NEW MECHANISM DESIGN IN THE C2C ONLINE REPUTATION EVALUATION OPTIMIZING

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Abstract: In view of the assumption of the trader's bounded rationality, our research analyzed the defects of current reputation evaluation mechanism and the trust problem in the online trade. The mechanism was redesigned from the three aspects of the evaluation process, the accounting method of the reputation-limit and reputation rating scores, then, the system of "tell the truth" has been added to the mechanism to realize the improvement of incentive function in evaluation mechanism. In order to prove the effectiveness of the new mechanism, an algorithm example was given based on the sequential game analysis and Harsanyi transformation of the bounded rationality trader's decision-making. The results show that the new mechanism can effectively provide the decision-making information for the trading parties in the process of reputation evaluation, and encourage both parties of evaluation to select the "tell the truth" strategy achieving the maximum reputation score.

1 INTRODUCTION

Shorter distance and lower store costs have made the online trading change the traditional sales channels and consumption patterns, while, a unique "credibility crisis" caused by the market liquidity and transaction anonymity is increasing, become an obstacle to the healthy development of the online trading (Jennifer, 2006). Online Reputation Evaluation Mechanism (OREM, also known as online reputation evaluation system) came into being, in order to relive the "reputation crisis", enhance trust and other demands for traders. Kim et al (2003) discussed the problem of increasing consumer confidence, believes the key of trust should be start with personal information, product quality and price, and through the 10 known websites have proven the suitability, built the foundation of further empirical research. Anyone can easily enter or leave, change the identity in the C2C website that not only affect the dealer's trust, but also affect the continuation of online trading market that led the OREM become an important study issue; Yamamoto et al (2004) gave important suggestions to improve the confidence through the reputation evaluation using computer simulation. Mikhail et al (2002) thought the seller's reputation that can help online auction bidders to determine the quality through statistics of gold coin

auction; This proved "favourable" reputation has positive impact to the seller from one side. Jeffrey (2005) confirmed fatherly the seller's reputation and its marginal revenue appears inverse relationship based on the Mikhail's study. Kamins et al. (2004) analyzed the effects on the closing price from the interaction between the starting price and the seller's reputation, the results show that asymmetric information will increase the benefits of high credibility of the seller, while there was no significant relationship between the credibility and the seller proceeds within a similar amount of information. Cabral et al (2004) obtained that when the seller receives the first negative evaluation, the sales and selling prices will drop under the eBay's reputation mechanism, subsequently increased in the rate of negative feedback, the poor record seller may withdraw from (and may re-enter under a new identity), while the good record seller will get more and better trading opportunities, yet, Dahui et al (2004) analyzed the negative reputation on the impact of price and sales transactions, made an empirical study based on the data collected from eBay, and worked out the seller's life-long negative points, concluded the risk of the negative reputation was not big as Cabral expected. Dellarocas et al (2001, 2006a, 2006b, 2006c) proposed that the OREM has become a promising mechanism for trust

management, utilizing computer science, marketing, psychology and other field knowledge, analyzed how to promote the construction of credibility evaluation system, and discussed the reliability of the evaluation mechanism from the number of Buyers and sellers, the property of the participants, Market microstructure, anonymous and certification system evaluation, the future development of online reputation evaluation depends on the reliability of evaluation results.

In fact, the accused has not stopped on the OREM, mutual abusive messages can be seen anywhere on the web, mapping out there are flaws in the reputation of the mechanism in some extent. Chris et al. (2004) obtained a negative evaluation will lead undesirable consequences for their development through the empirical analysis and pointed out the contradiction between the reputation with the dissatisfaction about the transaction and explain the causes of conflict, but not deeply analyzed the inadequate of OREM. Christina et al (2008) analyzed the seller change their strategy through the generation of expected return and the results of dishonest conduct under an effective reputation mechanism, and the effectiveness of the percentage of 12-month evaluation results in eBay, the final design of the mechanism should start from raising the level of parameters, but lack of analysis of the behaviour of traders.

Any design and optimization of mechanism are complex systematic thinking process, not only analysis from the objective, but also sort out the characteristics of the participants. Some traders In the virtual web where more complex than the actuality due to difficult to "face to face" communicate may make non-rational behaviour (Yi Yang, 2009), therefore, the OREM design is to bound the irrational behaviour of traders and allow them make rationally decisions. However, in reality many people are not entirely rational "economic man" (Qing Wang, 2009), after Simon (1955) developed the concept of bounded rationality and made a satisfactory criteria, the bounded rational "social man" are gradually replaced fully rational "economic man" either in theory or in practical applications, for it is more close to reality. On et al. (2002) found in the virtual network environment, because they do not by any constraints, human reason is very limited. The secret identity of online transactions, a single expression characteristic determines the behaviour of its unique characteristics. Ariely et al (2003) pointed out that based on the decision-making motivation of different, "desperate" emotion in the online auction

process will distort value judgments of the auction and then exert an influence on strategic options. Yi Yang et al. (2007) took www.kongfz.com as an example, analyzed the process of online bidder's mental accounts changing and found the default rates were different: the small starting price and fare increase higher than the large one's, Participants' were randomly greater than the experts'. All above results directly or indirectly confirmed the bounded rational character of online traders.

Therefore, this article assumes that traders are bounded rationality: a. Although the trader pursuit their own credit score to maximize in the reputation evaluation process, but if the other party meet own expectations will be meet in the deal and the evaluation; b. Traders will be impacted by the evaluating competitors, that is forgive a little faults in the process of exchange with each other because of compassion.

2 NEW DESIGN PROCEDURES OF OREM

2.1 Design of the Evaluation Process

False reputation and retaliation are two outstanding issues of OREM. False reputation is collusive behaviour that traders who are familiar with each other through false transactions, thus achieving a false evaluation of the reputation. In reality, for avoiding this problem, both parties are required to submit their performance. Retaliation was mainly due to the uncertainty caused by information asymmetry the order of evaluation. Currently the seller and the buyer evaluated each other, after the transaction is completed (Figure 1).

In fact, after each deal, buyers will generate their own expect reputation E_B in the payment level, then, give opposite side a credit rating R_B as his compliance; And sellers results a credit rating R_S of buyer from the receipt of payment, then begins shipments and generates its own credit expectations E_S . When the transaction is completed, if the seller was the first evaluator, and $R_S < E_B$, the buyer will be discontented, and retaliate evaluation $R_B < R_S$ against the seller; Likewise, if the buyer was the first evaluator and $R_B < E_S$, seller will revenge and give the evaluation $R_S < R_B$. Therefore, first valuator will always give the opposite side a good reputation for other party can give his/her a good reputation, the result makes the OREM forfeit the role of boosting trust.
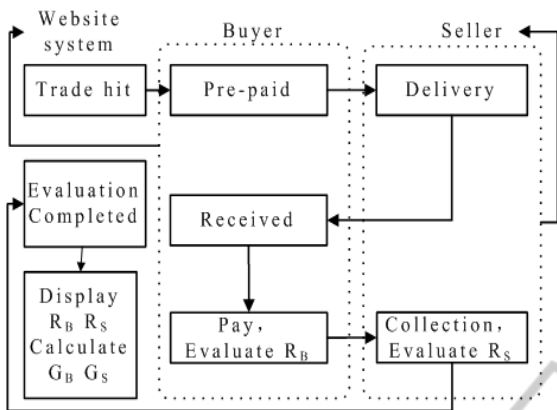
Figure 1: The current process of OREM.

The online bounded rational participants can transform the strategy of himself/herself and the adversary through information swapping. Participants all have variant frames of reference on reputation evaluation; they generally divided opposite traders into several ranks on the contract's duty performing: Give higher rank to the performance in good shape, give worse rank to the performance in bad shape and the defaulters. Therefore, designing the sequence of the reputation evaluation could commence from trader's information swapping, and then perfecting the OREM through confirmation on reputation scores. At the same time by way of better collecting results of reputation evaluation and providing trust sustentation for potential trading, website should definitely request all participants after trading successfully evaluating the reputation of the other party, who cannot steer next transaction within 120 days without giving evaluation. Therefore, we re-designed the order of the reputation evaluation mechanism (such as figure 2).

After the trade achieved, ① Buyer B pays first and submit performance testament (the electronics file of remittance receipt) on the website, then looks into the trading reputation history of S and submit the expectant rank E_B and justification of requisition; ② Seller S starts dispatch after receiving other party disbursement, then hands in own dispatch testament (post article of electronics file) on the website, then looking into the reputation expectation and the expectation justification of decide whether satisfied B's expectation, submit evaluation R_S and the justification, then looks into the trading reputation history of B and submits the expectant rank E_S and justification of requisition.

③After received goods, B decides whether satisfy S's expectation on S's duty perforation and the expectation and justification, then submit evaluation rank and justification. ④After the termination of evaluation, website show at the same time R_S and R_B, finally get G_B and G_S, the reputation scores of B and S, through reckoning and switching by a square function.
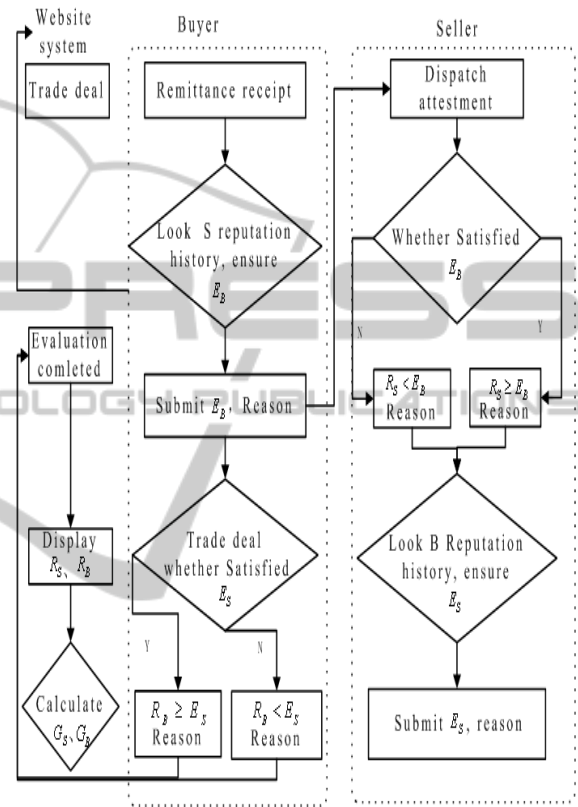

Figure 2: The flow of optimized evaluation.

The prevent OREM offer the function of leaving message after the evaluation, the optimized mechanism is variant, via the form of submitting own expectation and evaluating reputation for other party to realize communication of both parties' during the period of evaluation. Online communication is assistance and supplementary of the Realistic exchange (Peris, 2002) and help to alleviate both parties mood (Bark, 2006). So the form of information exchanging has significant advantages compared with the existing evaluation mechanism: The process of submitting expect grounds added opportunities to justify defects in their services and help to reflect on the inadequacies of their services, also can affect the opponent's selection of evaluation and achieve the ultimate objectives to reduce abuse and purify network.

2.2 Determination of Reputation Limit

Reputation limit, paipai (www.paipai.com) called as transactions weight, is given the different transactions a different reputation scores or weight, then use the level of evaluation to achieve the incentive role of evaluation, we take reputation limit replace the weights in order to reduce unnecessary confusion generated by adding the weight levels of evaluation. The prevent OREMs have not classified reputation limits, while generally determining the limit in two ways: ①Online trading platform, such as, eBay (www.ebay.com) and Taobao (www.taobao.com) have overlooked the existence of different transactions, reputation limit be identified as 1, and then use the other's evaluation to determine reputation score, such as "favourable" 1 point ,"bad " by 1 point, "moderate " no points; ② Paipai's single reputation score related two factors: Reputation evaluation and transaction amount, the formula:

Reputation score = Reputation evaluation * Transaction weights .

The weights of transaction amount are divided into 5 levels according to different intervals (Table 1), thus, the transaction of 0-1RMB (including 1) is no longer accumulate in the reputation score. if received "moderate" regardless of the amount of transaction, the transaction score is 0; if received "bad" and using the TenPay trading, the score will be minus based on the transaction amount, the more amount, the higher score deducted, and "bad "will affect the rate of the "favourable" evaluation; Similarly, in the received "favourable" circumstances, the higher the corresponding amount, the more bonus points, such as reputation evaluation is "favourable" and the transaction amount is 200 Yuan, then the reputation of the transaction as a "favourable"(+1) Multiplied by the transaction amount weight 2, gain the reputation score 2.

In order to achieve the mechanism of incentive role, introduced basic reputation limit and adjustable reputation limit. Basic reputation limit is determined a unique basic reputation limit for each different transaction amount, adjustable reputation limit is based on basic reputation provide an incentive compatible reputation limit on the other side's different evaluation level.

"Good", "medium" and "bad", three levels evaluation, in certain extent is a hierarchy of the trader's service. However, this classification does not fully describe the different people's perception.

Table 1: Paipai's weights of different transaction amount.

Transaction amount(RMB)	Weights
0-0.99	0
1-199.99	1
200-999.99	2
1000-5000	3
>5000	4

Generally, levels of the fuzzy evaluation is divided into excellent, good, medium and bad, so in order to better reflect the difference feelings of evaluator to the reputation difference of being evaluated party. This article is divided into the level of Reputation evaluate "excellent", "good", "medium" and "bad ", "terrible" five levels. On the basis of determining the level of evaluation, we can determine the different limit of the evaluating level in specific transaction amount. While, use R_2、R_1、R_0、R_{-1}、R_{-2} represent "excellent", "good", "medium", "bad" and "terrible". These levels not only may make the participants have better perception of the quality of goods and the fulfilment of obligations of trading partners, but also promote the participants to improve service quality for a higher Reputation score.

The incentive role of evaluating level should achieved by adjusting reputation limit, on the basis of determining the basic reputation limit C_1 ,determine the corresponding reputation limit adjustment of different transactions combining evaluating level and evaluating process. For adjustable reputation limit can use the following formula:

$$C(r) = rC_1 \qquad (1)$$

Among, $r \in \{r_2 = 2, r_1 = 1, r_0 = 0, r_{-1} = -1, r_{-2} = -2\}$ is the evaluation given by counterparty. By the value of R and the relationship between the reputation evaluation R and expectations E , we can arrive, $E = \{E_2 = 2, E_1 = 1, E_0 = 0, E_{-1} = -1, E_{-2} = -2\}$, if expect "excellent" as E_2 , expect "good" as E_1 , expect "medium" as E_0 , expect "bad" as E_{-1} , expect "terrible" as E_{-2} .

2.3 Incentive of Reputation Evaluation

The main role of prevent OREM is only to motivate the participants improve their own Reputation scores and grades, and then get more trading opportunities.

Although the Reputation evaluate level in some extent reduce the opportunistic behaviour of traders, but did not provide better incentives to promote traders to improve their level of service, unmatched that mechanisms design take information and incentive as study objects.

One of successful application of mechanism design theory is promoting the participants to tell the truth in the auction mechanism, order to achieve a balanced game, but the current mechanism could do anything about it. The reason is that Reputation evaluation system is a service mechanism, has essential differences with the trading mechanism; In the trading mechanism, strategy chosen by Participants under the action of the mechanism not only can affect the earnings of other participants, but also affect their earnings, but in the course of optimizing the evaluation process and the exchange of information, both strategies of evaluators only affect counterparties income (Reputation scores can be seen as Reputation resources) without affecting benefits of themselves. This mechanism cannot generate the game between the participants for maximize their own return, so OREM require introduce game analysis to solve this problem. To this end, by taking use of information exchange functions of OREM, the mechanism could deal with the participants' submission of expectations and evaluation through some kind of formula, achieving the game balance of participants.

"Tell the truth" is one of the basic principles of the effectiveness in mechanism design. The punitive role of mechanism guarantees traders submit their true expectation of reputation. If absence of punitive function in OREM, the majority of participants would choose to speculate in order to submit the highest grade " excellent " expectation, to allow the counterparty to give a higher evaluation, and ultimately get more trading opportunities. Limited rational trader in the face of punitive function will considered submitting "false" expectation would have loss of reputation, so that the punishment for "lies" reputation has become a key of mechanism design. In order to make trader submit their true expectation in the evaluation process, formula of the seller's ultimate score G_S for each indicator and the buyer's ultimate score G_B for each indicator as follows:if $R_S \geq E_B, R_B \geq E_S$, then

$$\begin{cases} G_S = C\left(R_B\right) \\ G_B = C\left(R_S\right) \end{cases} \quad (2)$$

② if $R_S \geq E_B, R_B < E_S$, then

$$\begin{cases} G_S = \dfrac{R_B - E_S}{R_2 - E_{-2}} C_1 + C\left(R_B\right) \\ G_B = C\left(R_S\right) \end{cases} \quad (3)$$

③ if $R_S < E_B, R_B \geq E_S$, then

$$\begin{cases} G_S = C\left(R_B\right) \\ G_B = \dfrac{R_S - E_B}{R_2 - E_{-2}} C_1 + C\left(R_S\right) \end{cases} \quad (4)$$

④ if $R_S < E_B, R_B < E_S$, then

$$\begin{cases} G_S = \dfrac{R_B - E_S}{R_2 - E_{-2}} C_1 + C\left(R_B\right) \\ G_B = \dfrac{R_S - E_B}{R_2 - E_{-2}} C_1 + C\left(R_S\right) \end{cases} \quad (5)$$

Based on the above formula, traders see expectation of the opposite and determine whether to meet the expectation, If determined to meet the expectations of all the indicators, choose " satisfied ", if not meet the expectations of all or part of the indicators, choose "dissatisfied", and then to re-evaluate the opposite's indicators.

Bounded rational participants submit their true expectations in the reference of the evaluating history of the opposite, and as much as possible to meet the expectation of the opposite. Only in special Satisfied circumstances or special dissatisfaction there will be higher or lower evaluation than the expectation of the opposite. This mechanism prevents the unnecessary dissatisfaction for both traders, and makes traders can not only see the other participants' evaluation to potential traders, also see their own position of potential traders. And providing more information whether the trader decide to trust a particular transaction, contribute to the trust of website trading environment.

3 TRADERS' STRATEGY CHOICE IN NEW MECHANISM

Although the two decisions are intertwined throughout the course of evaluation and being evaluated, because evaluation only related with the opposite's reputation scores, whereas the expectation related with own reputation scores, then following the attribution of reputation scores, the whole process will be divided into two sub-game to analyze. For each participant, the "evaluation" and "being evaluated" are taken as two different

processes. Specifically, the evaluation process (after seen the opponents' expectation) is to submit their evaluation to the opponent, but the being evaluated process is to submit own expectation (to be evaluation by opponent). In both processes, the two parties will adopt a different strategy in the submission of their expectations and evaluation to game between the traders. In part of the submit expectation of " being evaluated " process, each participant will have five strategies ("excellent", "good", "medium", "bad" and "terrible") for the different indicators to choose . While, based on the expectation and their own feelings of the services, the opponent will select a strategy from the five above strategies to cope with. Thus, five different expectations strategies and five different assessment strategies can be formed on a total of 25 potential game results (Table 2).

3.1 Sequential Game Analysis on Traders

Because the processes of game action one after the other, that is, both games firstly submit their own expectations for two being evaluated parties, then the other side will submit evaluations after known the expectations. The turn of decision time in the two sub-game process make the two games can be analyzed by sequential game: Buyers cannot accurately determine the evaluation grade of each indicator the sellers will submit, because they cannot exactly know the seller's specific experience for the level of buyer's service in the course of submitting their own expectations; The seller also can not accurately determine which grade the buyer will submit to buyer for the same reason. In the new mechanism ,there are two factors to determine the reputation scores, own expectations and opposite evaluation, expectations would be submitted in advance known evaluation each other, participants received incomplete information in this expectations submission, which makes the two sub-games are the incomplete information game. Then the evaluators make evaluation based on the submission of expectation. This allows evaluators to take advantage of information; making the evaluation and decision may be influenced by the reasons expectations and expectations. The Specific performance is the evaluator likely to adopt a "meet" strategy or may also take the "dissatisfied" policy. In the "dissatisfied" policy, the evaluator generally submits the evaluation less than the being evaluated expected. As bounded rationality of participants, also may submit the higher evaluation than

expectation, but this is less likely, because it may make their own cost of evaluation rise. The both sides are clearly aware of the above analyses of bounded rational evaluation. Therefore, the participants will also consider other possible reaction, so there will be the game process (Figure 3), If affected by being evaluated, evaluator would normally take the "meet" strategy, if not, then evaluator may adopt the "dissatisfied" policy.

Table 2: Scores of different expectations and evaluation.

Expectation	Evaluation	Scores
E_2	R_2	$(E_2,R_2)=2C_1$
	R_1	$(E_2,R_1)=(3/4)C_1$
	R_0	$(E_2,R_0)=-(1/2)C_1$
	R_{-1}	$(E_2,R_{-1})=-(7/4)C_1$
	R_{-2}	$(E_2,R_{-2})=-3C_1$
E_1	R_2	$(E_1,R_2)=2C_1$
	R_1	$(E_1,R_1)=1C_1$
	R_0	$(E_1,R_0)=-(1/4)C_1$
	R_{-1}	$(E_1,R_{-1})=-(3/2)C_1$
	R_{-2}	$(E_1,R_{-2})=-(11/4)C_1$
E_0	R_2	$(E_0,R_2)=2C_1$
	R_1	$(E_0,R_1)=C_1$
	R_0	$(E_0,R_0)=0C_1$
	R_{-1}	$(E_0,R_{-1})=-(5/4)C_1$
	R_{-2}	$(E_0,R_{-2})=-(5/2)C_1$
E_{-1}	R_2	$(E_{-1},R_2)=2C_1$
	R_1	$(E_{-1},R_1)=C_1$
	R_0	$(E_{-1},R_0)=0C_1$
	R_{-1}	$(E_{-1},R_{-1})=-C_1$
	R_{-2}	$(E_{-1},R_{-2})=-(9/4)C_1$
E_{-2}	R_2	$(E_{-2},R_2)=2C_1$
	R_1	$(E_{-2},R_1)=C_1$
	R_0	$(E_{-2},R_0)=-0C_1$
	R_{-1}	$(E_{-2},R_{-1})=-(3/4)C_1$
	R_{-2}	$(E_{-2},R_{-2})=-2C_1$

Under the new mechanism, if own expectation higher than the opposite evaluation, own reputation scores will be subtracted a value greater than 0 based on the opposite evaluation. Bounded rational participants will try hard understand each other's historical evaluation to guess the counter speculate evaluation preference, and determine possible evaluation then submit their expectation. Bounded rational evaluators in the case of equal or less than their expectations generally meet the expectations of counterparties to reduce the evaluation time, while in the case of higher than their expectations would choose the dissatisfied strategy, and then submit the real evaluation. Evaluators can be divided into different "kind speaker" and "ticklish speaker",

"kind speaker" is vulnerable to be affected by the submitted expectation and submit evaluation higher than their own feeling, but "ticklish speaker" is hardly being affected. In order to maximize their reputation scores, the being evaluated generally understand the types and preference of evaluators through the evaluation mechanism, then submit their own expectation.
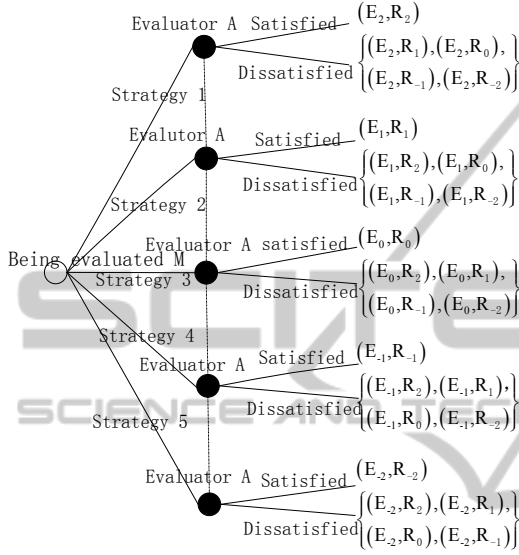

Figure 3: Sequential game of bounded rational traders.

3.2 The Harsanyi Transformation of Sequential Game

The reasons that participants estimate the opponents' possible evaluation in the process of submitting expectations mainly should be analyzed from three aspects: ① Maximization of reputation score and grade. Scholars study already confirmed that: the higher scores reputation seller will get more trading opportunities than the lower. ②Understanding of the opponent's preferences can be better to submit their own expectation, and maximize their reputation scores. Expectations higher than the evaluation of the opponent whose reputation score will be reduced, expectations equal to the evaluation of opponent will make their own score maximum. ③ Understanding of the opponent's preference is actually a process of reducing risk. Rational participant in any process of economic activities, if there is the opportunity to reduce uncertainty, all will be trying to fight for. Similarly, in the OREM process, participants all will try to understand the opponent's evaluation of preferences.
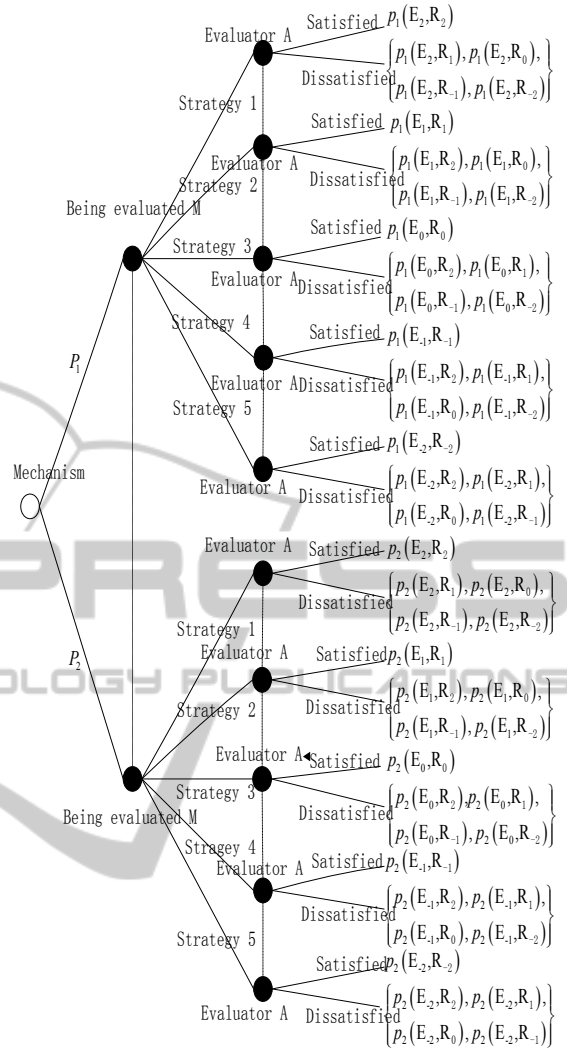

Figure 4: The Harsanyi transformation of Sequential game.

Sequential game of incomplete information can take Harsanyi transformation- introducing selection mechanism of super-participant "nature ", the game will be shifted into the analysis of complete information. For traders, the super-participant is the evaluation mechanism, not only promote the two sides to "speak the truth", but also provide the opponent's history of evaluation, so as to provide the decisive information of the opponent's preferences of evaluation. On the basis of confirmed participants will understand opponents' preference, the use of sequential analysis result of the game through Harsanyi transformation can analysis and evaluate problems of the balance of different strategies by two trading sides. New mechanism reserves records of each participant's evaluation: records of evaluating grade, records of evaluating reasons, and

records of expectations and reasons of expectations. So that participants can easily get possible evaluation of the opponents for their services, that is, can guess the probability of different opponents' strategies.

Bounded rational participants generally determine the probability of the counterparty's type based on the opponent's evaluating record and Corresponding evaluating reasons: "kind speaker" p_1 and "ticklish speaker" p_2, and $p_1 + p_2 = 1$, so the information of the being evaluated is also being turned into complete information. In the case of comparing reputation score under various strategies, the being evaluated can make better strategic choices.

3.3 Analysis of Algorithm Example

New mechanism reserves transaction information and evaluation of information of each participant. Transaction information which includes: transaction time, trading commodities, counterparty and transaction amount, and so on. Evaluation information, including: records of selection of evaluating strategies, records of evaluating reasons, and records of expectations and reasons of expectations. Transaction information can confirm the authenticity of the transaction in certain extent, while the evaluation information provides a basis for the determination of opponents' preferences. Participants can determine the probabilities of opponents' different strategy according the preferences of evaluation and their own level of service, then choose the strategy of submitting expectation based on the probability. Different risk preferences of participants may adopt different strategies, the favourable risk participants may prefer to take risky strategy, submit a higher expectation, and the risk-neutral participants may submit the greatest probability of strategy, as for the risk aversion of participants may submit smaller expectation. Therefore, we only make brief description of the strategic options to participants with different risk preferences, without deeply analysis and discussion.

Assume that there are evaluating histories of evaluator A:

(1) The total of evaluation 100 times, 50 times as "excellent", 30 times as "good", 15 times as " medium ", 3 times for the " bad ", 2 times for " terrible ";

(2) Among 10 times of the 'dissatisfied' strategy, 9 times were less than the opposite's expectation, the

reasons are poor package made the product has been damaged to some extent, the other 1 was out of the submitted expectation, the ground is product being packed well;

(3) Further 30 times evaluations meet the "excellent" expectations, but being noted that there are small defects in goods or other reasons.

The reputation limit of the transaction is 1.5, the probability of A as "kind speaker" is $[30/(30+10)]=$ 0.75, the probability for the "ticklish speaker" is $[10/(30+10)] = 0.25$, under all possible strategies the being evaluated M's scores can be seen in Table 3-4. And the evaluating history of A shows he has a certain preference to the package of products, while the probability of A's evaluation higher than the opposite's expectation is $(1/10) = 0.1$. Then assumed the being evaluated spent more energy in the process of mail package, through analysis of A's historical evaluation, he ensure their service achieved the "good" level (R_1).

Table 3: The reputation scores under kind evaluator.

Probability of kind evaluator：0.75		
Expectation	Evaluation	Scores
E_2	R_2	$0.75 \times 2 \times 1.5 = 2.25$
	R_1	$0.75 \times (3/4) \times 1.5 = 0.84$
	R_0	$-0.75 \times (1/2) \times 1.5 = -0.56$
	R_{-1}	$-0.75 \times (7/4) \times 1.5 = -1.97$
	R_{-2}	$-0.75 \times 3 \times 1.5 = -3.38$
E_1	R_2	$0.75 \times 2 \times 1.5 = 2.25$
	R_1	$0.75 \times 1 \times 1.5 = 1.13$
	R_0	$-0.75 \times (1/4) \times 1.5 = -0.28$
	R_{-1}	$-0.75 \times (3/2) \times 1.5 = -1.69$
	R_{-2}	$-0.75 \times (11/4) \times 1.5 = -3.09$
E_0	R_2	$0.75 \times 2 \times 1.5 = 2.25$
	R_1	$0.75 \times 1 \times 1.5 = 1.13$
	R_0	$0.75 \times 0 \times 1.5 = 0.00$
	R_{-1}	$-0.75 \times (5/4) \times 1.5 = -1.41$
	R_{-2}	$-0.75 \times (5/2) \times 1.5 = -2.81$
E_{-1}	R_2	$0.75 \times 2 \times 1.5 = 2.25$
	R_1	$0.75 \times 1 \times 1.5 = 1.13$
	R_0	$0.75 \times 0 \times 1.5 = 0.00$
	R_{-1}	$-0.75 \times 1 \times 1.5 = -1.13$
	R_{-2}	$-0.75 \times (9/4) \times 1.5 = -2.53$
E_{-2}	R_2	$0.75 \times 2 \times 1.5 = 2.25$
	R_1	$0.75 \times 1 \times 1.5 = 1.13$
	R_0	$-0.75 \times 0 \times 1.5 = 0.00$
	R_{-1}	$-0.75 \times (3/4) \times 1.5 = -0.08$
	R_{-2}	$-0.75 \times 2 \times 1.5 = -2.25$

Then from the comparative analysis of Table 3, we can clearly see in the case of determining the evaluator A as the "kind speaker", in order to

maximize its own reputation scores, M has two options in the process of submission of their expectations: the first is to submit "Good" (E_1), the score should be $0.75 \times (E_1, R_1) \times 1.5 \approx 1.13$; The second is to submit "excellent" (E_2), the score should be $\left[0.1 \times (E_2, R_2) + 0.9 \times (E_2, R_1)\right] \times 0.75 \times 1.5 \approx 0.98$.

Therefore, we can see from the above analysis, the risk aversion being evaluated M should choose to submit the "good" expectation; the preferable risk being evaluated may choose to submit "excellent" expectation.

4 CONCLUSIONS

About the current questioned online integrity and inadequate reputation evaluation mechanisms, the existing research results of bounded rationality as a precondition, this paper took the behaviour of a participant to optimize the defects of current crisis of confidence in reputation evaluation mechanism. In the process of Improve the existing evaluation mechanism, this paper mainly start form three aspects: Optimization of the evaluation process, the determination of adjusting reputation limit and reputation scores, in which optimization of the process of the evaluation is based on the existing processes to increase the new function of submitting expectation, providing preconditions for the " tell the truth " mechanism; Adjustment of reputation limit is to increase the incentive function and to match the level of evaluation, is an incentive reputation limit (or weight of transaction amount) on the adjustment of basic reputation limit. The paper divided the whole evaluation process into two sub-processes of "evaluation" and "being evaluated" in accordance with the various participants, and introduced the concept of "tell the truth" mechanism by determination of reputation scores, improved the incentive function of the mechanism. Finally, a sequential game analysis of traders' possible strategy choice, divided the participants into "kind speaker" and "ticklish speaker" and analysed with a algorithm example of Harsanyi transformation concluded that the best strategy choice of bounded rational participants under the incentive function of online trading system is to "tell the truth", in order to achieve the maximization of their own reputation scores, thus confirmed the validity of the new mechanism.

Table 4: The reputation scores under ticklish evaluator.

Probability of ticklish evaluator：0.25		
Expectation	Evaluation	Scores
E_2	R_2	$0.25 \times 2 \times 1.5 = 0.75$
	R_1	$0.25 \times (3/4) \times 1.5 = 0.28$
	R_0	$-0.25 \times (1/2) \times 1.5 = -0.19$
	R_{-1}	$-0.25 \times (7/4) \times 1.5 = -0.66$
	R_{-2}	$-0.25 \times 3 \times 1.5 = -1.13$
E_1	R_2	$0.25 \times 2 \times 1.5 = 0.75$
	R_1	$0.25 \times 1 \times 1.5 = 0.38$
	R_0	$-0.25 \times (1/4) \times 1.5 = -0.09$
	R_{-1}	$-0.25 \times (3/2) \times 1.5 = -0.56$
	R_{-2}	$-0.25 \times (11/4) \times 1.5 = -1.03$
E_0	R_2	$0.25 \times 2 \times 1.5 = 0.75$
	R_1	$0.25 \times 1 \times 1.5 = 0.38$
	R_0	$0.25 \times 0 \times 1.5 = 0.00$
	R_{-1}	$-0.25 \times (5/4) \times 1.5 = -0.47$
	R_{-2}	$-0.25 \times (5/2) \times 1.5 = -0.94$
E_{-1}	R_2	$0.25 \times 2 \times 1.5 = 0.75$
	R_1	$0.25 \times 1 \times 1.5 = 0.38$
	R_0	$0.25 \times 0 \times 1.5 = 0.00$
	R_{-1}	$-0.25 \times 1 \times 1.5 = -0.38$
	R_{-2}	$-0.25 \times (9/4) \times 1.5 = -0.84$
E_{-2}	R_2	$0.25 \times 2 \times 1.5 = 0.75$
	R_1	$0.25 \times 1 \times 1.5 = 0.38$
	R_0	$-0.25 \times 0 \times 1.5 = 0.00$
	R_{-1}	$-0.25 \times (3/4) \times 1.5 = -0.03$
	R_{-2}	$-0.25 \times 2 \times 1.5 = -0.75$

Mechanism design has an important guiding role in improvement of mechanism, while the implementation of incentive function determines the effectiveness of the mechanism design and optimization, thereby affecting its existence and development. Therefore, with species diversity and characteristic complexity of the mechanisms, how to determine the correct classification and the classification standards is the most basic of should be the next main research directions in the field of mechanism design.

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