

Improving the ‘Cyber Lemons’ Problem with the Counteracting Mechanism in Chinese E-Commerce Market: Based on the Data from Taobao.com (China)

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ABSTRACT

As the e-commerce of the limit of space and bring up the virtual reality in the e-commerce market, the ‘cyber lemons’ problem resulting from the informational asymmetry of the qualitative uncertainty is getting worse, which is restricting the useful and profitable business. Based on the data from Taobao.com (China), this paper demonstratively analyzes the characteristics of ‘cyber lemons’ problem in Chinese e-commerce market and discuss the function of counteracting mechanism such as credit evaluation system, quality-intermediary and reputation. Finally, this paper offers some strategic thought for eliminating the cyber ‘lemons’ problem with the counteracting mechanism.

Keywords: cyber ‘lemons’ problem, counteracting mechanism, credit evaluation system, reputation, quality-intermediary

INTRODUCTION

‘Lemon’ is from the spoken language of ‘defective cars’, ‘second-hand car’ in the United States, it is a well-known metaphor for defective goods in economist’s vocabulary. ‘Lemon’ problem was suggested by the American economist George Akerlof (1970), who is one of Nobel Economics Prize laureates in 2001. Akerlof has initiated ‘lemons market’ theory and proved the result of asymmetric information: ‘Lemon’ problem reduces the transaction efficiency of market; therefore, there should be offset mechanism that restrains the negative effect results from the ‘Lemon’ problem^[1].

The Akerlof ‘lemons market’ theory studies the traditional markets (physical markets), but how about the cyber markets that are based on the Internet? In fact, when we are enjoying the convenience of the Internet we are up against a predicament: the informational asymmetry from the qualitative uncertainty is getting worse because of the virtual reality in the e-market. It will impede the normal and useful market transactions^[2].

The cyber ‘lemons’ problem is attracting the attention of a number of Chinese scholars. From the existing literature, the study about the cyber ‘lemons’ problem focused on the following aspects: (1) The study on the market mechanism. Pan has compared the similarities and differences of the cyber ‘lemons’ problem between the traditional market and e-commerce market^[3]. Li and Zhang have analyzed the cyber ‘lemon’ problem impact on the fixed costs and profit margins^[4]. (2) The study on the business operation model. Pan and Chen analyzed pricing strategy under the cyber ‘lemons’^[5]. (3) The Comparative Study. Pan has analyzed some e-commerce strategies to reduce the cyber ‘lemon’ problems in Japanese enterprises^[6]. (4) Risk research. Li and Yang have study the risk control about the cyber ‘lemons’ from the perspective of cybernetics^[7]. However, on the whole, these studies more remain in general analysis about principles and

lack the empirical research on the Chinese e-commerce market. Thus, there is still a certain amount of lag in guidance and practice. In fact, the current cyber 'lemon' problem is still the main obstacles on China's e-commerce.

According to 'The 21st Statistical Survey Report on the Internet Development in China' released by the China Internet Network Information Center (CNNIC), In December 2007, the online shopping rate of Chinese e-consumers was 22.1%, with the size of shopping reaching 46.40 million Yuan. In contrast, USA observed an online shopping rate of as high as 71% in August 2006^[8]. Recent three times report shows that the proportion of 'thinks the biggest problem in e-commerce market is good quality' is 43.8% (2004-11), 42.5% (2005-1), 48.4%(2005-7),46.2%(2005-11),43.4%(2006-7),45.1%(2006-11) ,46.8%(2007-5) and 42.6%(2007-11)^[9]. These facts illustrate that there exist the 'lemon' problems, which has seriously affected the development of the Chinese electronic commerce. The fact ask us attach importance to it. Now we take Taobao (www.taobao.com) as a case to discuss the role of counteracting mechanism such as credit evaluation system , quality-intermediary and reputation, and analyze the existing issues in order to offer a strategic thought.

EMPIRICAL ANALYSIS: BASED ON THE DATA FROM TAobao

Taobao (www.taobao.com) was founded in 2003 by Alibaba Company. Taobao has exceeded eBay and become China's largest C2C online trading platform in 2005.

The choice of samples and data

We chose the tea trading market as study object. The reason we chose tea market is that it has a lot of trading volume, multiple mass distributions and there is the possibility to reduce the uncertainty relying on the information.

Tea as a typical experience goods, their quality standards are not unified, the quality identification for the level not easy to be carry out. Unless there is a wealth of experience, it is difficult to identify their true quality and grade for the buyers after receiving merchandise. Thus, the buyer in the purchase of such products are most likely to take a negative attitude to deal with possible risk, that is, to choose low-price goods and refused to choose high-price goods. In other words, such commodities trading activities contain asymmetric information that is prone to result in 'lemon' phenomenon. At the same time, the gaps between the levels of tea are also relatively large, which is from a few dollars to a few thousand dollars. The data are widely distributed.

The sample we select is Longjing tea (a type of green tea in China). Time span is half a year (2008.1-2008.6).Until the data is collected completely, Longjing tea in Taobao has 8320 entries and 263 group valid data.

Explanatory variable

As an electronic market intermediary, Taobao is not responsible for identifying the quality of products, but Taobao provides a credit evaluation system. We mainly use four major credit value indicators from Taobao's credit evaluation system as explanatory variables: credit of sellers, favorable ratio of the seller, favorable number of commodity and price. We chose the accumulated monthly sales as the dependent variable.

- Credit of seller (X1)

Once Taobao members make a successful transaction with Zhifu-Bao (a type of instant payment software developed by Taobao), they can do a credit evaluation for the opposite side. Evaluation is divided into the three types: 'favorable evaluation', 'middle evaluation', 'poor evaluation'. Each evaluation is corresponding to a credit score: 'favorable evaluation' plus 1 point, 'middle evaluation' not plus any points, 'poor middle evaluation' minus 1 point. Taobao also stipulates that the total evaluation point between buyers and sellers must be less than 6 points every natural month. If there are many transactions between the same seller and buyer, more 'favorable evaluation' only is calculated 1 point; more 'poor middle evaluation' only is calculated -1 point. These provisions are to ensure that the credit value can reflect the true level of the seller's credibility.

- Favorable ratio of the seller (X2)

Favorable ratio of the seller means the percentage of number 'favorable evaluation' in total number. As the evaluations are occurred for each other, the buyer and seller would be more careful. The seller that has lower 'favorable evaluation' hardly sold goods.

- Price (X3)

Generally speaking, commodity price means the purchase price of goods. However, we can not directly use this price as the dependent variable data. The reason lies in the fact that there is a postage fee in addition to the price. Therefore the prices in this paper include the commodity prices and the postage fee.

- Favorable number of commodity (X4)

After the every transaction is completed, the buyers will be able to evaluate each commodity. If the purchaser has been evaluated, the total number of these assessments will be recorded in the pages. The visitors can see the details of these assessments by clicking the page. Compared to the indicators above, this indicator is specific to each independent commodity and is the user feedback, which is more valuable for the buyer.

- Accumulated monthly sales (Y)

The merchandise display in Taobao has varying duration. If we take the total direct sales as the dependent variable for analysis, it is obviously inappropriate. Therefore, in order to eliminate the interference caused by difference in sale time, we should use the cumulative sales as the dependent variable of the estimated equation.

Data analysis

This paper use linear regression methods to analyze affect of the various factors on the sales. The model is as follows:

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4$$

Here x_1 , x_2 , x_3 , x_4 , y is credit of seller, favorable ratio of the seller, price, favorable number of commodity and accumulated monthly sales. We use Eviews5 to carry out multiple linear regression analysis. The analysis results and estimated equations are as follows:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1791.34341	725.7468676	-2.468275772	0.014241181
X1	0.000335417	0.000122748	2.73257637	0.006728938
X2	1788.300826	727.4967467	2.458156457	0.01463891
X3	-0.031288987	0.016283338	-1.921534007	0.055792266
X4	2.768445893	0.098399201	28.13484116	1.00709E-79

$$y = -1791.34341 + 0.000335417x_1 + 1788.300826x_2 - 0.031288987x_3 + 2.768445893x_4$$

$$t = (-2.46827577) \quad (2.73257637) \quad (2.458156457) \quad (-1.921534007) \quad (28.13484116)$$

$$p = (0.01424118) \quad (0.00672893) \quad (0.014638910) \quad (0.055792266) \quad (0.0000000000)$$

$$R^2=0.800 \quad F= 25.851 \quad D.W.=2.017$$

From this analysis we can found:

- 1) The level of the seller's credit has a significant influence on the sale of goods, although influence coefficient is not too big. The reason resulting in this phenomenon is that the valid data almost come from the sellers whose credit value is more than 10,000 point. Among them, the seller's credit value is more than 10,000 point account for 86 percent. The highest credit value is 73,335 points. At the same time, the data of sales are generally distributed between 10 ~ 500, therefore, a smaller coefficient is reasonable. The fact that the valid data is always focused on high value credit precisely indicates the seller's credit value has very great influence on commodity sales.
- 2) Favorable ratio of the seller is greater and has a significant influence on the sale of goods. This is because the ratio is less than 1. In all the valid data, 80% of sellers received favorable ratio more than 90%. Therefore, the change of sales is extremely sensitive to the changes of favorable ratio. In the actual business activities, the seller's sales whose favorable ratio is less than 90% have significantly affected. We also found that many buyers can accept the bottom line at a more than 95%.
- 3) Prices has a more significant influence for the sale of goods, but its coefficient is negative, absolute value is smaller. This shows that the higher prices of goods more difficult to sell. Because the buyers can not identify the quality, they can only accept low prices - this is the characteristics of cyber 'lemon'. The results show that in Taobao tea market, the cyber 'lemon' phenomenon still exists.
- 4) Favorable number of commodity is greater and has a significant influence for the sale of goods. From the data we can see that if the favorable number of commodity increase 1 point, commodities will increase sales of 2.768, while the price changes on the impact of sales is negligible. It shows that when we can not determine the quality of a commodity, the reference to the views of other people is a wise choice. This is similar to the 'word-of-mouth' marketing in traditional markets.
- 5) Above results show that in Taobao tea online sales market, a certain degree of 'lemon' phenomenon still exists. But, as the credit of seller, favorable ratio of the seller reveals the credit history and the consumer evaluation on quality as information supplementary, the impact of cyber 'Lemon' phenomenon is being undermined. Among them, the role of the latter is particularly evident.
- 6) Cyber 'Lemon' phenomenon not only exists, but also is strengthening. When we observe the overall data, we also found the seller with the same favorable number of commodity sales the goods obviously different: The number of low-price goods sold much higher than the number of at high-prices goods. In order to study this relationship, we divide each commodity sales by the favorable number of commodity sales and re-build the analysis model. We select unit favorable ratio as the dependent variable and select prices as the explanatory variables. We standardize the data in order to eliminate the impact of the units and then carry out the linear regression analysis. The analysis results and estimated equations are as follows:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.06578E-08	0.022422333	2.70524E-06	0.999998
X1	-0.485595802	0.14181129	-3.424239366	0.001492

$$y = 6.06578 \times 10^{-8} - 0.485595802x$$

$$t = (2.705 \times 10^{-6}) \quad (-3.424239366)$$

$$p = (0.999998) \quad (0.001492)$$

$$R^2 = 0.814 \quad F = 11.725 \quad D.W. = 1.790R$$

Regression results showed that the impact of commodity prices is a significant and strong. When Favorable number of commodity and sellers' credit are the same, the buyer is more willing to buy low-priced goods. This result shows when buyers browse a favorite seller's products, they tend to believe the information about evaluation and make their own decisions in accordance with the favorable number. However, the buyers is still worried about the quality of products, their behavior has the characteristics of 'lemon' market. These phenomena indicate that along with the e-marketing strategy counteracting the cyber 'lemon' problem, there may be a force that likely to strengthen consumers' distrust on the network environment. It may results in 'vicious circle' in dealing with the cyber 'lemons' problem.

CONCLUSION

With data analysis for Taobao, we can get the following conclusion:

- Credit evaluation system plays a particularly important role.

The credit evaluation system as an effective counteracting mechanism can weaken negative effects from cyber 'lemon' problem. Taobao as a successful C2C e-commerce sites, although it has not responsibility to appraise the quality of products, Taobao's credit evaluation system can better measure dealer's reputation. In addition, Taobao's credit evaluation system process information by the decentralized approach, transactions cost and the cost of information collection is very low. Therefore, compared with the tangible market, the network technology has greatly improved the efficiency of the transmission of information, so that the reputation mechanism can play a greater scope to reduce the 'lemon' phenomenon.

Compared with the United States, China's legislature for the Internet transactions is still very lag, so the Internet transactions should be greater reliance on market method. Therefore, the informal mechanisms of governance, in particular, the credit evaluation system and mechanisms can safeguard the transactions to carry out smoothly.

- The quality -intermediary's strategy can be an effective counteracting method.

In the network economy, many people think that intermediary services business will completely disappear because manufacturers and end-users can contact directly and the rapidly ^[11]. However, in fact, the intermediaries in e-commerce markets remain. The quality intermediates as the third-part have a great significance in counteracting the cyber 'lemons'. Although the transaction cost in e-commerce market increase with the participation of the middleman, the marketing efficiency enhanced simultaneously as well as. The more the qualitative distribution, the more we need the intermediary. We can confirm that the quality intermediates is an efficient approach to resolve 'lemons' problems in present e-market. The quality-intermediates as the third-part will have great development in the future.

- Considering the characteristics of Chinese e-consumer.

To reduce network transactions 'lemons' problem, we must fully take into account the Chinese e-consumer's acceptability to technology innovation. For example, Taobao uses 'one-mouth price' (single price) rather than auction sales and separately calculated credit evaluation system. It is more suitable for the actual situation in China.

- Preventing the 'speculation' of credit.

Taobao experimental evidence indicates there is ‘vicious circle’ phenomenon in dealing with the cyber ‘lemons’ problem. Existing evidence suggests that it is caused by the malicious speculation for credit in Chinese e-commerce market. Although Taobao's information-gathering and transmission of credit evaluation system is carried out by the auto-complete, but this information is made by the traders of their own. This will cause the ‘speculation’ of credit with false transactions, or buyers and sellers flatter or even revenge each other. Therefore, to prevent the seller using false transactions to ‘speculate’ credit is very important. Although Taobao has recognized this problem and take relevant measures, such as stipulating evaluation points between buyers and sellers not more than 6 points each natural months, adopting the real-name and increase punishment (or even the concealing ID) and other measures, but the effect is still not ideal. In my opinion, in order to regulate the behavior of network transactions and avoid credit speculation and credit fraud, we must explore non-market solutions. With the e-commerce policy and regulations gradually become clear and mature, we will solve or diminish the cyber ‘lemon’ problem for more options.

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