

## Game of The Parties to The Transaction Taobao

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**Abstract**—In this article the trading behavior of buyers and sellers in Taobao was analyzed from the perspective of game theory. The three trade expectations and their possible trade links and the corresponding solutions and the transaction model of Taobao Game of the parties were proposed. Moreover the measures of successful e-commerce transactions can not do without the protection of various effective was presented, which could prevent the occurrence of fraud, but also prompt the formation of Nash equilibrium game model, so that trading between the two sides was forced to choose to complete the transaction integrity of the transactions.

**Keywords**—Game; Nash equilibrium; Transactions; Taobao

### I. INTRODUCTION

With the rapid development of information technology and the popularity of the Internet, online shopping has become more and more consumer choice. And Taobao in terms of the number of registered users, or sales, have become China's largest C2C online trading platform, was first set up Taobao in 2003 was 30 million registered users, with annual sales of 7.3 billion, to In 2010, registered users has reached 370 million, with annual sales of 4,000 billion[1]. From these data we can see that the attitude of consumers shopping online has been suspected from the past into the present trust, the reason is mainly Taobao through a series of measures to continuously improve its market environment for trading Both sides in the online shopping process can be effectively protect their own interests, effective way to eliminate the occurrence of fraud, and create a shopping atmosphere of good faith. This article will analyze Taobao conduct of the parties in the transaction from the perspective of game theory, and find game ideas which are behind the various measures of the transaction process.

### II. C2C E-COMMERCE REVIEW THE GAME

C2C e-commerce at home and abroad on research concerning the game are mostly focused on how to credit rating and reputation by establishing mechanisms to achieve integrity aspects of trading. Zeng Yong, Mao Xu Wei is the first from the perspective of the game between the seller and C2C transactions, credit analysis mode selection [2]. Without integrity behavior of the buyers and sellers the most fundamental reason is that the asymmetry of information, effective way to solve this problem is to build credibility evaluation system. In China, for the credibility of the system

of C2C are: Jingbo Xian, Xu Feng, reputation-based trust model design and analysis [3]; Pu Chunhui, quiet, Fang Meiqi analysis of the shortcomings of existing evaluation model was established to improve the C2C e-Credit evaluation model business website and a new credit evaluation algorithm [4]. Abroad, Sulin Ba proposed: asymmetric information (information asymmetry) is the leading C2C e-commerce fraud in the primary cause of [5]. For the credibility of the System, Cynthia G. McDonald and V. Carlos Slawson Jr on eBay, the personal credibility of individual transactions and the issue of an empirical study, found that those with high credibility and low credibility in the price and there are different aspects of behavior[6].

In summary, for the Game of C2C e-commerce, whether domestic or foreign, mainly for the evaluation process and the reputation of the cumulative part of a study to solve the problem of asymmetric information, but very few buyers and sellers on the behavior of the transaction process Analysis. However, the author's personal experience of many Taobao buy and read a lot of relevant information found: transaction buyers and sellers have been able to succeed mainly because of the transaction process both are in a Nash equilibrium of the game model, and Taobao in On completion of the transaction of various measures to promote the formation of a Nash equilibrium.

### III. NASH EQUILIBRIUM BASED GAME TAOBAO BUYERS AND SELLERS TRADE

Nash equilibrium (Nash equilibrium), also known as non-cooperative game equilibrium, game theory is an important term to John • Nash named. Nash equilibrium is defined as: Suppose there are  $n$  individuals to participate in games, strategy given the conditions of other people, each person to choose their own optimal strategy (optimal strategy may depend on the individual may not rely on strategies of others), all they choose the strategy together constitute a strategic combination of (Strategy Profile). Nash equilibrium refers to the combination of such a strategy, this strategy combination of all participants by the composition of the optimal strategy, that is, given the case of other strategies, no single participant has a positive sexual selection and other strategies to no one has the enthusiasm to break this equilibrium[7]. Interpretation of a classic case of Nash equilibrium is the "prisoner's dilemma", in this case the non-cooperative game theory to lay the theoretical foundation, and it can be used as many real-life phenomenon of an abstraction.

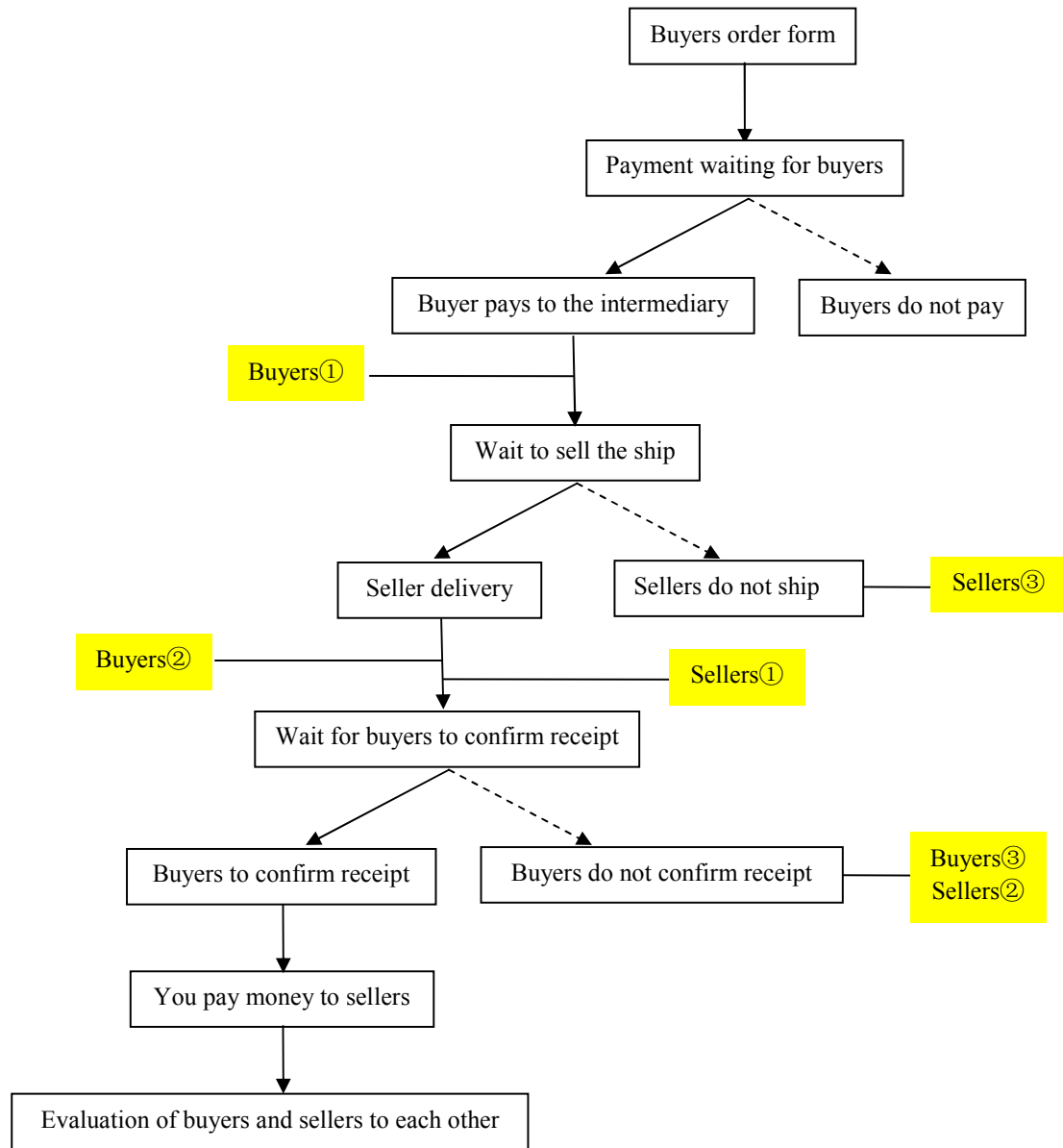


Figure 1. Taobao buyers and sellers transaction process

Fig. 1 Taobao transaction process between buyers and sellers, by the solid arrow path of the transaction is successful.

According to Taobao this transaction process, buyers and sellers on the transaction there are three types of results were expected, as shown in Table I. Eliminate the occurrence of the behavior of buyers in the following two transactions may occur in areas: ① "buyer payment to the intermediary, " after the seller does not ship (Fig.1, the "buyer ① " below); ② "buyers pay Money to the agency "after" the seller shipped ", but not within the prescribed time the goods to the buyer in the hands (Fig.1, the "buyer ② " below). Buyer fraud may occur in shipping but the buyer receives the seller

fails to transaction procedures, "confirm receipt", but a refund to the Seller (as shown in Fig.1, the "buyer ③ " below). The seller to prevent the behavior may occur in the following two trading links of: ① "seller's delivery" and the goods were to the purchasers, buyers and apply for a refund (as shown in Fig.1, "the seller ① " below) ; ② "seller's delivery" and the goods were to the purchasers, but within the prescribed time, "the buyer does not confirm receipt"(as shown in Fig.1, "the seller ② " below). Seller fraud may occur in the "payment to the intermediary buyers" after "the seller does not ship"(as shown in Fig.1, "the seller ③ " below).

TABLE I. TAobao IN THE EXPECTATIONS OF BUYERS AND SELLERS ON THE TRADING RESULTS

Transaction Participants expected	Buyer	Seller
Eliminate the occurrence of	Payment can not get the goods	Delivery shall not receive
Fraud	Do not pay to get the goods	No payment is received Delivery
Normal	Payment to get the goods	Payment is received Delivery

Taobao trading above expectations for a series of solutions developed to ensure the smooth progress of the transaction, the corresponding measures in Table II :

TABLE II. FOR THE EXPECTATIONS OF BUYERS AND SELLERS TRADING SOLUTIONS

	Transaction expected		Solutions
Buyers	Eliminate the occurrence of	"Buyers paid to the intermediary, " seller does not ship after (Buyers ①)	At this point the transaction status as "Buyer Payment" wait to sell the ship. " If the seller does not ship, the transaction will remain in a "buyer paid" status, the transaction state is not out, does not automatically play money to the seller, the transaction will not succeed and will not close automatically, you need to buy Home initiative to apply for a refund, to return the money, buyers apply for a refund, the refund if the seller has been untreated, the buyer 2 days after requesting a refund, the system default buyers and sellers have been reached by the buyer refund agreement and refund to the buyer. The transaction time-out state, the system will automatically refund to the buyer.
		"Buyers paid to the intermediary, " after "the seller shipped", but not within the prescribed time to the purchasers the goods (Buyers ②)	At this point the transaction status as "the seller has shipped" waiting for buyers "to confirm receipt. " Buyers can first contact the seller to verify shipments, please help extend the trading out the seller if the seller does not help extend the transaction timeout, the buyer can immediately apply for a refund, to avoid time-out play money, if refund 5 days after the seller does not respond, the system default buyers and sellers to refund the buyer has reached a refund agreement and refund to the buyer.
	Fraud	But the failure to receive the shipment buyer seller transaction process, "confirm receipt", but a refund to the Seller (Buyers ③)	At this point the transaction status as "the seller has shipped" waiting for buyers "to confirm receipt. " Based logistics company, "the goods to the signing" principle, the seller may be related to logistics in the website of the goods reach the buyer is truly the hands of fraudulent refund if the buyer by virtue of the evidence provided by logistics companies refused to refund the buyer or Proceedings to the buyer.
Sellers	Eliminate the occurrence of	"Sellers shipping" and the goods were to the purchasers, the buyer and refund (seller ①)	With the "buyer ③ " measures to address
		"Sellers shipping" and the goods were to the purchasers, but within the prescribed time, "the buyer does not confirm receipt" (seller ②)	At this point the transaction status as "the seller has shipped" waiting for buyers "to confirm receipt. " If the buyer within a specified time without any reason and no refund request confirmation of receipt, the system will confirm receipt according to types of goods within the time fixed confirm receipt, and to fight money to the seller.
	Fraud	"Buyers paid to the intermediary, " after "the seller does not ship" (seller ③)	With the "buyer ① " of solutions

Table II solutions resulted in the buyers and sellers in the trading game Taobao in the process of the formation of Nash equilibrium, game behavior analysis shows that buyers and sellers: The buyer in the transaction process, there are two active behaviors, namely, "payment do not pay ", confirm

receipt, do not confirm receipt "; seller in the transaction process has an active behavior, the "delivery, not delivery. "Assuming both parties are economic, that are in the trading process to maximize their own interests to pursue and eliminate the occurrence of acts set to pay for the -1, 1

payment fraud, payment behavior under normal conditions of 0, due to Taobao Provided for payment only after the buyer, the seller can be shipped, so the case of non-payment buyers will be unable to continue trading. Accordingly, the parties to the transaction Taobao game model shown in Table III:

TABLE III. GAME TRANSACTION BUYERS AND SELLERS IN TAobao

Payment Seller	Buyer	Payment	
		<i>Confirm receipt</i>	<i>Do not confirm receipt</i>
<b>Delivery</b>		0,0	1,-1
<b>No shipping</b>		-1,1	0,0

Note: ① The first number is the buyer's payment, the second number is the seller of the payment; ② Table 4 in the "payment" refers to payments to the intermediary, then the seller did not receive any money, "Confirm receipt" means you pay money to the seller, the seller really time payment is received.

Analysis of Table III shows, the parties to the transaction Taobao Nash equilibrium is: (the buyer does not confirm receipt of payment, the seller does not ship), indicating that each of fraud when buyers and sellers expectations, the transaction is not their dominant strategy. If the transaction continues, we can see from Table II, (the buyer to confirm receipt of payment, the seller does not delivery) and (the buyer does not confirm receipt of payment, the seller shipped) have both been Taobao fraud the corresponding solutions are developed to avoid, although this method is to avoid passive, but to ensure the transaction goes smoothly. Therefore, as long as the buyers and sellers in Taobao does not terminate the transaction, even if the process of fraud of any party's expectations will be limited due to various measures, so that they are forced to give up hope, turn to (buyers pay Confirm receipt, the seller shipped) game state, until the transaction is successful.

#### IV. CONCLUSION

Taobao, as China's largest C2C online trading platform, its comprehensive transaction security mechanism is to win much key Taobao consumer choice. Based on the transactions between buyers and sellers and the transaction process analysis of various measures, summed up the expectations of buyers and sellers each of the three transactions, each expects the trading process and the possible solutions to avoid the expected happened, come to the "Electronic The success of business transactions can not do without the protection of various effective measures, these measures prevent the occurrence of fraud, but also prompted the formation of Nash equilibrium game model, so that buyers and sellers are forced to choose to complete the transaction integrity of the transactions, "the Conclusion.

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