The Effect of Emotion on Consumer Behavior in the Fan Economy

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Abstract: Fans' customer behavior is highly susceptible to emotions.Emotions play an important role in the interaction of consumers and objects of interest in the fan economy. Based on the bounded rationality hypothesis of game participants, the game model is constructed by using the emotional function. On this basis, we used the dynamic system theory to dynamically replicate the equations of the general 2x2 "Eagle Pigeon" evolutionary game, analyzed the behavior of both sides in the evolution ,and got the equilibrium point between the two sides of the game to explain the mechanism of influence of emotions on customer behavior in fan economy.

1. Introduction

With the development of the network and the transformation of young people's entertainment and sports lifestyles, young people have formed an Internet-based fan consumption model.One of the characteristics of the fan economy is that emotions influence consumer decisions.The utility of consumer behavior comes not only from consumer goods or services, but also from emotional satisfaction.In view of the fact that emotional factors have an important impact on consumer behavior in the fan economy, this paper discusses the mechanism of influence of emotions on consumer behavior decision-making in the interaction between consumers and their target audience (public figures/IP).

The research on consumer behavior mainly focuses on the impact of waiting time[3], delay announcement[7] on consumer behavior in the service industry, and the role of FGC public information in TV and online media on consumer spending decisions[1].These empirical studies imply that emotional cognition has an impact on consumer behavior, but has not studied its impact on fan consumers directly.Research on online consumer behavior shows that emotion has a significant impact on the mobile consumer experience[7], and consumer feedback behavior has a positive effect on product design in the fan economy[6].The post-event feedback model based on cognitive emotions in e-service was built[4].These studies show that emotions affect the consumer behavior of online consumers through interactive behaviors, but do not pay more attention to the role of emotions for

fans with such targeted and loyal consumers.At present, the research on fan economy and emotion mainly focuses on the sports industry. Research shows that mixed emotions change with the result of competition, and the emotional change of consumers is related to the moral behavior of athletes.These studies show that consumer emotions are dynamic throughout the consumption activity, which means that the evolution of consumer emotion and the decision-making of consumer behavior can be studied through an evolutionary perspective.

In view of the above research background, this paper built an evolutionary game model[2] of customer behavior in fans economy based on emotional factors , mainly discussing the following questions: 1) considering the role of emotional factors in the fans economy ; 2) in the continuous dynamic process, what factors influence the development of the evolution of customer behavior. Taking into account the characteristics of emotional continuity changes, the RDEU theory[5] is introduced to construct a continuous emotional function of decision makers. The model is solved by the method of system dynamics, and the optimal solution of the game strategy is obtained. The influence of emotion, action cost and benefit on the optimal decision is discussed based on the analysis.

This paper gave the optimal decision-making expressions of the evolutionary game in the fans economy. The results showed that the emotional heat has a significant impact on the behavior of decision makers. The research results provided a reference value for cultivating customers' fan behavior .

2. Case Analysis

According to the analysis of the evolutionary game behavior under the condition of bounded rationality, this paper considered the game model between customer and firm in fan economy .

Throughout the existing fan economy, the emotional interaction between consumers and merchants is of great significance to consumers' payment behavior. Through analysis, the customer as the selector has two strategies to choose: positive feedback and negative feedback; the firm as a product designer also has two strategic options choosing to change or unchanged . Based on the analysis of the factors affecting the two participants, the parameters corresponding to the relevant factors are set, and the customer is dissatisfied with consumption before participating in interaction. Therefore, if the firm does not take action, the customer would get -2 as income of positive feedback, and when the firm implements the changed policy, a certain degree of demand is achieved, and the income of the customer to negative feedback is 3.For the customer , the final benefit obtained through positive feedback is 8 minus the cost of feedback 1 ,so the result of the payment is 7. For the firm , when the customer is negative , don't do anything can still be ok. Therefore, the firm revenue is 8 at this time, and the firm needs to pay 2 for change; if the firm does not act when complaints occur, it will lose all even pay more, at that time firm return is -4; if the customer and the firm choose positive behavior at the same time, the customer gets 1/2 of its total return, and the firm positive strategy is less difficult to push. The cost of firm is reduced by 1, and the benefit is 7, which results in a strategic payment matrix that supports the customer and firm.

Table 1 :support group and government game payment matrix

		Firm	
		Unchanged	Changed
Customer	Negative feedback	$-2,8$	4,6
	Positive feedback	$7,-4$	3.5,7

According to the emotional function, the income functions of both parties are obtained as follows:

$$\overline{U_1} = (q^{r_1} \quad 1-q^{r_1}) \begin{bmatrix} -2 & 4 \\ 7 & 3.5 \end{bmatrix} \begin{pmatrix} z^{r_2} \\ 1-z^{r_2} \end{pmatrix} = 3.5 + 0.5q^{r_1} + 3.5z^{r_2} - 9.5z^{r_2}q^{r_1} \qquad (1)$$

$$\overline{U_2} = (z^{r_2} \quad 1-z^{r_2}) \begin{bmatrix} 8 & 6 \\ -4 & 7 \end{bmatrix} \begin{pmatrix} q^{r_1} \\ 1-q^{r_1} \end{pmatrix} = 7 - 11q^{r_1} - z^{r_2} + 13z^{r_2}q^{r_1} \qquad (2)$$

Find the first partial derivative of equation (1)

$$\frac{\partial \overline{U_1}}{\partial q} = r_1 q^{r_1 - 1}(0.5 - 9.5z^{r_2}) > 0 \qquad (3).$$

Summarizing the above analysis, for the Nash equilibrium of the eagle pigeon game, the following conclusions are obtained:(1)The mixed strategy Nash equilibrium of customer and firm is ((113)$r1$, 1-(113)$r1$)、((595)$r2$,1− (595)$r2$), but the equilibrium state is affected by the emotions and degrees ($r1$and$r2$) of customer and firm.(2)If customer and firm are not affected by emotional factors ($r1$=1, $r2$=1), the game at this time is the traditional eagle pigeon game.(3)If one party shows a positive attitude towards the strategy of "negative feedback" (or "unchanged"), then the Nash equilibrium of the game may be (negative feedback, unchanged), or (positive feedback,unchanged), (negative feedback, changed)($r1$>1,$r2$>1).(4)If one party is pessimistic about the "negative feedback " (or "unchanged ") strategy ($r1$<1 or $r2$>1), then the Nash equilibrium at this time may be (positive feedback , unchanged) or (negative feedback,changed); if both parties are holding positive emotions, meanwhile risk aversions exceed a certain level. Nash equilibrium may occur (positive feedback changed), which means that both sides will have a positive outcome .

It can be seen that the equilibrium state of the eagle pigeon game is not determined by the payment function that has been used in traditional game theory, but also related to the participants' emotional preferences and extent, and the latter plays a key role. After considering the results of a single game, the evolution behavior of the game is analyzed according to the dynamic equation.

Then construct the following game model according to the analysis ideas of this paper:

$$\begin{cases} \mathrm{F}(q^{r_1}) = \dfrac{\mathrm{d}q^{r_1}}{\mathrm{d}t} = q^{r_1}(1-q^{r_1})(\,0.5 - 9.5z^{r_2}) \\ \mathrm{G}(z^{r_2}) = \dfrac{\mathrm{d}z^{r_2}}{\mathrm{d}t} = z^{r_2}(1-z^{r_2})(\,13q^{r_1} - \,11) \end{cases} \qquad (4)$$

And separately analyze the evolution process of customer firm, then get

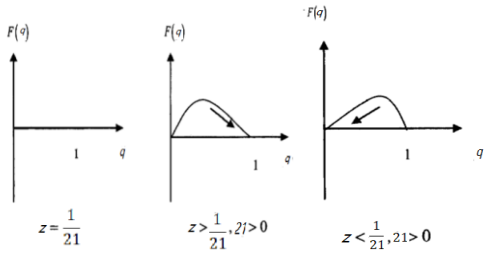

Figure 1 the graph of evolution stability of support group in different cases

The two evolutionary stability strategies of the customer are $q^{r_1} = 0$ and$q^{r_1} = 1$, and the critical condition is$z^{r_2*} = \frac{1}{21}$. When$z^{r_2} > \frac{1}{21}$, the customer is more likely to negative feedback ; on the contrary, the customer tends to positive feedback .

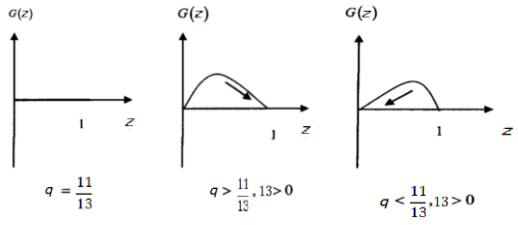

Figure 2the graph of evolution stability of government in different cases

The critical point of the firm is $q^{r_1*} = \frac{11}{13}$ and two evolutionary stability strategies are $z^{r_2} = 0$and $z^{r_2} = 1$ .When$q^{r_1} > \frac{11}{13}$, the firm was more likely to unchanged ; on the contrary, the government preferred to change.

3. Conclusion

Under the condition of considering the emotional fluctuation of participants, this paper constructed the evolution model of fans market , and studied the decision-making problems of customer and fir during consumption process. The utility of fans in the model is an exponential function of their own preferences and emotions. Using the theory of system dynamics, we obtained the equilibrium point of evolution of both sides. Meanwhile, using comparative static analysis, this paper discussed the effects of factors such as emotion, action cost and income on the optimal decision and benefit of both parties. The results showed that under the influence of emotions, the strategic choice of fan is affected by cognitive differences . The more positive the emotion is, the more conservative the fan's strategy is.In the future work, factors that affect emotions can be further introduced, or the evolutionary game of the fans market can be extended to a three-player game (to make the problem more in-depth exploration.

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