An Investigation into the current Situation and support for the development of the "Anxin Pay"payment model in Gongshu District, Hangzhou City

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Abstract: To prevent the prepayment consumption trap of "institutions closing down and running away, with no way to recover the money from recharge cards", the Hangzhou Municipal Government has launched "Anxin Pay" with great fanfare, launching a battle from the collapse of trust to its reconstruction. This article focuses on the hot issues of prepaid consumption and takes Gongshu District of Hangzhou City as the research site to deeply study the support degree of consumers in Gongshu District for the "Anxin Pay" payment model. This paper uses descriptive statistics to explore the usage intention and recommendation intention of the survey subjects, and builds an identification model for the consumer support of "Anxin Fu" based on Fisher discriminant analysis, in order to further optimize the promotion strategy of the future "Anxin Pay " payment model.

Key words: "Anxin Pay" payment;model Support level;Fisher discriminant analysis

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1 Investigation background

1.1 The prepaid consumption market is rife with chaos

In daily life, consumers often encounter difficulties such as merchants "running away" and having no place to complain due to prepaid consumption. The prepaid consumption market is in a state of chaos, and the issue of consumer rights protection urgently needs to be addressed. The Implementing Regulations of the Consumer Rights and Interests Protection Law of the People's Republic of China, which will come into effect on July 1, 2024, has listed the regulation of prepaid consumption as a key focus. Hangzhou took the lead in action. Led by the Hangzhou Market Supervision and Administration Bureau, Alipay, in collaboration with Hangzhou Bank, launched the "Anxin Pay" product. By leveraging innovative models and technological means, it ensures the safety of consumers' prepaid funds, boosts consumer confidence, and restores trust between merchants and consumers.

1.2 Definition of the Concept of "Anxin" Pay

Consumers can make purchases by searching for "My Life" on Alipay, or scan the code in offline stores to recognize the Anxinfu brand and enter the Anxinfu merchant Alipay mini-program to place orders and use it. Under the Anxin Pay product model, a user's one-time payment will be directly transferred to the bank account designated by the merchant, and the merchant cannot directly withdraw the consumer's payment funds. The platform and the merchant will jointly agree with the bank that only when the user confirms to enjoy the service on the merchant's side can the merchant deduct the user's payment amount based on the actual consumption amount, and the bank will complete the fund transfer for the user's single service enjoyment.

2 Research Methods

2.1 Data Collection

This study adopted a combination of online questionnaires and offline interviews. Through stratified sampling and typical sampling, a total of 750 questionnaires were distributed, and 732 valid questionnaires were retrieved.

2.2 Data Analysis Methods

Descriptive statistics: Analyze the basic characteristics of respondents and the distribution of overall consumption willingness.

Fisher Discriminant Analysis: An identification analysis of consumer support

3 Results and Analysis

3.1 Overall Analysis of Support

In the survey, consumers showed a high support rate for the promotion of the "Anxin Pay" payment model. More than half of the respondents supported it, among which 19.5% strongly agreed and 44.4% agreed. This might stem from the fact that "Anxin Pay" has addressed consumers' pain points in terms of transaction security and process transparency. However, 25.6% of the respondents had no clear opinion, which might be due to insufficient understanding of "Anxin Pay". However, 9.6% and 1% of the respondents disagreed or strongly disagreed, perhaps due to their habituation to traditional payment methods and having doubts or misunderstandings about emerging models.

After learning about "Anxin Pay", the consumption willingness of most consumers has been enhanced. Among them, 18.8% think it is very helpful, and 57.3% think it is helpful. This is mainly attributed to the fact that the bank custody mechanism and platform supervision have reduced risks and enhanced trust. However, 20.8% still adopt a wait-and-see attitude, while 2.4% and 0.7% believe it is of no or no help at all.

Consumers hope that the industries covered by "Anxin Pay" present diverse demands. The sports and fitness industry has the highest demand, followed by beauty and hairdressing services and entertainment facilities services. Domestic services and catering also have strong demands, while pet diagnosis and treatment and education and training are relatively low. Relevant departments and platforms should enhance the promotion of "Anxin Pay" in high-demand industries, explore other application scenarios, and conduct research in low-demand industries to improve the coverage effect of "Anxin Pay".

3.2 Consumer Support Recognition Based on Fisher Discriminant Analysis

We further conducted a user profiling analysis to discuss consumers' support for Anxinfu and its influencing factors. First, based on the survey data, we classified consumers' attitudes into three categories: support, neutrality and non-support.

Considering that consumers' understanding of the "Anxin Pay" payment model, their willingness to use "Anxin Pay" for consumption, and their willingness to recommend people around them to use "Anxin Pay" for consumption may determine their support for "Anxin Pay", we have selected three variables, namely "understanding level", "willingness to use", and "willingness to recommend", as explanatory variables. Among them, the "degree of understanding" reflects the clarity of consumers' understanding of the "Anxin Pay" payment model process, which is particularly important in the early stage of promotion. "Willingness to use" measures consumers' willingness to use this payment method when making purchases. "Recommendation willingness" reflects consumers' trust and loyalty to the payment method, indicating whether they are willing to promote it to others.

In the process of classifying user support, we employed the Fisher discriminant analysis method, which is a very common classification method. Because Fisher discriminant analysis can find the projection direction that maximizes the inter-class distance and minimizes the intra-class distance, making the separation degree of different categories in the projected space greater, it is very efficient when using this model to handle classification tasks. Affected by its linear characteristics, the interpretability of the results is strong. We randomly selected 582 pieces of data as the training set and the remaining 150 pieces of data as the test set to construct the Fisher discriminant model.

Based on the eigenvalue test of discriminant analysis, the eigenvalues of function 1 and function 2 are 1.819 and 0.001 respectively. The total variance percentages were 99.94% and 0.06% respectively; The relevant results are shown in Table 1.

Table 1 EigenValue Table of Discriminant Function

Function	Characteristic value	Percentage of variance (%)	Cumulative percentage (%)	Typical correlation
1	1.819	99.94	99.94	0.803
2	0.001	0.06	100	0.027

After conducting the Wilke Lambda test, the significance of each discriminant function was obtained as 0.000 and 0.844, respectively. At the significance level of α = 0.05, only function 1 has discriminant significance. Since the variance percentage of the first function reaches 99.94%, the first discriminant function is selected to construct the model.

Table 2 Wilke Lambda Test

Function test	Wilke Lambda	Chi-square	Degree of freedom	Significance
1 up to 2	0.354	484.364	6	0
2	0.999	0.339	2	0.844

After verification, it was found that the constructed Fisher discriminant function was reasonable, and the following Fisher discriminant function coefficient table and discriminant classification function were obtained:

$$Y = -6.393 - 0.012X_1 + 1.028X_2 + 0.733X_3$$

Table 3 Coefficient Table of Fisher's Canonical Discriminant Function

Indicator	Unstandardized canonical discriminant function coefficients
Degree of understanding X_1	-0.012
Willingness to use X_2	1.028
Recommendation intention X_3	0.733
（Constant）	-6.393

To evaluate the accuracy of the classification results, we introduced a confusion matrix, which is a tool used to assess the performance of classification models and can visually observe the model's performance in different categories. By constructing the model, we obtain the confusion matrices of the training set and the test set, as shown in the following figure. It can be observed that the confusion rate is relatively low, indicating that the model has a good structure and the obtained results are very accurate.

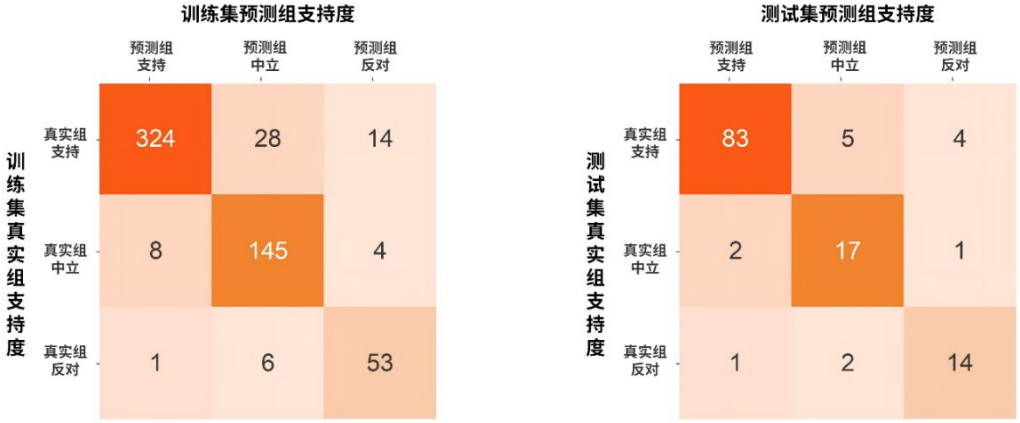

Figure 1 shows the confusion matrix diagram of the training set and test set in Fisher discriminant analysis

We also conducted a quantitative analysis of the classification effect of the model, and the obtained prediction results are shown in Table 4 below. The support degree of consumers' real choices in the questionnaire is on the far left. The prediction support degree of the prediction group refers to the support degree of the predicted object obtained by using the Fisher discriminant function for discrimination. Accuracy rate refers to the probability of correct prediction in a certain category, that is, the ratio of the number of correctly classified samples to the total number of samples. The recognition rate refers to the percentage of the number of input patterns that are correctly recognized to the total number of all recognized input patterns, reflecting the proportion of those that are correctly recognized. Ultimately, we found that the probability of successful prediction was 86.89%, which was quite good.

Table 4 Support Prediction

Real group support	Prediction group prediction support degree	Accuracy rate（%）

	Support	Neutral	Not supported	
Support	407	33	18	86.97%
Neutral	10	162	5	86.63%
Not supported	2	8	67	87.01%
Recognition rate（%）	97.14%	79.80%	74.44%	

Based on this, we conducted a ROC test and plotted the ROC curve. The specific results are shown in the following figure. It was found that the area below the prediction probability curve was relatively large, and the classification effect of the model was better.

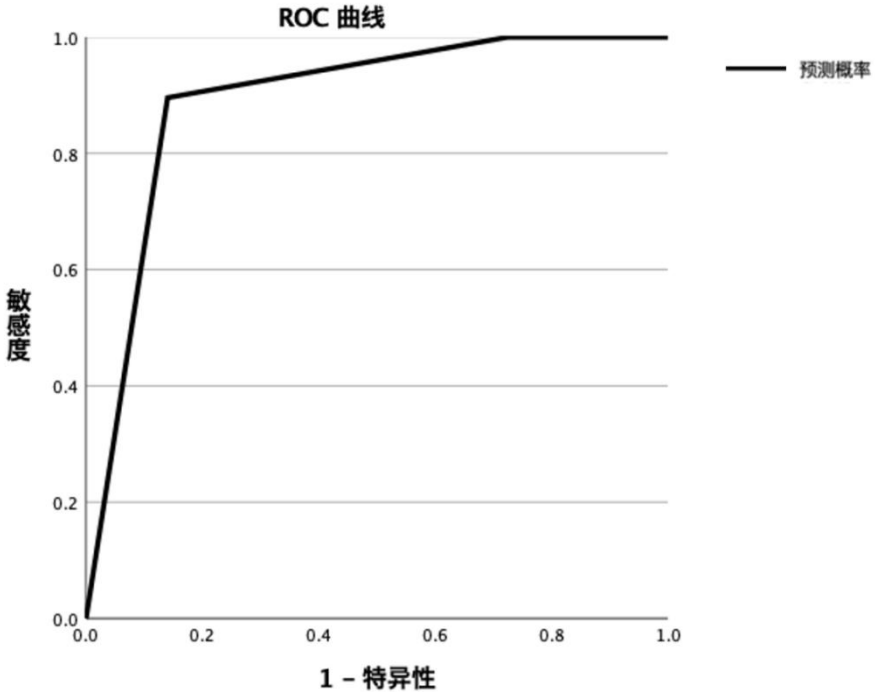

Figure 2 ROC test graph

We further analyzed the significance of the three variables in influencing consumers' support for the "Anxin Pay" payment model based on the model. The behavioral patterns of consumers when choosing payment methods have a significant impact on the promotion effect of "Anxin Pay". For instance, consumers with a high recommendation intention and those with a low recommendation intention may show different attitudes when choosing payment methods. Consumers with a high recommendation intention are more willing to propose to use "Anxin Pay" together with people around them when making payments. The group attribute will drive more consumers to use and promote it. Consumers with a lower willingness to recommend "Anxin Pay" may have doubts or concerns about it, making it even more difficult to encourage others to support its promotion. These behavioral patterns can all be reflected in Fisher discriminant analysis through relevant variables. By integrating social cognitive theory and planned behavior theory, we can more deeply explain the behavioral motivations of consumers and understand their payment choices in specific situations.

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