

Bank Marketing Strategy Based on Consumer Loan Behavior Prediction

Yao Peng^{1,a}, Jiawei Liang^{2,b}, Wenqi Zhang^{3,c,*}, Mingyuan Liu^{4,d}

¹*Department of economic, university of California, Santa Barbara, 93117, the United States*

²*Business administration, HuaQiao University, Quanzhou, 362021, China*

³*Beijing No.35 High school, Beijing, 102600, China*

⁴*Art and Science, University of Colorado, Boulder, CO80309, the United States*

a. yaopeng@ucsb.edu, b. jiawei_liang2022@163.com, c. 20350334@bj35.com, d. mili6325@colorado.edu

Jiawei Liang, Yao Peng, Mingyuan Liu and Wenqi Zhang contributed equally to this work and should be considered co-first authors.

**Corresponding author*

Abstract: In recent years, with the continuous improvement of living standards, more people and small enterprises have tended to loan from banks. By analyzing the loan behavior of bank customers and the decision-making process of loan behavior, this paper proposes and optimizes the strategy and marketing model. The customer's marital status, real estate status, and the type of contact information left will affect the customer's loan behavior. And the influence of the three factors is ranked as follows: marriage is more significant than contact information, and contact information is more excellent than real estate.

Keywords: bank marketing, consumer behavior, marketing strategy

1. Introduction

Banks worldwide will conduct loan activities, mainly for some reasons which can enhance the liquidity of bank funds. After the bank handles the loan business, the borrower needs to repay the principal and interest regularly every month so that the bank can obtain a stable cash inflow every month, and some income can increase through the personal loan interest rate. The more the bank loan business, the higher the bank capital liquidity and the more conducive to the bank's development. The second point is that banks can further adjust the credit structure of banks, further promote the development of the bank credit business, and promote the peaceful development of the financial industry. The third point is that the loan business can help banks to diversify risks. To better prevent the risks to customers and to avoid business losses as far as possible, the loan procedures could be better, or the source of customers is unknown, which is likely to cause the failure of funds and bank losses.

In the "Trobe, Y., Liberman, N., & Wakslak, C. Construal levels and psychological distance." it is shown that, at some distance, they interpret the same objects or events with high-level, abstract, and stable features. Studies have shown that the different dimensions of psychological distance (time,

space, social distance, and hypotheses) influence psychological interpretation, guiding prediction, evaluation, and behavior. Most existing experiments suggest that clients' psychological and user preferences and consumption interests can impact their lending behavior and that, often, psychological factors are the ultimate determinants.

Bank practitioners can, through the analysis, understand the local enterprise industrial structure. At the same time, the economic conditions of various customers, the primary repayment sources, and the cooperation with the customer's loan business can better predict the customer's loan behavior. By mastering the change of cash flow, we can make its source of funds more accurate and safe, better complete the banking business, and stabilize the capital base.

The research's main problem is making behavior predictions based on different customers. Analyze the changes in the bank's cash flow after the loan, which customers are the main customers, which customers are the potential customers, and, more importantly, whether these customers can repay and whether these customers can become stable loan customers.

2. Literature Review

Our research is related to the studies of banking marketing. Jain, Pinson, & Malhotra [1] investigate customer loyalty. They discover that bank loyalty can be measured and helps explain differences in banking skills, expected benefits, attitudes toward banks, and level of banking service utilization. Holmlund & Kock, Perrien, Filiatraul., & Ricard, and Perrien, Filiatraul., & Ricard [2-4] both study relationship marketing. They concluded that relationship banking is a significant corporate issue and that putting a relational approach to seller-buyer exchanges into practice is a strategic issue that will impact essential company choices. Chye & Gerry and Ivanchenko, Mirgorodskaya, Baraulya, & Putilina [5,6] study data mining in banking marketing. They find that big data technologies enable interaction between the bank and the target client to reach a new level of partnership, but there are still some things that could improve. Durkin & Howcroft [7] study about the banking sector found that the internet had a crucial role in relationship management. Still, there needed to be more agreement about the rates of customer adoption and the extent to which this could or should influence by bank strategies. Sarel & Marmorstein, Girchenko & Kossmann, and No [8-10] both study digital banking. They look into the potential of internet banking, but banks need to reconsider their marketing strategy.

In terms of consumer behavior prediction, Shavitt, S. [11] investigated the Consumer's behavioral preferences and found that Personality and product preferences are the primary consumer purchasing motivation. Thomas, L. C. and Thomas, L. C., Ho, J., & Scherer, W. T. [12,13] both consider the risk problems in the bank customer loan behavior and the establishment of a scoring system to avoid the risk. Liberman, N., Trope, Y., & Wakslak, C. [14] study how the Construal Levels and Psychological Distance Impact consumer behavior prediction, and they find the application of CLT in consumer selection. Trope, Y., Liberman, N., & Wakslak, C. [15] investigate how psychological distance influences individuals' thoughts and behavior; they find that different dimensions of psychological space affect mental construal and that these construals, in turn, guide prediction, evaluation, and behavior.

3. Data Set and Method

3.1. Describe the Data

The data obtained is from Kaggle and includes the marketing information of Portuguese Banking institutions. The main objective is to determine whether bank customers have opened a time deposit account (Variable y). The data is related to direct marketing campaigns of a Portuguese banking institution. The marketing campaigns were based on phone calls. Often, more than one contact with

the same client was required to assess if the product would be or not subscribed. The Attribute Information included the Bank client data, Other Attributes, and Social and economic context attributes. The data set details package 11 categories of customer data variables, three groups of other variables, five social and economic background attributes, and one particular Y function value variable. These variables are age, job, marital, education, default, housing, loan, contact, month, day-of-week, duration, campaign, p-days, previous, outcome, employment variation rate, consumer price index, consumer confidence index, Euribor 3-month rate, number of employees, output variable(y).

3.2. Describe the Progress

According to the variables in the data analysis, the author conducted a sampling survey and overall customer group analysis. In the above steps, the customer groups with apparent tendencies are selected, and the bar chart is drawn. Then, based on the preliminary analysis results, key variables are selected for further bivariate contingency table analysis.

4. Analysis and Discussion

4.1. One Variable Analysis and Discussion

We first analyzed the impact of a single variable on loan behavior. As shown in Table 1, we calculate the proportion of bank customers with different characteristics under each variable and find the customer characteristics most likely to lend.

Enterprises should set up different marketing strategies among other groups of people, such as marital status, working status, and education status. According to marital loans, married people have a higher loan demand, so that enterprises can increase their marketing efforts for married people. According to the analysis of job loans, admin., blue-collar, technician, services, management, and entrepreneur are in great demand for the load. Technician suggests that enterprises increase their marketing efforts on job loans in six aspects. According to the analysis of education loans, universities. Degree, high. School, basic.9y, and basic.4y have the highest impact on load. According to the analysis of day loans, Mon, Tue, Wed, Thu, and Fri have little influence on loans. When launching marketing efforts, enterprises are advised to distribute marketing efforts from Monday to Friday evenly. From the perspective of age distribution, it is suggested that enterprises increase their marketing efforts between the age of 29-37, which significantly impact loans. In addition, the group over the age of 79 has a minimal impact on loans. When setting the investment amount, enterprises can reduce the marketing efforts for these age groups.

4.2. Two Variables Analysis and Discussion

Through one variable analysis, it can be seen that marriage, housing, contact information, and loan are most closely related and have a very obvious data proportion and tendency. Marital status is divided into three categories: divorced, married, and unmarried. As can be seen in table 2, loans after divorce account for 10.82%, loans after marriage account for 60.50%; available loans account for 28.67%. After housing loans accounted for 59.03%, no housing loans accounted for 40.97%. The cross-comparison of the two items shows that the proportion is: the married house is greater than married house is greater than single house is greater than divorced house is greater than divorced house.

Table 1: one variable analysis.

		Un-loan	Loan
Age	20-30	14.96%	2.83%
	31-40	33.63%	6.23%
	41-100	35.86%	6.48%
House	Yes	44.49%	9.18%
	No	39.96%	6.36%
Marital	Divorced	9.51%	1.68%
	Married	51.26%	9.40%
	Single	23.68%	4.46%
Education	basic.4y	10.57%	10.39%
	basic.6y	5.85%	5.49%
	basic.9y	15.42%	14.70%
	high.school	24.16%	24.03%
	illiterate	0.05%	0.05%
	professional.course	13.31%	13.20%
	university.degree	30.65%	32.13%
Contact	cellular	53.54%	10.10%
	telephone	30.92%	5.44%
Pre-loan	0	72.93%	13.42%
	1	9.35%	1.73%
	2	1.53%	0.30%
	3	0.46%	0.06%
	4	0.14%	0.03%
	5	0.04%	0.00%
P-days	mon	20.59%	21.33%
	tue	19.76%	18.73%
	wed	19.78%	19.54%
	thu	21.01%	20.82%
	fri	18.85%	19.57%
P-Outcome	failure	8.70%	1.60%
	nonexistent	72.93%	13.42%
	success	2.83%	0.51%

We can draw a conclusion from data analysis: among the bank loan customers, the proportion of loans with housing is about 10% higher than that without housing loans. The ratio of marriage loans is much higher than that of a single loan, more elevated than divorce accounting for 50%, and higher than unmarried, accounting for 30%. In single loans, available loans account for a higher proportion of about 18%; The balance of loans for divorced homeowners is still about 5% lower than that for unmarried homeowners. The loan ratio of divorced or unmarried people with houses is lower than that of married people without places, which is 18% and 7%, respectively. It can see that marriage has a significant impact on the loan ratio.

It can conclude that marital status and real estate status both affect loan behavior, and marital status has a more significant impact on the loan than real estate has on the loan. Married with a house loan ratio is more critical than married without a house, single with a house, or other

circumstances.

Table 2: The combined influence of Marital and Contact.

Marital/Contact	Cellular	Telephone
Divorced	7.31%	3.51%
Married	37.73%	22.77%
Single	19.95%	8.72%

Therefore, when making loan marketing, banks suggest increasing the marketing efforts of loans among married people, and the marketing efforts of married people are greater than those of unmarried people and divorced people.

In the case of marriage and contact information, the data proportion is as follows: the marital status and the real estate status will affect the customer's loan behavior at the same time, and the marital status has a more substantial impact on the loan behavior than the real estate, because even if the customer has no real estate, but if the customer is married, the loan proportion is higher than that of other people with real estate, respectively, by 18% and 7%. The marital status and contact information will affect the customer's loan behavior at the same time. The marriage status substantially impacts the loan behavior more than the contact information. Because even if the customer left the landline contact information, if the customer is in a married state, the loan probability is also higher than if the customer left the mobile contact information, 15%, and 3% higher, respectively. Table 3 shows the results of the analysis.

Table 3: The combined influence of Marital and Housing.

Marital/Housing	House	No-house
Divorced	6.30%	4.54%
Married	35.57%	24.94%
Single	17.16%	11.51%

As seen in table 4, both the property status and the contact information will affect the loan behavior, and the influence of the contact information on the loan behavior is more significant than the property status. Because even if a person doesn't own a house, if they leave their mobile contact information, they have a higher percentage of loans than if they leave a landline phone, about 6% higher.

Table 4: The combined influence of Contact and Housing.

Contact/Housing	House	No-house
cellular	40.16%	35.41%
telephone	18.92%	17.27%

This is an exciting conclusion that property has a lower impact on the loan than the type of customer contact. We have two possible explanations for this. First, Cellular is more conducive to banks contacting customers, which leads to loans. For example, someone from a bank reaches two of the same customers, and neither is home. As a result, one customer left a mobile phone, the bank called to contact the customer, and another left a landline, which the bank still needs to get. At this point, the previous customer is more likely to borrow. Second, the contact information left by the customer similarly reflects the customer's enthusiasm for the loan. For example, a customer wants to take out a loan, so he doesn't want to miss any contact from the bank, so he chooses to leave his

cellular number. Another customer didn't want to take out a loan that much and didn't want the bank to make too many calls to harass him, so he left a telephone. Based on this conclusion, our advice to banks is that banks can prioritize marketing to customers who have contact information as Cellular, even if some of these people do not yet have real estate.

4.3. Summary

In conclusion, when enterprises are marketing loans, it is suggested to start from the following aspects: formalization of credit service, specialization of credit service, innovation of credit service, standardization of credit service, and professional culture of credit marketing team. The tangible characteristics of credit services are that, like marketing practice products, the development and planning of credit products and branding are also significant. The "common name" or "nameless" phenomenon of corporate financial products leads to the lack of individuality of credit products provided by various enterprises. To solve the unfavorable factors brought by the intangible, it is necessary to use specific marketing strategies, and marketing means to shape the enterprise brand and product brand to stabilize and expand their business market in an invincible position in the competition.

5. Conclusions

This paper analyzes the prediction of bank customer loan behavior, and we study the problem by analyzing a data set including bank consumers' loan behavior and individual characteristics. We reach our conclusions as follows:

(1) Marriage and property status will affect customer loan behavior. The impact of marital status is more substantial on the loan behavior than the property because even if there is no property, if the customer is married, the loan proportion is higher than that of other people with property, 18% and 7% higher, respectively.

(2) Marriage status and contact information will also affect the customer's loan behavior. The marital status has a more substantial impact on the loan behavior than the contact information because even if the customer keeps the contact information on the landline if it is married, the loan probability is higher than that of the customer with the mobile contact information, 15%, and 3% higher respectively.

(3) The property status and the remaining contact information will affect the loan behavior, and the remaining contact information has a relatively more significant impact on the loan behavior than on the property status. Because even if a person is without a house, if he leaves, his contact information is mobile, such people have a higher loan ratio than those who leave a landline phone. About 6%.

Further, based on the above conclusions, we made some management recommendations.

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