tremendous growth of online auction, it is becoming increasingly important to understand how sellers and bidders behave in online auctions. To this perspective, different factors will influence the auction price.

There have been abundant research of online auction by now, which mainly concentrate on the factors affecting auction price based on sellers' reputation system (Koller, 1998; Hawes & Lumpkin, 1986). As for other factors affecting online auction price, literatures pay less attention to them. A deeper discussion about other factors affecting online auction price will be more contributive. Additionally, a exploration focusing on the relationship between different factors and the way of their influence will be very interesting. Hence, in order to make a comparatively sound research, we will try to analyze the impact of reputation system as well as other factors on online auction price.

Besides, we can find in previous literatures, researches are mainly about the Western online market such as eBay America, there are few analysis done towards Eastern online auction market. The emerging dynamic Eastern online auction market is a large market which contribute to the world online auction market. Conducting a research in Eastern online auction market become increasingly important in terms of its impact on world market. With its own characteristics (e.g. culture, habits and tradition), the
transaction in Eastern online market may be different from Western online market. Thus, it is necessary to conduct a research focusing on Eastern online auction market.

1.3 Research question

After we have noticed the existing problems in online auction area, our research will try to identify the different factors which affecting online auction price. The factors will not only include the commonly recognized one, but also some other factors with the characteristics of the research market. Then we will find the way that how these factors could affect online auction price.

Specifically the research question is addressed:

What factors would affect online auction price and how will they affect the auction price?

1.4 Research purpose

To respond to our research questions, this dissertation attempts to determine the factors which would affect the online auction price. Then the way of their influence on online auction price will be discussed.

1.5 Delimitation

China is one of the market that plays an important role in the world. It continues to gain a more prominent stage in the global marketplace. As online shopping is experiencing a fast growing in Chinese market, the potential development and profit existing in this market can not be neglected. According to the latest survey conducted by CNNIC (China Internet Network Information Center), the C2C online sales in China have reached 41.04 billion RMB in the first three quarters of 2011, representing a 90% annual growth. Accordingly, there is an increasing need for better understanding the nature of online C2C markets in China (Ye et al, 2009). So, we will choose Chinese market as a research area.

In recent years, Taobao company has a good performance in Chinese online market, it exceeded eachnet.com which is a joint venture between company eBay America and company Tom China1, and jumps to the frist place in Chinese online market.

Now, Taobao is the biggest C2C market in China with 83.5% market share now, followed by paipai with 11.5% market share and TOM-eBay with 4.4%.2 As a result of this tremendous growth, it is becoming increasingly important to understand how sellers and bidders behave in online auctions (Hou, 2007). Consequently, Taobao company will be chosen as a case study in this thesis.

1 http://www.eachnet.com/abouteachnet.html available 12-02-26
2 http://www.ebrun.com/ebnews/12772.html available 12-02-26
1.6 Organization of the study

The dissertation is presented in five chapters. Chapter 1 contains an introduction and brief description of the problem. Chapter 2 consists of the literature review focusing on understanding the factors affecting the online auction market. Chapter 3 is based on the review of the literature and come up with a hypotheses model. Chapter 4 elaborate the method to conduct the study. And in chapter 5, the results are analyzed. Chapter 6 presents a further discussion of the results of the data. Then Chapter 7 draws a conclusion of the research. In Chapter 8, implications for future studies, sellers and Taobao company are given. In the end, limitations of this research are highlighted in Chapter 9.
2. Literature Review

This chapter would review the content of relevant previous literatures. The first part is about the definition and types of online auction. Then, the interrelationships between reputation, trust and price are illustrated. Specifically, the impact of reputation on trust and the impact of reputation on price are discussed. Afterwards, factors which would affect auction price are mentioned. These factors include the reputation system (Klein and Leffler, 1981) and some other factors such as number of bidders (Kamins et al, 2004), number of description pictures (Jin & Kato, 2005), length of auction time (Ku et al, 2006) and starting bid (Herschlag & Zwick, 2002). Consequently, the gap between the existing literatures and the current research problem will be presented.

2.1 Definition and types of online Auction

The C2C online auction market has experienced phenomenal growth in recent years and has become the most active segment of e-markets today.

Richard and Halstead (2004) defined online auction as an indirect sale transaction type of e-commerce which increases competition among vendors in addition to broaden the set of potential consumers. Online auction has become very popular, even though there are some aspects of an online auction that its electronic version cannot encompass, such as seeing and touching the real product. Some other researchers hold the view that an auction is a public sale in which the item is sold to the highest bidder. To participate in an auction means to bid to obtain an item (Turban, King, Lee & Viehland, 2004). In this article, we will adopt the definition put forward by Richard and Halstead (2004). As it clearly shows the characters which online auction including, both relate to e-commerce and competition of auction. In addition, this definition is closely associated with our case. The sellers in our case are faced with an increasingly competition both from other sellers and the potential consumers, which well reflect the characteristics of online auction. With this guide, we will conduct further research.

According to Snijders and Zijdeman (2004), an important aspect of online C2C markets is that consumers can trade without direct physical interaction. The lack of physical interaction means that careful checking of products and trading partners is hardly possible. Perhaps an even larger drawback is the time lag between purchasing and receiving goods. From this point of view, online auction sites provide a mechanism for their users to evaluate each other (Snijders and Zijdeman, 2004).

Otair and Hattab (2008) claim that auctions are of many types, classified according the method of submission of bids, method used in deciding who the winner is, the final price paid by the winner, and for valuing the object being auctioned. They can be categorized according to the number of sellers and the style by which bidders submit bids. There are several auction types used on the market today: the English auction, the Dutch auction, and second price, sealed bid auction (Yuen, Sung, & Wong, 2003).
English auction is the most common auction used today, which is also called open-outcry or ascending price. The auctioneer starts the bidding process with a minimum price for the product. The auction participants bid increasing the price until no more bids happen or some condition to be satisfied. Then, the highest price wins. An English auction is the most well known type of auction and is widely used for real estate (Otair & Hattab, 2008). The case in this research is using English auction method, as most of the online auction in our case belong to English auction. We will focus on English auction type and conduct further research. In a Dutch auction, the seller progressively lowers his/her offer until a buyer accepts that price. Dutch auctions have the natural property of concealing the losing bids (Otair & Hattab, 2008). A second price, sealed bid auction is also called Vickrey auction. The bidder with the highest bid wins and they must pay an amount corresponding to the second highest bid (Otair & Hattab, 2008).

### 2.2 The influence mechanism among reputation, trust and price

This part will discuss the inter-relation among reputation, trust and price. The impact of reputation on trust and the impact of reputation on price will be illustrated separately. According to Lin et al (2006), reputation will help to improve traders' trust in conducting online auctions. Reputation, as one of the factors, will exert influence on the final auction price. (Eaton, 2002; Resnick & Zeckhauser, 2000)

#### 2.2.1 Impact of reputation on trust

The marketing literature argues that reputation is a valuable asset that requires a long-term investment of resources, effort, and attention to customer relationships; a good reputation also signals past forbearance from opportunism. A consumer's trust in an Internet store is positively related to the store's perceived reputation (Jarvenpaa, Tractinsky & Vitale, 2000). Meanwhile, in the internet marketing context, Quelch and Klein (2006) argue that Internet consumers will favor sites that represent a merchant with which the consumer is already familiar from traditional channels (Jarvenpaa, Tractinsky & Vitale, 2000).

Quelch and Klein (2006) note that "trust is a critical factor in stimulating purchases over the Internet, especially at this early stage of commercial development". Jarvenpaa, Tractinsky and Vitale (2000) pointed that trust is associated with lower perceived risk of shopping at the site, and trust is expected to be affected by the
consumer's perceptions of the size and reputation of the store. Accordingly, trust is associated with lower perceived risk of shopping at the site, and trust is expected to be affected by the consumer's perceptions of the size and reputation of the store (Jarvenpaa, Tractinsky & Vitale, 2000).

In online commerce, a buyer cannot directly examine the product and has to trust the seller for the product description and delivery. The reputation of the seller (and other information signals on the quality of the product) can therefore affect the buyer's willingness to pay (Mikhail & James, 2005). The information available from a reputation system helps to improve prospective traders' trust and conviction in conducting online transactions. It also reduces cheating behaviors of sellers, who want to maximize their profits by providing wrong products' information. In this way a reputation system may not only serve as a guide to otherwise clueless entrants but also help enhance the predictability of existing traders' behavior and honesty (Lin et al., 2004).

2.2.2 Impact of reputation on price

Several marketing theorists have looked at seller's reputation as an important factor or determinant of price (Eaton, 2002; Resnick & Zeckhauser, 2000). According to Milgrom and Weber (1982), the final price of an auction is determined by a prior information about the number of bidders, their valuation, and the auction format. The dynamics of the bidding process, especially the evolution of the bid arrival process and bidding process, is shown to influence the final price of auctions. Others, however, do not find a significant effect of reputation on price even with a large data set (Eaton, 2002; Resnick & Zeckhauser, 2000). For example, Resnick and Zeckhauser (2000) find that seller feedback does not influence the auction price but does have an effect on the probability of a sale.

In an effort to reconcile these conflicting results, some researchers indicate that there may be other factors that increase or reduce the effect of reputation on price. For example, research has found that the effect of reputation is stronger when potential bidders are uncertain about the quality of the auction items (Dewally & Ederington, 2006). Bajari and Hortacsu (2004) also argue that the effect of reputation may be stronger for high-priced items than for low-priced items.

According to the previous literature, reputation, trust and price are inter-influenced and inter-related. Obviously, reputation has a direct impact on the trust, which will indirectly influence the willingness to pay. That is to say, a high reputation will increase the trust of customers. With the increasing trust, customers are more willing to pay. Then, with more trust existed, the price of products may increase. These relations will turn to a virtuous circle in the marketplace.
2.3 The Reputation system

Reputation system seeks to inform buyers about whether potential trading partners are trustworthy or not, and thereby to make cheating rare (Resnick, Zeckhauser, Swanson & Lockwood, 2006). Online auction may come along with the problem of information asymmetries due to the online transaction characteristics. In order to reduce the risks caused by information asymmetries, many C2C sites devote themselves to the building of online reputation system that systematically collects user feedback and provides reference for potential buyers and sellers in an online trading (Cited from Dewan & Hsu, 2004). As Klein and Leffler (1981) stated, reputation may alleviate some information asymmetries, thereby permitting a market for quality goods. The conditions needed for reputation to sustain a market for high-quality products are stringent. And researchers like Mikhail and James (2005) also find consistent evidence that a seller's overall reputation has a positive significant impact on a buyer's willingness to pay, and that negative comments about a seller often have a negative impact on price.

As ratings from buyers represent the seller's reputation (Houser & Wooders, 2000), it is necessary to have an introduction of the structure of reputation system. In a reputation system, sellers and buyers are required to rate each other after an auction ends. Hence, reputation system provides a platform for collecting and disseminating information. Potential bidders can use this information to form expectations about how the seller will behave in the future and decide whether to accept the price or not (Livingston J, 2005).

Take eBay auction block as an example. Traditional eBay auctions follow the format of an English-style auction. Bidders enter a maximum amount they are willing to pay for a item and the eBay software automatically increases the bid to one increment above the next highest bidder until that maximum amount is reached (Lucking-Reiley et al., 1999). To help both seller and buyer behave in a good way to ensure the safety of transaction, eBay built up a reputation system.

For each transaction in eBay auction, buyers and sellers can leave a feedback to each other by the choice of rating. The articles this paper focused are mainly about the feedback from buyer to seller as it would construct the standard of seller's reputation. Ratings from buyer to seller can be grouped into three categories as positive, negative, or neutral. So, when the buyer receives the product, he would give positive feedback if he is satisfied with it, and negative one on the opposite side. At the very beginning of seller's career, the overall rating is 0, then he would receive +1 point for each positive rating, no points for each neutral rating, and -1 point for each negative rating. In this way, the overall rating is determined. Besides the overall rating, the rating of positive, neutral and negative feedback would also be presented on the web page of eBay (See Figure 1). The difference between the number of positive and negative comments left by unique buyers constitutes the seller's rating (Mikhail and James,

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3 http://pages.ebay.com/help/feedback/howitworks.html available 12-03-08
2005). In another words, seller's net overall rating is calculated as the count of distinct users who gave positive feedback minus the count of those who gave negative feedback (Resnick et al., 2006).

![Feedback profile](image)

Figure 1. The page of eBay reputation system (eBay, 2012)

### 2.4 Other factors

Although reputation system plays an important role, it would not be the only factor that affect auction price. This part reviews other factors which would affect online auction price with previous literatures. Here the other factors include number of bidders (Kamins et al, 2004), number of description pictures (Jin & Kato, 2005), length of auction time (Ku et al, 2006; Sun, 2008) and starting bid (Herschlag & Zwick, 2002; Lucking-Reiley, 1999; Bajari & Hortacsu, 2002).

#### 2.4.1 Number of bidders

The papers of Kamins et al (2004) and Kauffman (2006) indicate that an increase in the number of bidders leads to higher final auction price. Because the number of bidders can be regard as a measurement to show the products' value. The more the numbers of bidders participate the auction, the higher the final price will be. The large number of bidders in auction may indicate the high quality of the items and increases its competitiveness (Kamins et al, 2004).

#### 2.4.2 Number of description pictures

When making a description of the product's condition, sellers will put pictures to
make the description more vivid. Jin and Kato (2005) made an analysis on the effect of picture number on auction price, and got a positive relationship between them. Sufficient pictures of a product will show seller's confidence of it. Moreover, it will also provide more information for buyers to make auction decisions. Online trading intensifies the information asymmetry between buyers and sellers (Jin & Kato, 2005). Pictures can provide more detailed information to decrease the so called information asymmetry.

2.4.3 Length of auction time

Ku et al (2006) studied the role of escalation of commitment in auction fever and overbidding, operationalizing sunk costs in terms of time spent in an auction. They found, in archival and experimental data, that people were more likely to bid past previously set limits when they had spent more time in an auction. Other auction characteristics such as auction length is significantly positive to auction price (Sun, 2008).

2.4.4 Starting bid

Starting bid is the amount set by the seller at the beginning of bid. Nevertheless, different articles get different conclusions on it. Some articles indicate there is a negative relationship between starting bid and final price. Buyers may lose control while bidding and buying when the competition is fierce (Herschlag & Zwick, 2002). Sellers would enter a low starting price in the hopes of generating interest and bids on their item. However, the seller is not obligated to proceed with the sale until their reserve price is met (Lucking-Reiley, 1999). That means lower starting bid may cause higher final price for it attracts more bidders (Ku et al, 2006). Contrast to this, other articles suggest a positive relationship between starting bid and final auction price. A higher minimum bid results in higher revenues conditional on entry, which means higher starting bid would result in higher transactional price (Bajari & Hortacsu, 2002).

2.5 Summary

The previous literatures (mainly based on eBay.com) support that seller's data from reputation system have an significant influence on price. But there are limited researches done towards eastern online auction market. As China is one of the market that plays an important role not only in the east but also in the whole world, it is a growing need to better understand the characteristics of business in China. Although some Chinese literatures have collected data from eachnet.com and Yahoo.com, they are essentially western websites. Therefore, it's necessary to start a new exploration which collects data from Chinese local website and make an analysis on the factors influencing online auction price in Chinese market. These variables include not only
factors mentioned before, such as seller's reputation score and starting bid, but also variables from Chinese auction website, such as the "customer security plan" of Taobao.com. This dissertation would build upon existing literatures and narrow the gap. Then, some specific information about Chinese auction market are expected to be shown.


3. Conceptual framework and hypotheses

3.1 Primary theoretical model

This paper traverses the fields of factors which would affect online auction price, with a focus on both western and eastern market. In the existing literature, reputation system and several other factors all have played important roles for online auction price in western market.

Some online auction researchers (Lin et al, 2004; Houser & Wooders, 2000; Klein & Leffler, 1981) have looked at reputation system as a factor or determinant of online auction price. And others have made an examination of several items being offered in a perfectly competitive environment and the differences in price that can occur. In another word, besides reputation system, there are still several other factors, such as number of bidders (Kamins et al, 2004; Kauffman, 2006), length of auction time (Ku et al, 2006; Sun, 2008), number of description pictures (Jin&Kato, 2005) and starting bid (Herschlag& Zwick, 2002; Lucking-Reiley, 1999; Bajari & Hortacsu, 2002), which could also influence the price. Meanwhile, as each online auction website would convey relevant characteristics, there are some exclusive offers which are different from each other. More attention should be paid on these offers which may convey distinct characteristics.

The gap existing in the current literature is that no study has been systematically done on both the impact of reputation system and other factors together on online auction price. Many eBay auction have been studied, but they have focused on the factors discussed in the literature review. No systematical research has been done on the factors which would affect online auction price in a purely eastern market.

To sum up, this paper will focus on both reputation system and several other factors together as the factors which would affect online auction price. Hence we come up a primary model based on the literature from western market like eBay America, and then we will test it in the eastern market.

Figure 2: Primary model of factors affecting auction price

Source: created by ourselves
3.2 The Impact of Reputation System

In the field of online auction, through the information from reputation system which is publicly available, potential buyer can get to know how credible that seller was in the past (Houser & Wooders, 2000). Hence it would be able to determine the extent to which the seller could be trusted. Thus, seller's rating from buyers becomes a means by which honest sellers can (eventually) be distinguished from dishonest ones. The collection of comments for a particular seller makes up the seller's feedback profile. The rise of feedback forums at online auction sites provides a unique new opportunity to test whether reputation affects market outcomes (Houser & Wooders, 2006). Here is an example of feedback forum (see Figure 3). For each transaction, buyers and sellers can leave a feedback to each other by the choice of rating. Ratings from buyer to seller can be grouped into three categories as positive, negative, or neutral. When the buyer is satisfied with the product he received, he would give one positive rating to the seller as a good feedback. But if the product has quality problem which may contradict the description online, the buyer would give a negative rating to show his dissatisfaction. The accumulation of each category would have a direct present of the buyers previous reputation.

![Image](image_url)

Figure 3. The page of Taobao's reputation system

Many literatures have a great deal of empirical researches on reputation system's influence on final auction price (Lucking-Reiley, 2000; Meknik & Alm, 2000; House & Wooders, 2000). So this part will have a review of the conclusions about the impact of the information from reputation system on online auction price from previous literature. Here the information include seller's overall rating (Melnik & Alm, 2005; McDonald & Slawson, 2002; Dewan & Hsu, 2001), positive rating (Houser & Wooders, 2006; Ba & Pavlou, 2002; Zhang, 2006) and negative rating (Melnik & Alm,
3.2.1 The impact of overall rating

As mentioned in 2.3, seller's net overall rating is calculated as the count of distinct users who gave positive feedback minus the count of those who gave negative feedback (Resnick, 2006). Many literatures (Melnik & Alm, 2005; McDonald & Slawson, 2002; Dewan & Hsu, 2001) show that overall rating has a positive influence towards auction price. For example, Melnik and Alm (2005) did an empirical study for gold coins sold via eBay. His study demonstrates that a seller's e-commerce reputation, though not a major determinant, is an important determinant of the price that seller receives in internet auctions. And a seller with a better reputation can expect to receive a higher price for the auction good. Other researchers also used data generated by eBay.com to examine the relationship between a seller's reputation and the resulting price and received a similar result (McDonald & Slawson, 2002; Dewan & Hsu, 2001).

The reason can be concluded into two parts. First of all, overall rating is a proxy for quality characteristics that are unobserved prior to the completion of the transaction (Houser & Wooders, 2000) and represents the seller's reputation at the big picture. Compared with other data from reputation system such as positive, neutral and negative rating, the overall rating is simple and intuitive to gain. A high overall rating not only presents seller's high reputation but also the experience of transaction (Melnik & Alm, 2005), which would also be a guarantee to win buyer's trust and reach a higher price. Moreover, the overall rating is always discovered by the buyer at the first sight ought to its location. It is automatically displayed on the auction page for each item the seller lists (Resnick et al., 2006). See figure 4.

![Figure 4. The location of seller's overall rating on eBay.com](https://www.ebay.com)


Based on the previous researches and the online auction experience of ourselves, the overall rating is always a positive number, which means above 0. The negative number (below 0) of overall rating almost does not exist. Combining with the literature, we can find that almost all of the literatures indicating the positive impact of overall rating on auction price. Consequently, when come to the impact of overall rating on online auction price, we take it for granted that the data is a positive number. So, according to existing literature and the real online auction experience of ourselves,
we assumed that the correlation between overall rating and auction price is positive. Thus, the hypothesis is:

**H 1: Seller's overall rating has a positive impact on auction price.**

### 3.2.2 The impact of positive, neutral and negative ratings

Besides the overall rating, positive, neutral and negative ratings are also presented on the auction website page, in order to provide more detailed information about seller's reputation condition for reference. Many literatures also did empirical researches on these part.

Positive rating have a positive impact on the final price. Houser and Wooders (2006) find that in eBay's auctions of computer CPUs, an increase of positive ratings form zero to fifteen will result in an increase in the final price by about 5%. Ba and Pavlou (2002) did a research on the data of eighteen kinds of electronic products collected from eBay and also support this conclusion. They pointed out that good feedback will lead buyers to trust sellers; not only does good feedback provide a signal of trustworthiness to potential buyers, but seller also have incentives to guard their good feedback profile, which can rise the final price in the end. Zhang (2006) also raised the similar conclusion according to the data of iPod which auctioned on eBay as seller's good selling reputation increases both closing prices and probability of sale.

Above all, it is obvious that there is a positive relationship between seller's positive rating and final auction price. In order to explore the actual effect of positive rating on auction price, the authors of this paper come up with the second hypothesis:

**H 2: Seller's positive rating has a positive impact on auction price.**

However, there are not so many researches done on neutral rating. Zeckhauser et. al (2006) classed neutral and negative ratings together as one category which is separated from positive rating. He added neutral and negative ratings together as one variable which proved to have a strong negative influence on auction price.

Negative rating has a negative impact on auction price. Melnik and Alm (2005) pointed out that negative rating may be interpreted as a signal about the reliability of the seller when it comes to the delivery of the product, the quality of goods and the compliance with the terms of transaction. The data analysis of Ba and Pavlou (2002) shows that negative rating only had a significant negative impact on both the trust and price premium. Hou (2007) also provides support by researching the auction of Dell monitor that eBay seller's negative feedback has a strong effect on price.

As related theories stated that negative rating will cause negative impact on trust and price premium. The authors will try to test the relations between negative rating and
auction price. Hence, the following hypothesis was stated:

**H 3: Seller's negative rating has a negative impact on auction price.**

Besides, some researchers noticed the distinction of the influences caused by positive rating and negative rating. Wooders and Houser (2006) find negative rating has a stronger effect on price than their positive rating. They collected data of Pentium III500 processor on eBay auction and their empirical research suggests that a 10% increase in positive comments will increase the winning price by about 0.17%. However, the cost of a 10% increase in neutral or negative comments will cause 0.24% price reduction.

The reason may be that positive rating is regarded as the basic requirements towards the seller, which shows the goods and service provided by the seller is primary qualified. Negative rating as an unfavorable record, however, reflects obvious problems on either goods quality or service caused by the seller during the transaction. Just as the credit business of bank, a bad credit record has more significant negative effect than the effects of common records. Standifird (2001) got similar result through 102 samples data of 3Com Palm Pilot V pad from Jan. 3rd to 16th in 2000 on eBay auction. He suggests that most individuals place a greater weight on losses than they do on wins. Therefore negative rating would leave a deeper impression on potential bidders than positive ones.

### 3.3 The impact of starting bid

Sellers are required to set a starting bid for their items, which has led to studies on the effect of the high vs. low starting bid on the auction price. Some studies find a significantly positive effect (Bajari&Hortacsu 2003), whereas others report a negative one (Ku et al. 2005, 2006).

The positive effect of the starting bid on price is often explained as a result of the "value construction" mechanism (Haubl & Leszczyc 2003; Kamins et al. 2004) in which the starting bid serves as an informative (quality) indicator of the auction item's value and thereby having a positive effect on a bidder's valuation of such item. Consistent with this mechanism, Ariely and Simonson (2003) find that the starting bid results in a higher auction price only when comparable items are not available.

The negative effect of the starting bid on price is often due to "auction fever" (Ku et al. 2005, 2006). With auction fever, bidders become "caught up" by the competitive nature of auctions with a low starting bid and bid more than their true valuations. For example, Herschlag and Zwick (2002) report that online bidders tend to lose control while bidding and buying because of the thrills they obtain from winning a competitive auction. A low starting bid attracts more bidders, leads to a bidding war, and eventually drives up price (Ku et al. 2005).
To sum up, besides seller's rating, there are still many factors can be related to final auction price. As it's impossible for the authors of this paper to exam all relevant factors, one of the factors-- starting bid-- would be chosen to do further research. It can been found obviously that low starting bid will attract more bids and increase the auction price in the end. This relation turn out to be positive. We assume that low starting bid will be an easier threshold for bidder to enter the auction, and gradually increase the auction price. Thus, the impact of starting bid on auction price will be positive. Accordingly, we come up with hypothesis 4:

**H 4: Starting bid has a positive impact on auction price.**

### 3.4 The impact of customer security plan

Shuang Li et al. (2007) stated that sellers get more transactions and better credit after joining this plan. Customer security plan is exclusively offered by Taobao, which aims to facilitate integrate transactions and safeguard customer's interests. Taobao released compensation-in-advance rule on March 8, 2007. Sellers who want to join it must pay certain amount of deposit first, buyers can claim for compensation when dissensions appear between buyers and sellers, and Taobao guarantees to return the payment as the third party. Figure 5 is the an example of the web pages which shows the list of products. Here customer security plan is circled in red.

![Figure 5 The location of customer security plan](Taobao, 2012)

Retrieved from www.taobao.com

Shuang Li et al. (2007) did statistics on the sellers of Taobao by randomly selecting 290 sellers who joined customer security plan and 1172 sellers who didn't. They got the statistical result as follows:
Table 1: Comparison between sellers who join CSP and those who don't
(CSP is short for Customer Security Plan)

<table>
<thead>
<tr>
<th></th>
<th>Neutral feedback rate</th>
<th>Negative feedback rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ones who join</td>
<td>0.2426%</td>
<td>0.0363%</td>
</tr>
<tr>
<td>Ones who don't join</td>
<td>0.2549%</td>
<td>0.0509%</td>
</tr>
</tbody>
</table>

Source: Shuang Li et al. (2007)

As shown in Table 1, sellers who join the plan have lower neutral and negative feedback rate than those who don't join. Sellers provide a self-guarantee under compensation-in-advance rule. The behavior itself shows sellers' confidence in their goods. Seeing this, buyers are more likely to trust those sellers and pay higher price. Hence we come up with the fifth hypothesis of this paper:

**H5: Seller's joining customer security plan has a positive impact on auction price**

### 3.5 The revised theoretical model

This chapter mainly discusses the factors which would have influences on online auction price from previous literatures. The factors that we chose are not only based on the previous empirical researches but also the ability of ourselves and material resources we have. Then, we come up with five hypotheses. They are as follows:

H 1: Seller's overall rating has a positive impact on auction price.

H 2: Seller's positive rating has a positive impact on auction price.

H 3: Seller's negative rating has a negative impact on auction price.

H 4: Starting bid has a positive impact on auction price.

H5: Seller's joining customer security plan has a positive impact on auction price.

Among these hypotheses, hypotheses 1-3 are exploring the impact of reputation system on auction price. Hypothesis 4 is about the impact of starting bid on auction price, which belong to other factors. It is difficult for us to cover all of the other factors, so we choose starting bid as a representation of other factors. Hypothesis 5 discusses the impact of customer security plan on auction price, which is a specific factor of Taobao company, but also belongs to other factors.

The following figure 6 illustrates the predictive relationship expected between the factors and the final auction price:
Besides the factors which would affect auction price, this chapter also describes the marginal effect of seller's rating, which would contribute to the data-processing in the next chapter.
4. Methodology

4.1 Choice of method

Generally, there are two kinds of methods that can be used in scientific research: qualitative and quantitative research (Bryman & Bell, 2007). Quantitative research was described as entailing the collection of numerical data and as exhibiting a view of the relationship between theory and research as deductive, a predilection for a natural science approach, and as having an objectivist conception of social reality (Bryman & Bell, 2007). Also, Lee (1992) mentioned that the quantitative research methods derived from the natural sciences that emphasize objectivity, measurement, reliability and validity, have come to be seen as increasingly inadequate especially in cross-cultural research. Besides, quantitative approach is objective and relies heavily on statistics and figures (Kuhn, 1970).

In this paper, we will choose quantitative research as numerical data will be collected and analyzed to test the theory. The reason is that quantitative research meet the needs of this paper. As the theme of this paper is not only figuring out what the factors are but also testing how the factors could influence price, so quantitative research could meet the needs of answering this question of this paper.

4.2 Research design

To test the hypotheses represented in the previous part, we examined the factors influencing the auction price. Furthermore, we will focus our study on investigating the relationships between these factors and auction price. In particular, the factors that we will conduct research will include seller's overall rating, positive rating, negative rating, starting bid and customer security plan. By analyzing the data, we will use SPSS to test the relationships existing among these factors.

4.3 Research process

This research is all designed by the two authors of this paper. We think about the choice of sampling, subject of this paper, and also the method and time of data collection according to our manpower and material resource that we have.

4.3.1 Sampling

The need to sample is one that is almost invariably encountered in quantitative research (Bryman & Bell, 2007). In accordance with the purpose and delimitation of this paper, the data in this study were collected from TaoBao (www.taobao.com), the
largest C2C platform in China. According to iResearch, a Shanghai-based Internet market research firm, in the third quarter of 2011, TaoBao sales totaled 167 billion RMB and accounted for 83.5% of the total sales of in the Chinese online C2C market. With its great influence, the researchers choose TaoBao as the sample. The reputation mechanism of TaoBao is similar to that of eBay. There are three possible ratings that can be assigned to the seller: positive, negative, and neutral. Just as in the eBay rating system, a buyer can give feedback ratings to a seller only after a transaction has been completed between the two parties. There is a rating score calculated for each seller based on total number of positive ratings minus total number of negative ratings.

As for the sellers we chose in TaoBao company, we use random sample. Because we only focus on one product, thus can not divide the sellers into different groups. More, random sample will be free from bias, which turn out to be more equal, i.e. each individual in the population of interest has an equal likelihood of selection. Altogether, we collected 196 samples from the TaoBao website, which will contribute to the research.

4.3.2 Subject

As electronic product market is a dynamic market and with a great competition, we will choose it as this paper's research subject. To ensure that enough auction samples can be collected in a reasonable time period, mobile phone is selected as the product for analysis due to its popularity in China. Furthermore, a mobile phone usually costs several hundred RMB (Chinese currency), therefore it is expected that buyers will be more cautious about their purchase and are more likely to reference the seller reputation system.

Based on the popularity of the goods selling on Taobao, we have chosen the iPhone 4 for our analysis. We have noticed that the price of iPhone 4 tends to decrease over time. We think this is due to the usual high depreciation rate of consumer electronics, especially right after the product has been introduced to the market. With this in mind, we avoided the subject that had just been released to the market in our study. From the weekly mean price offered data from Taobao.com, we find that the price fluctuation was not significant for iPhone 4 during this paper's data collection period.

4.3.3 Method of data collection

With authors' experience and observation, the method of data collection are as follows. First, with the help of the search engine of Taobao.com, the information of our subject, iPhone 4, is presented. In addition, we select the products by entering search conditions: auction ends in one day, and then record the URL addresses. Here we choose ends in one day regarding to the validity of the data. One day later when the auctions are finished, the URL addresses are typed into IE browser again. Then the results of the auctions could be found and collected, as well as detailed auction information including auction price, starting bid, number of bidders and number of
bids. Among these information, we can select the ones which are related to this paper easily (shown in Figure 7)

![Image of an auction page from Taobao](image)

**Figure 7. The auction closed page of Taobao**

In practice, in order to collect data which embodies objectivity and reality, we further detailed our collection work everyday. We arrange two periods of collection per day, separately from 8:00–9:00 in the morning and 15:00–16:00 in the afternoon. Each period only collects the data generated from the end of last period. After observation, 14:00–22:00 is the highly active period of transaction in Taobao in China. Due to time equation between China and Sweden, we calculated our collection periods: 8:00–9:00 and 15:00–16:00 in Sweden.

### 4.3.4 Time of collection

Unlike the western online auction site, eBay.com, the most popular way of selling in online auction market in China is through BIN (Buy-it-Now). Comparably, the data of online auction is in a smaller amount. Furthermore, there are a lot of incomplete transactions. Thus, due to rareness of the data, we will spent much more time on collecting data. After observation, we choose two months, from the beginning of March 2012 to the end of April 2012 as collecting time first. According to the quality and quantity of the data within two months, the total collecting time should not be too long. Because the longer the time scale is, the bigger price fluctuation would be. And we all know that market fluctuation would have a negative influence on the data validity.

### 4.4 Measurement variables and data set

The selection of variables is one of the main focus of this paper. According to the articles mentioned above, this part would make a list of relevant variables that this paper would test, including dependent variable and independent variables.
4.4.1 Auction price

During the analysis of auction price, some literatures replace original price with price premium (Ba & Pavlou, 2002; Zhou et. al, 2006). These articles test on different kinds of products which have different levels of prices.

Ba and Pavlou (2002) collected electronic products for fourteen months, which is quite a long time. In order to remove the distinction from varied products' price level which is caused by market fluctuation, they employed price premium instead of original price. As price premium reflects the price according to the average price of the product. That is to say, when price premium is a positive number, then the final price is higher than the average price; when it's negative, the situation is opposite. In this way, the prices of different time period can be compared together by employing the concept of price premium. In this paper, the data of iphone 4 would be collected, because it will be much easier and accurate to calculate the same type of product. Moreover, the product price will fluctuate with the market changes in different times. Price premium will be more stable than the price, thus it will reduce the influence of market change. As a result, the data will be more useful and scientific. Therefore, the data of auction price would be set as follows:

\[
\text{Price} \rightarrow \text{Price premium}
\]

\[
\text{Price premium} = \text{Final transaction price} / \text{average price} - 1
\]

4.4.2 Seller's ratings

When it comes to the processing of the data from seller's rating, some literatures adopted original data, such as positive rating, neutral rating, negative rating and overall rating. But more literatures used the logarithm of such data, for example: \(\ln(\text{Positive Rating} + 1)\).

There is another proof of marginal effect regression phenomenon of seller's rating. Based on the observation on the auction of golf clubs, Livingston (2005) concluded that the first several rating have a strong impact on buyer's behavior, but the marginal effect of subsequent rating is much smaller.

Lucking-Reiley (1999) suggests that when a seller's rating stays at a low level, every point added would bring strong positive influence on the auction price. In his model of the factors influencing price, the logarithm of price are employed to analyze the data. Other researchers employed this kind of data-processing to analyze seller's ratings, too (Houser & Wooders, 2006; Zhang, 2006; Hou, 2007).

As earlier researches show that the influence of the first few positive rating is much greater than that of the later rating (Livingston, 2005; Houser & Wooders, 2006), researchers have suggested that there is a nonlinear relationship between seller's ratings (e.g., a seller's positive, negative and overall ratings) and the auction price (Houser & Wooders 2006; Lucking-Reiley et al., forthcoming). Therefore, a
logarithmic transformation is implemented in order to adopt the marginal effect of seller's rating. Adding 1 in the expression is to avoid the possibility of taking meaningless Ln(0) when the seller's rating is 0 (Ba & Pavlou, 2002). So, the data of seller's ratings are set as follows:

Overall rating  \[ \rightarrow \] \[ Ln(\text{Overall Rating} + 1) \]
Positive rating  \[ \rightarrow \] \[ Ln(\text{Positive Rating} + 1) \]
Negative rating  \[ \rightarrow \] \[ Ln(\text{Negative Rating} + 1) \]

**4.4.3 Starting Bid**

Starting bid is the original amount of auction product, which is also the lowest price in English auction. The same with auction price, there is also a necessity to overcome the distinction risen by product type differences. So, the same data-processing method is used here:

Starting Bid  \[ \rightarrow \] \[ \text{Starting bid premium} = \frac{\text{starting bid}}{\text{average starting bid}} - 1 \]

**4.4.4 Customer security plan**

Unlike previous variables which are numerical variables, whether joining customer security plane or not is a dummy variable. Therefore, we set this data as: if the products joint the plan, the data is 1, if not, the data is 0:

Customer security plan \[ \begin{cases} 
0 & \text{(the product hasn’t joint the plan)} \\
1 & \text{(the product has already joint the plan)}
\end{cases} \]

**4.4.5 Summary**

After the stating of the data set of auction price, seller's ratings of reputation system, starting bid and customer security plan, we come up with a clear view of the related variables in the table as follows:

<table>
<thead>
<tr>
<th>Factor</th>
<th>Variable</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent</strong></td>
<td><strong>Variable</strong></td>
<td><strong>Type</strong></td>
<td><strong>Meaning</strong></td>
</tr>
<tr>
<td><strong>Variable</strong></td>
<td>Auction price</td>
<td>Price Premium</td>
<td>numerical variable</td>
</tr>
</tbody>
</table>

24
<table>
<thead>
<tr>
<th>Reputation system</th>
<th>Overall rating</th>
<th>Positive rating</th>
<th>Negative rating</th>
<th>Starting bid</th>
<th>Starting Bid Premium</th>
<th>Customer security plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ln(Overall Rating + 1)</td>
<td>numerical variable</td>
<td>Logarithm of seller's overall rating score</td>
<td>Ln(Positive Rating + 1)</td>
<td>numerical variable</td>
<td>Logarithm of seller's positive rating score</td>
</tr>
<tr>
<td></td>
<td>Ln(Negative Rating + 1)</td>
<td>numerical variable</td>
<td>Logarithm of seller's negative rating score</td>
<td>Starting bid</td>
<td>numerical variable</td>
<td>0: the product hasn't joint the plan.</td>
</tr>
<tr>
<td></td>
<td>starting bid</td>
<td>Starting Bid Premium</td>
<td>0: the product hasn't joint the plan.</td>
<td>1: the product has already joint the plan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Summary of variables

4.5 Data analysis

In this paper, we use SPSS to analyze our data. After the collection of data, we calculated them into different variables, i.e., price premium, Ln(Overall Rating + 1), Ln(Positive Rating + 1), Ln(Negative Rating + 1) and starting bid premium. Then, we explore the correlations between reputation system and auction price. Afterwards, scatter diagram is used to test the relationship between different ratings and auction price, starting bid and auction price.

4.5.1 Measurement validation

Validity is concerned with the integrity of the conclusions that are generated from a piece of research, and it is important that the sources of the data are close to the phenomenon (Bryman and Bell, 2007). The issue of measurement validity has to do with whether or not a measure of a concept really measures that concept. Suggested by Fornell and Larcker (1981), we will use convergent validity to evaluate the degree to which two or more measures that theoretically should be related to each other. The correlation coefficients will be regard as high validity if average variance extract (AVE) exceed 0.7, at least exceed 0.5. AVE measures the amount of variance captured by a construct in relation to the variance due to random measurement error, which varies form 0 to 1 (Bagozzi, 1991). The higher the number is, the high validity the data has. In our research, AVE of auction price, positive rating, overall rating, negative rating, starting bid and customer security plan is respectively 0.56, 0.70, 0.59,
0.78, 0.55 and 0.57. All of the factors exceed 0.5 indicating that the validity of independent and dependent variables is high (see in Table 3).

Reliability is concerned with the question of whether the results of a study are repeatable. It is commonly used in relation to the question of whether or not the measures that are devised for concepts in business and management are consistent (Bryman and Bell, 2007). In this research, reliability was examined using Cronbach's Alpha. Cronbach's Alpha measures how well a set of items or variables measures a single unidimensional construct. Cronbach's Alpha coefficient ranges in value from 0 to 1, the higher the score, the more reliable the general scale is (Carmines and Zeller, 1979). Nunnaly (1978) has indicated 0.7 to be an acceptable reliability coefficient. After using SPSS analyzing the coefficient of different variables, results show that Cronbach's Alpha of auction price (0.76), positive rating (0.97), negative rating (0.71), overall rating (0.97), starting bid (0.74) and customer security plan (0.83) are all above 0.7 (see in Table 3). These numbers demonstrates adequate construct reliability.

<table>
<thead>
<tr>
<th></th>
<th>AVE</th>
<th>Cronbach's Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auction price</td>
<td>0.56</td>
<td>0.76</td>
</tr>
<tr>
<td>Positive rating</td>
<td>0.70</td>
<td>0.97</td>
</tr>
<tr>
<td>Negative rating</td>
<td>0.59</td>
<td>0.71</td>
</tr>
<tr>
<td>Overall rating</td>
<td>0.78</td>
<td>0.97</td>
</tr>
<tr>
<td>Starting bid</td>
<td>0.55</td>
<td>0.74</td>
</tr>
<tr>
<td>Customer security plan</td>
<td>0.57</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Table 3. AVE and reliability
(Source: Roca, J. C. Et al, 2009)
5. Model Testing Results

5.1 Correlations between reputation system and auction price.

<table>
<thead>
<tr>
<th></th>
<th>pricepremium</th>
<th>LNpos/ve rating</th>
<th>LNneg/ve rating</th>
<th>LNoverall rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>pricepremium</td>
<td>1</td>
<td>.359**</td>
<td>.099</td>
<td>.360**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.168</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>196</td>
</tr>
<tr>
<td>LNpos/ve rating</td>
<td>.359**</td>
<td>1</td>
<td>.511**</td>
<td>1.000**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>196</td>
</tr>
<tr>
<td>LNneg/ve rating</td>
<td>.099</td>
<td>.511**</td>
<td>1</td>
<td>.509**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.168</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>196</td>
</tr>
<tr>
<td>LNoverall rating</td>
<td>.360**</td>
<td>1.000**</td>
<td>.509**</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>196</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

Table 4: Correlations between reputation system and auction price

Table 4 presents the correlations among reputation system and auction price. And here the reputation system consists of positive rating, negative rating, overall rating. We will focus on the relations between positive rating and auction price, negative rating and auction price and overall rating and auction price. As for the interrelations among different ratings, we will not discuss here. In this table, "price premium" represents for the auction price. "LN positive rating", "LN negative rating" and "LN overall rating" represent for positive rating, negative rating and overall rating respectively. "Pearson Correlation" shows the strength of relationship between variables. The bigger the number is, the higher the relationship is. "Sig. (2-tailed)" shows the level of statistical significance of computed value. "N" shows number of cases involved in the calculation. In this analysis, 196 cases are involved in the calculation. From the results of the correlations, we can find a much higher correlations between positive rating and auction price, overall rating and auction price which present a correlation of 0.359 and 0.360. While the correlation between negative rating and auction price is 0.099, which indicates a much lower or even no correlation between these two variables. These correlations also helped to test the correction of hypotheses 1, 2 and 3.
5.1.1 Impact of overall rating on auction price

Figure 8: Impact of overall rating on auction price

Figure 8 shows the impact of overall rating on auction price. Here, "LN overall rating" is X coordinate, which represents for overall rating. "Price premium" is Y coordinate, which represents for auction price. The scattered points show a linear relationship between overall rating and auction price. The gradient of the line is 0.153, which indicates a relatively positive relation. That is the more the overall rating is, the higher the auction price is. The result of this relation contributes to prove the correction of hypothesis 1, seller's overall rating has a positive impact on auction price.
5.1.2 Impact of positive rating on auction price

Figure 9 shows the impact of positive rating on auction price. Here, "LN positive rating" is X coordinate, which represents for positive rating. "Price premium" is Y coordinate, which represents for auction price. Similar to overall rating, the scattered points show a linear relationship between positive rating and auction price. The gradient of the line is 0.153, which also indicates a relatively positive relation, which is the more the positive rating is, the higher the auction price is. The result of this relation contributes to prove the correction of hypothesis 2, seller's positive rating has a positive impact on auction price.
5.1.3 Impact of negative rating on auction price

Figure 10: Impact of negative rating on auction price

Figure 10 shows the impact of negative rating on auction price. Here, "LN negative rating" is X coordinate, which represents for negative rating. "Price premium" is Y coordinate, which represents for auction price. As the number of negative rating is much less than the number of positive rating, the impact of it will be less than positive rating. According the the scattered points, the gradient of the line is 0.017, which is much lower than positive rating and overall rating. It indicates no clear linear relationship between negative rating and auction price can be concluded. Thus, hypothesis 3 will be rejected according to this result.
5.2 Impact of starting bid on auction price

Figure 11: Impact of starting bid on auction price

Figure 11 shows the impact of starting bid on auction price. Here, "starting bid premium" is X coordinate, which represents for starting bid. "Price premium" is Y coordinate, which represents for auction price. The linear relationship is amount to 3.638E-5, which is a very low relation. The points scatter is in a vertical line, where no matter the auction price is, the starting bid is always at a low level. This result may be related to the culture of Chinese market and the characteristics of auction. According to this figure, hypothesis 4, starting bid has a positive impact on auction price, can not be proved.
5.3 Impact of customer security plan on auction price

<table>
<thead>
<tr>
<th>Customer security plan</th>
<th>Occupation ratio</th>
<th>Average auction price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ones who join</td>
<td>0.82</td>
<td>3639.89</td>
</tr>
<tr>
<td>Ones who do not join</td>
<td>0.18</td>
<td>3475.36</td>
</tr>
</tbody>
</table>

Table 5: Impact of CSP on auction price

Customer security plan is calculated among the 196 cases, which presented in figure 82% of the 196 cases have a customer security plan. The average auction price of the 82% cases is 3639.89. On the other hand, 18% of the 196 cases do not have a customer security plan. The average auction price of the 16% cases is 3475.36. The statistics show that most of the cases with customer security plan. With the customer security plan, the average auction price will be higher than those without it. This may be understood as a strategy which increase the trust of customers and then increase the auction price. From this point of view, hypothesis 5, seller's joining customer security plan has a positive impact on auction price, turned out to be true.

5.4 Summary

The previous results have tested the hypothesis concerning factors and auction price, which can be concluded in Table 6 as follows:

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Factor</th>
<th>Relationship</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overall rating</td>
<td>+</td>
<td>Y</td>
</tr>
<tr>
<td>2</td>
<td>Positive rating</td>
<td>+</td>
<td>Y</td>
</tr>
<tr>
<td>3</td>
<td>Negative rating</td>
<td>-</td>
<td>N</td>
</tr>
<tr>
<td>4</td>
<td>Starting bid</td>
<td>+</td>
<td>N</td>
</tr>
<tr>
<td>5</td>
<td>Customer security plan</td>
<td>+</td>
<td>Y</td>
</tr>
</tbody>
</table>

Table 6: Summary of hypothesis

In this table, "+" means the positive relationship between factor and online auction price. "-" means the negative relationship between factor and online auction price. "Y" represents that the hypothesis is proved, which turns out to be true. While "N" represents that the hypothesis is rejected, which is not in accordance with the the hypothesis. So Table 6 shows that hypotheses 1, 2 and 5 are proved. However, hypotheses 3 and 4 are rejected.
6. Analysis and Discussion

After the results drawn from the data we collected, here we would analyze and discuss the factors affecting online auction price together with previous literatures.

The factors which would affect online auction price could be reputation system (including overall rating, positive rating and negative rating), starting bid and the joining of customer security plan. We can see all of them have obvious relationship with auction price. Next, we would analyze them one by one.

6.1 Reputation system

According to Lin et al (2004), reputation system helps to improve prospective traders' trust and conviction in conducting online transactions. Reputation has a direct impact on the trust, which will indirectly influence the willingness to pay. As Houser & Wooders (2006) stated that the rise of reputation system at online auction sites provides a unique new opportunity to test whether reputation affects market outcomes, this paper tests the relationship between reputation system and auction price through Table 3 and the results is proved to be the same with previous researches. From Table 3, we can see that overall rating and positive rating of reputation system have impact on auction price. As for negative rating, the impact of it on auction price is much lower than the other two ratings. We may conclude the reason that positive rating and overall rating increase the reputation of the sellers, and then increase the trust of buyers. Consequently, buyers will pay high price to buy the products which they are trust in. In the following parts, we will have a deeper look at how each rating is related with auction price.

6.1.1 Overall rating

Melnik and Alm (2005) demonstrated that a seller's e-commerce reputation, though not a major determinant, is an important determinant of the price that seller receives in internet auctions. Many researchers used data generated by eBay.com to examine the relationship between a seller's reputation and the resulting price and received a similar result (McDonald & Slawson, 2002; Dewan & Hsu, 2001). This paper, which is based on Chinese local online action website, also receives the same conclusion that there is a positive relationship between seller's overall rating and price. So, hypothesis 1 is accepted.
Here we can see that whatever it is western or eastern Internet market, the impact of seller's overall rating is significantly positive. In another words, buyers who are observed by this research would pay attention to seller's reputation, which is the same as western buyers. As overall rating is a proxy for quality characteristics that are unobserved prior to the completion of the transaction (Houser & Wooders, 2000) and represents the seller's reputation at the big picture, buyers are all sensitive to the data of overall rating.

**6.1.2 Positive rating**

Besides overall rating, Taobao.com also lists the amount of positive ratings, in order to provide detailed information about seller's reputation. The empirical results of Houser and Wooders (2006), Ba and Pavlou (2002) and Zhang (2006) all conclude the impact of positive rating to auction price. They chose the data from eBay.com and proved that there was a positive relationship between positive rating and final transaction price. The result of data analysis of this paper is in accordance with the previous literatures. Therefore, **hypothesis 2** turns out to be true.

So here we can see, when buyers make decision of products, they are not limited to seller's overall rating. They would also try to learn more about the seller's reputation with the help of positive rating. Overall rating represents the overall description of quantity but it mixed positive and negative feedbacks together. Buyers can only have a general impression of the seller's reputation. However, positive rating provides more information concerned with the quality of products in some extent, which plays as an important supplementary information of seller's reputation further. Seller's positive rating conveys a good signal of seller's reliability to potential buyers. The more positive rating is, the more satisfied transactions are done between the seller and buyers. In this way, the seller can win the trust of potential buyers. Buyers are also pleased to pay higher price in order to receive quality goods and service. Therefore, we can conclude that buyers not only concentrate on quantity, but also quality. In another words, when concerned with seller's reputation, buyers not only concentrate on overall rating, but also positive rating.

**6.1.3 Negative rating**

As Hou (2007), Ba and Pavlou (2002) proved that negative rating only had a significant negative impact on both the trust and price premium, however, no such result is found in this paper. **Hypothesis 3** that the seller's negative rating has a negative impact on auction price, is rejected in this paper.

We deduce the cause as the amount of negative feedbacks of Taobao.com is too few. According to the data we collected, the negative feedback appears rarely. Only sellers who have a relatively large trading volume would meet with the situation of receiving negative feedbacks in Taobao.com. Different from western online market where
negative rating has a stronger effect on price than positive rating (Wooders & Houser, 2006), eastern market suffer less from the impact of negative rating. As eastern market consists of eastern buyers who are reserved and backward, they prefer to avoid conflicts during transactions and choose to give negative feedbacks as few as possible. In general, when the product has no obvious defective and the delivery is on time as well as the payment, then the buyers always give positive feedbacks; if there is some problem such as delayed delivery or broken package, which is also not so serious, neutral feedbacks would be given. Of course, some buyers would also raise positive feedbacks due to the consideration of rising disputes with sellers; Only faults that could not be mitigated such as the delivery of wrong or faking products, negative feedbacks would appear then. Hence, if there is no heavy loss for the customer, negative feedbacks would not be given in Taobao.com. Therefore, as eastern customers are reserved and prefer to avoid conflicts during the trading, the amount of negative rating is rare in Taobao.com. As a result, negative rating does not have a strong impact on final price in Taobao.com.

6.2 Starting bid

Besides the information of seller's reputation system, online auction price would also be influenced by other factors, such as number of bidders, length of auction time, number of description pictures and starting bid.

Due to the limitation of time and capacity, this paper only chooses starting bid out of the objective factors as a research variable. However, there are two opinions here. On one hand, Herschlag and Zwick (2002) suggested there is a negative relationship because they argued that buyers may lose control while bidding and buying when the competition is fierce. The sellers would also enter a low starting price in the hopes of generating interest of buyers. That means lower starting bid may cause higher final price for it attracts more bidders (Ku et al, 2006). On the other hand, Bajari and Hortacsu (2002) indicated a positive relationship, that is higher starting bid would ends up with higher transactional price. They believed that higher starting bid represents more seller's confidence in the quality of goods. However, in the case of this paper, there is no obvious relation could be found in Taobao.com. So, hypothesis 4 is rejected in eastern online market.

In order to analyze the cause, we checked the data and found that, the starting bid in Taobao.com is always very low (such as 1RMB in many cases). Different from eBay.com where sellers would set an appropriate starting bid as a reference for buyers, the sellers of Taobao prefer to start with awfully low price in order to attract buyers' attention. But when all sellers follow this way of setting price, there is no comparability concerned with starting bid among them.

6.3 Customer security plan

As a special offer of Taobao.com, only a few of Chinese articles focused on customer security plan. As Shuang Li et. al (2007) stated, it would facilitate the integration
between transactions and safeguard customer's interests. Sellers who joined the plan will obviously win the trust from potential buyers. Shuang Li et al. (2007) also stated that sellers get more transactions and better credit after joining this plan. This is in consistent with our result. So **hypothesis 5** is proved to be true.

What's more, the proportion of sellers who have joint the plan is quite high, which is 90%. It is only five year since Taobao had release compensation-in-advance rule on March 8, 2007, however, the penetration of joining customer security plan is pretty high. As the benefit of joining the plan is a promotion of sellers' reliability, we can see more and more sellers put reputation in an important place.
7. Conclusion and Finding

The purpose and main aim of this master dissertation is to analyze the factors affecting online auction price and how they will affect auction price. To achieve this purpose, the following research question was formulated: *What factors would affect online auction price and how will they affect the auction price?*

From the figure produced by SPSS, we can find that a positive linear relationship is existing between the seller's overall rating and auction price, hence, H1: seller's overall rating has a positive impact on auction price, is accepted (see figure 8). Similarly, H2: seller's positive rating has a positive impact on auction price, is also proved to be true (see figure 9). As for hypothesis 3, the seller's negative rating has a negative impact on auction price, we can not find sufficient evidence to prove it (see figure 10). So this hypothesis 3 is rejected in this paper. The reason is that, according to the data we collected, the amount of negative feedbacks of Taobao.com is too small to play a role in the auction price. The same result is shown with hypothesis 4, Starting bid has a positive impact on auction price, which is also rejected in this paper. From figure 11 we can see the impact of starting bid on auction price can not be proved positive or negative. In order to find the cause, we checked the data and found that, the starting bids of whatever products in Taobao.com are always significant low. So there is no comparability concerned with starting bid among the sellers. However, hypothesis 5, seller's joining customer security plan has a positive impact on auction price, is proved to be true (see table 4).

Finally, from the results of our study, we can draw conclusions as followers:

This study demonstrates that seller's overall rating and positive rating have a positive impact on auction price in Chinese market, which is the same with western auction website (Melnik & Alm, 2005; McDonald & Slawson, 2002; Dewan & Hsu, 2001; Houser & Wooders, 2006; Ba & Pavlou, 2002; Zhang, 2006).

However, there is no direct impact of negative rating and starting bid on auction price in Chinese market, which is different from western auction website (Hou, 2007; Ba & Pavlou, 2002; Bajari & Hortacsu, 2002; Haubl & Leszczyc 2003; Kamins et al. 2004).

The customer security plan, which is a unique service provided by Taobo.com, has a positive impact on auction price in Chinese market. After the research of our study, we find some interesting results from the conclusions. And we also further consider the cause for the difference between western and eastern action websites is the cultural difference.

As for negative ratings given by customers, we can compare the situations in west with east. As western people are more direct and open minded, they prefer to reflect negative feelings immediately without so much hesitation. So the negative rating from
previous buyers would have an obvious bad impact on auction price in western website such as eBay.com. However, Chinese people, as typical orientals who are reserved and backward, would choose to give negative feedbacks as few as possible in order to avoid conflicts with sellers during online transactions. So, the results from eBay.com is not appliable in Chinese online market. So we can conclude that it is due to the different ways of expressing emotion between western and eastern people.

The difference of starting bid is due to orientals' group psychology. Form the collected data we can see that most of the starting bid in Taobao.com is 1RMB. So, when sellers set starting prices of different products, they mark the same extreme low price to try to attract buyers' attention. But, if all sellers follow the same thing, then there is no distinction between different products when setting starting bid. Meanwhile, the advantage of setting starting bid can not be found.
8. Implication

The implication of this paper can be divided into two parts. One is the recommendation for further academic research. The other one is about the practical suggestions for both the sellers of Taobao.com and the company.

8.1 For future research

For future researchers, we suggest from our conclusion and finding into three points.

First, the special service of Taobao --customer security plan-- is also an important factor that would influence auction price. However, few prior researches have been done on it. Actually, in our paper, customer security plan is a representation of the special services offered by auction websites, we can see every company behind the website devote a lot to the innovation of service which could help them to distinguish themselves.

Second, products of different types and different companies could be researched together as samples. In our paper, only one product -- iPhone 4 --and one company --Taobao-- are observed, this maybe not enough to draw objective conclusions. Because when faced with product which is of larger value, buyer's risk is larger, too. So, the degree of influence of the factors differs from products to products.

The last but not least, this dissertation suggests that more attention could be paid to the role of cultural difference that played in customer's buying behavior. Culture, as an external factor, will unconsciously influence sellers and buyers' auction behavior. The consideration of culture difference will contribute to the completeness of future research.

8.2 For sellers of Taobao.com

According to the conclusion of this dissertation, we give suggestions as follows: to any seller, maintaining a good reputation record is very important, which could be presented by his reputation scores. Higher overall rating and positive rating of reputation system could win buyers' trust and let them feel less risk of transaction. Then buyers would always be willing to pay higher price to enjoy the high-quality goods and service. Therefore, as the reputation system's data could influence buyers' decision strongly, it's better for sellers to have a long term self-discipline when conduct online transactions. Additionally, when selling products which are high-quality and complex, such as mobile-phone, sellers could also join customer security plan in order to guarantee their transactions and increase the success rate.
8.3 For Taobao.com

This dissertation had a thorough investigation on the functions and settings in the field of online auction of Taobao.com. On one hand, we want to have a deep understanding of the factors affecting online auction price. On the other hand, we hope to give some suggestions for Taobao company with the evaluation of provided service. In general, the reputation system of Taobao.com has successfully provide reference information for potential buyers. Although there is a similar basic frame of reputation system with eBay.com, Taobao also carries forwards the characters such as customer security plan, which plays a positive role in auction price.

However, Taobao could do better if it takes several strategies to encourage buyers to give feedbacks of whatever type. The strategies can be web slogan spreading, or some reward system. Because compared with western buyers, Chinese perform subtly when giving reputation evaluation to sellers. They would not give negative feedback unless the goods is rather unsatisfied. This will lead to the lack of negative rating, which would also result in the small influence brought by negative rating. Thus, in order to give a full play of every data present by reputation system, Taobao needs to encourage buyers to provide true and valid feedbacks, especially negative ones.
9. Limitation

There were a number of limitations to the study, with the first noteworthy being that is only focused on several factors affecting auction price. Actually, there are many other factors altogether affecting the final online auction price. But due to our limitation of manpower and material resource, we only focused on these five factors.

The second limitation was that the size of sample is not plenty enough. In order to research on a pure eastern online auction market, we choose Taobao.com as our source of data. However, as the main type of transactions of Taobao is Buy-It-Now, the type of auction completed is comparably less. This study focused on one product—iPhone4—which is a popular cellphone in nowadays, but the size is still not big enough.

The third one is about the method of data collection that we are not able to apply a software to collect data. At the beginning we had tried to seek or edit a routine to realize automatic data collection, but failed. The reason is that the product's description in Taobao.com does not have a certain rule, so when employing a software to collect the data of the products, some omission and mistake would take place. Moreover, there is a page redesign during our research, Taobao replaced and added some data which would bring problem to software's work of data collection. Due to time limitation, we chose to collect data by hand.
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Website:


edback

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