

Analysis on Similarities and Differences of Demand for Consumer Finance Based on Blood Type Difference under the Internet of Things Environment

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Abstract: With the support of the new generation of information technology and the guidance of the consumption demand, consumer finance under the Internet of things environment will combine multiple factors to promote the economic development by innovative activities. The offline questionnaire survey helps the relevant people to find out the demands of consumers with different blood types for consumer finance products. The results of regression analysis between them from the survey data show that it is different for the consumers with different blood type to select the wills and the reasons of consumption credit, the consumer finance products of different companies, the field of credit products, the mode of consumption payment, etc. What's more, it is obvious that the consumers with Rh blood type are more conservative, while the consumers with other blood groups have different selections in different specific problems. Therefore, the providers of consumer finance products can improve their market shares by designing these products based on the big data of the Internet of things according to the consumers' blood type in the sales area of the product.

1. Introduction

With the increasing upgrading of Internet information technology, the increasing development of financial technology and the demands for the convenience of consumer groups, the consumer scenarios like the diversified demands for clothing, food, shelter and travel based on finance were created [1]. It provides many opportunities for application of consumer finance to the consumers with consumption credit. The statistical result from iResearch shows that the scale of Internet consumer finance lending in China was 4.4 trillion RMB in 2017, an increase of 904% over 2016. Many Internet consumer finance companies and the related platforms are also developing [2]. In addition, the Internet of Things(IoT) provides many opportunities for business expansion of many industries. Ashton(2009), Tan and Wang(2010) think that the IoT developed on the basis of the Internet that links people to people and people to things can realize the communication from things to things. Thus, they are able to gather data without anyone's help to track and count everything [3] [4]. The advantage improves the ability of the researchers or the providers of consumer finance to obtain the information of consumers very quickly. Therefore, if the connection is established between people and things to obtain the blood type of consumers and their related habit of consumption by the IoT environment, the consumer finance companies can more effectively increase their market shares in consumer finance. But, as of right now, there are few literatures on studying the demand for consumer finance from the human's genetic code or the characteristics of consumers. However, there are indeed many scholars who study or apply consumer finance or Internet consumer finance. For instance, Samuelson (1969) and Merton (1969, 1971) studied the scope of consumer finance that covers consumption, savings, consumer credit and etc [5] [6]. It provides guidance for other researchers. Crook (2001) studied the demand for household debt in the United States based on the data from the survey on consumer finance in 1995, it is found that when the heads of households have higher incomes, and the number of family members is increasing, the households have more debts. and it also found that if a household has a huge expected expenditure in the next few years, it now has more debt, and the family's expectation for the future interest rates does not affect its demand for debt [7]. The result explains the relationship between the income and expenditure of a family and consumer finance, and provides a design basis for the providers of

consumer finance. Ryan, Trumbull and Tufano(2011) thinks that consumer finance industry involves: innovation that increased the choices available to consumers; enhanced access in the form of consumers' broadening participation in financial activities; do-it-yourself consumer finance [8]. Chang(1995) deduces that 40% of U.S. households had a decrease in real net non-housing assets from the 1983 and 1986 after the author analyzed the data from the two period Survey on Consumer Finance [9]. Campbell (2006) believes that many families are effective investors [10]. It shows that families can increase the utilization rate of funds through consumer credit. The Federal Reserve regards consumer finance as one part of household finance, which implies those consumption loans for shopping and services like the credit cards and the housing loans, etc.

In China, the scholars' research on Internet consumer finance involves market players, market expansion, scenarios and business innovation and the like [11] [12] [13] [14] [15]. As a result, it is very vital for the researchers and the providers of consumer finance to study the behaviors and habits of consumers on consumer finance, so as to further compensate for the shortage of products about consumer finance in positioning consumer groups

2. Causality Analysis between the Blood Types of Consumers and Their Demand for Consumer Finance under the IoT Environment

2.1 Acquisition of consumer finance data under the IoT environment and the introduction to content and samples of the questionnaire

In order to understand the causality relationship between the blood type of consumer and their demand for consumer finance under the IoT environment, the offline questionnaire was carried out with the random surveys, which were conducted among the people in Suzhou City, Wuxi City, Xuzhou City and Lianyungang City, Jiangsu Province, China. 1,490 out of the 1,600 copies were gotten. However, the number of valid questionnaires is 1,037. The questionnaire only involves the investigation of the relationship between the willingness of consumer credit, the inclination of consumer finance company, the field of consumer finance, consumer payment methods, and the blood types of consumers. Therefore, the main content of this paper is to analyze the regression results between them to find out whether the blood types affect consumers' demands for consumer finance. That is to say, the regression models take the blood type of consumer as independent variables, take the age, the choice of consumer credit, the demand for consumer credit product, fields of consumer credit product, and consumer payment methods as dependent variables to analyze the effect of the blood type on consumer finance and the preference of consumers with different blood types for consumer finance.

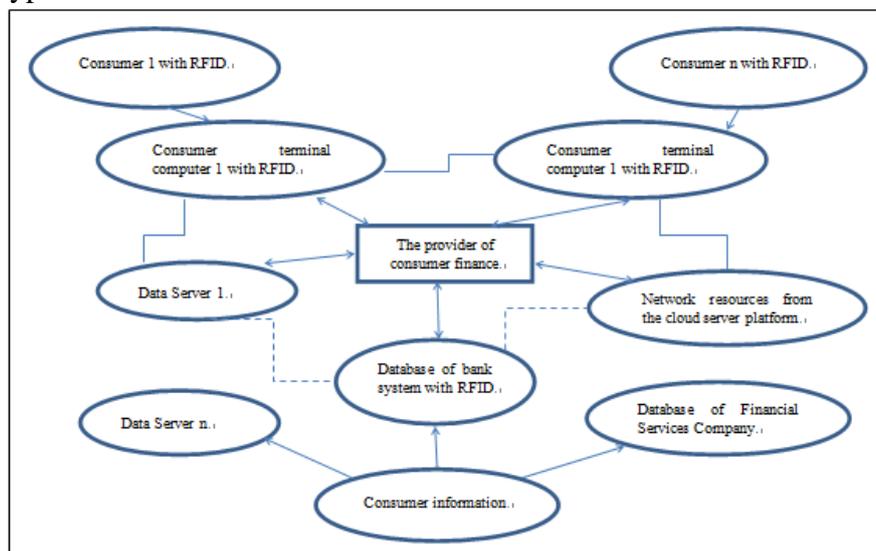


Fig. 1. The process of obtaining consumer finance data with RFID under the IoT environment

The process of obtaining data on consumer finance by RFID under the IoT environment is shown

in Fig. 1.

The providers of consumer finance can obtain the blood type of consumer and the related consumption information in the area of product sales by means of IoT, the big data and the information technology, so that they can improve or reconstruct the existing consumer finance products according to the difference of the blood group of consumers to meet their demand for consumer finance. If there is no IoT, it is difficult to extract the data from consumer terminals in time because the Internet cannot identify the RFID taped to consumer terminals and put on consumers, and then it is impossible to obtain the data from these consumer terminal machines and the relevant information of consumers who are willing to carry RFID tags. And the data that are obtained from data server who is allowed to access through the Internet are lagging, targeted and extensive.

The age distribution of the respondents who took part in the questionnaire is shown in Fig. 2. The proportion of people aged from 26 to 35 is the highest, followed by that of people aged from 18 to 25, and then that of people aged from 36 to 45. Namely, the respondents to the questionnaire were mainly young and middle-aged, and they are the main force of consumer finance. Therefore, the research result gotten from the survey will be representative.

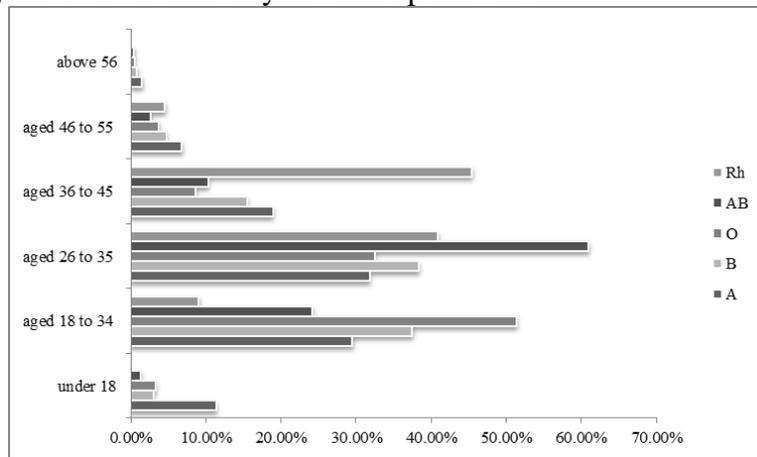


Fig. 2. Age distribution of the respondents in the offline survey about consumer finance

2.2 Analysis on consumer credit willingness based on the difference of blood type under IoT environment

The information about the willingness of consumer credit makes the providers of consumer finance markets to understand its market potential to determine whether it is worth to shape a channel about consumer finance among manufacturing, traders, banks, consumer finance companies, service providers and consumers. If the consumers with different blood types generate different consumer credit willingness, then this study provides a better product design basis for the providers of consumer finance products. With the help of the IoT environment and the related data servers, they can be effectively and closely linked by RFID.

The regression results between the blood types and whether the consumers choose consumer credit when purchasing goods or services in the offline survey are shown in Fig. 3. When consumers pay for their shopping, the proportion of people who choose to pay by installments is lower than that of people who pay by lump-sum payments, which means that most people hold a conservative attitude toward the behavior of purchasing goods or services by consumption credit. Among them, the person with blood group Rh is the most conservative consumers because for every additional person with blood type Rh, there will be 13.64% of them who chose to pay by consumption credit; those consumers with blood group O and AB are the second conservative people because for every additional person with blood type O or AB, there will be only 33.41% or 34.98% of them choosing to pay by consumption credit; those consumers with blood group B is the third conservative ones because 42.67% of them chose consumption credit for each additional blood group B, which imply that the consumers with the blood type B had the biggest population in all the blood groups. It shows that the consumers with blood group B are more flexible in fund operation,

followed by that of blood group A. These results of the research are conducive to the positioning for consumer groups from the providers of consumption credit.

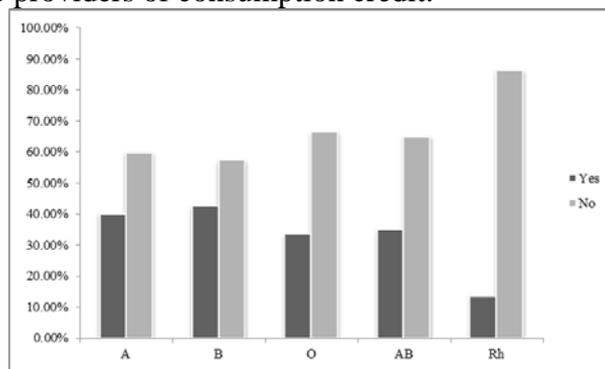


Fig. 3. Consumers' choice of installment when purchasing goods or services

The people with different blood types in the offline survey have obviously different choices of consumer loans. But which one of consumption loan functions fails to meet the needs of consumers, so that they are unwilling or do not like to buy goods or services by consumption loan? After the regression analysis was made between the blood type of the respondents and the factors affecting consumer loans obtained from the off-line questionnaire, the reasons were found as shown in Fig. 4. Consumers with blood type A and B believe that the lending rate does not meet their own requirements. For example, the higher interest rate will lead to an increase in the cost of consumption goods, etc. But there are different views in the following affecting factors between consumers with blood type A and B. For instance, consumers with blood type A think that the amount of money borrowed is the second reason, followed by the safety, and next the loan amortization period. And yet, the consumers with blood type B consider that the safety is the second reason, followed by the amount of money borrowed, and finally the categories of goods. Those with blood type O and AB believe that the borrowing limit does not satisfy their demand for consumption loans, followed by the lending rate, and next the loan amortization period, and finally the categories of goods. The respondents with blood type Rh generally believe that the lending rate and the safety are the first considerations, followed by the borrowing limit and the loan amortization periods. In brief, these results show that the consumers with blood group Rh think about the problem from a different point of view compared to that of consumers with blood group ABO. However, consumers with ABO blood group have slightly different perspectives depending on their specific blood type.

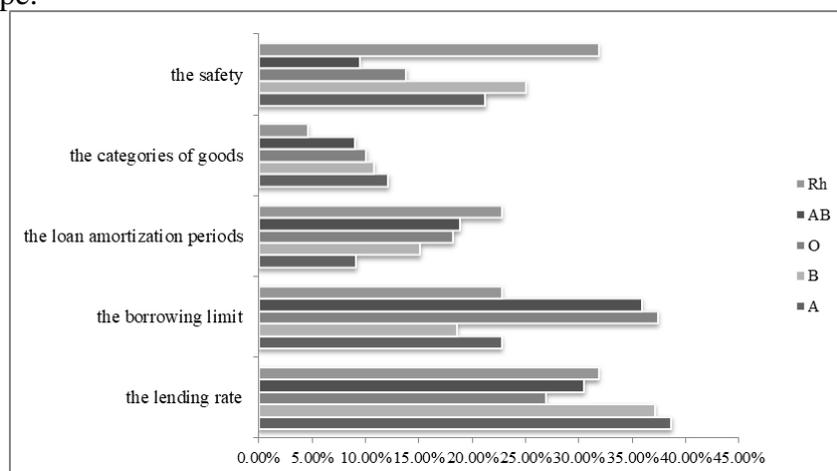


Fig. 4. The survey results for the problem "which function of consumption loan fails to meet consumer demand"

2.3 Analysis on the demand for consumer credit products based on blood type difference under IoT environment

For the providers of consumer finance products, Consumers' choice of products from consumer finance company and the application field of the products made it possible to understand consumers' preferences for different consumer finance companies, the preference for the consumption fields involving consumption credit, which provide the financing basis for the providers of these products or the merchants that provide services for these products, and It also provides the channels of the marketing and the direction of the product positioning for banks and consumer finance companies. If the consumers with different blood types have different demand for consumption credit products, then their suppliers can design the targeted products. Moreover, the information about the preference of consumers for consumer finance can be obtained from The IoT environment. Thus, the IoT environment can connect these participants effectively and timely to serve the consumer finance market through RFID, the big data and cloud service platform, etc. Therefore, the choice of the consumption credit products and the issues about their field located were designed in the questionnaire to analyze their relationship.

According to data from the questionnaire, the regression analysis was carried out between the blood type of the respondents and the reasons for consumption credit chosen by most consumers. And the regression result is shown in Fig.5. The consumers with blood group A and B first consider the convenience of application, while those with blood group AB and O first consider the problem of safety, but those with Rh blood group first consider whether the consumption loan can arrive in time, followed by the problem of safety and the problem of convenience of application. Other reasons for selection vary depending on the blood type.

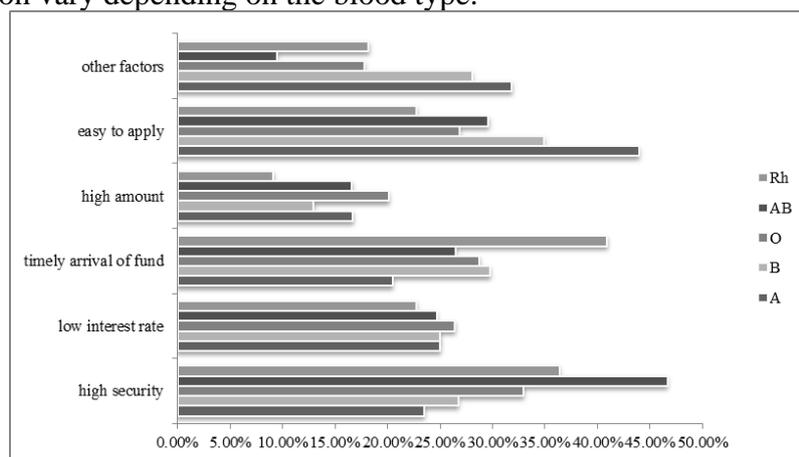


Fig. 5. The reasons for consumption credit chosen by the respondents with different blood types

However, what areas do consumers generally choose consumption credit? According to the information feedback of the questionnaire, the regression result is shown in Fig. 6. Most consumers choose to pay for purchases by consumption loan when they buy real estate, followed by buying automobiles, and next shopping, then tourism, and yet higher education, and finally, the proportion of the consumers by consumption credit are relatively small in buying electric vehicle, training and home appliances, etc. In other words, consumers generally choose the consumption credit on purchasing products with higher value. However, relatively speaking, consumers with blood type B are most likely to choose consumption loan on most products, followed by those with blood type O, and then those with blood type A. But those with blood type Rh are the most conservative because they pay the money by installment only in several areas like buying cars, buying houses, traveling and shopping, etc. It shows that consumers with different blood types have different concerns on the selection of area of consumption credit.

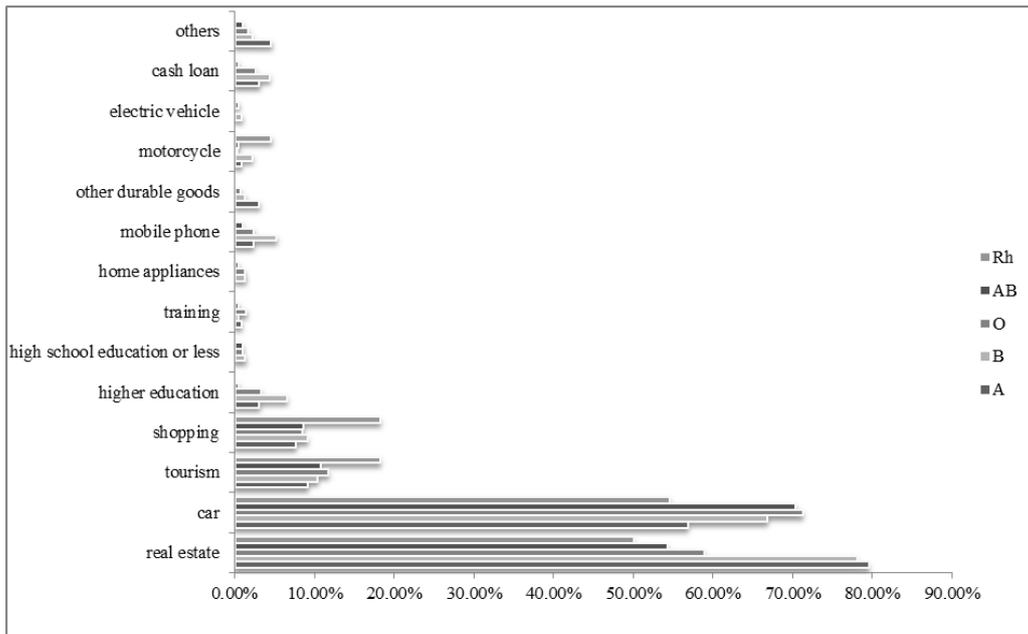


Fig. 6. The Range of Consumer Credit

2.4 Analysis on consumer payment modes based on blood type difference under IoT environment

Consumers need to make payment for their purchase. And then the regression analysis was made between the blood types and consumption payment modes of the respondents obtained from the offline survey, and the results are shown in Fig. 7. According to the sort of the regression coefficient, most consumers will choose WeChat and Alipay payment, followed by debit card, and next credit card, and finally the other payment mode like cash. Among them, according to the sort of the regression coefficient from high to low, the sequence of the payment method that consumers with blood types A, O and AB choose are different from that with blood types B for WeChat and Alipay. Because WeChat and Alipay can link bank cards or credit cards to pay directly through mobile phones or the other mobile vehicles, while bank cards, credit cards and cash payments need to be carried around to pay when consumers make a purchase. Accordingly, the choice of different payment methods of consumers with different blood groups shows that today's consumers love the convenient payment mode like the mobile phone. Thus, they go without bank cards, credit cards and cash. To a certain extent, it avoids the problems of losing and then re-issuing the card, and improves the security of funds.

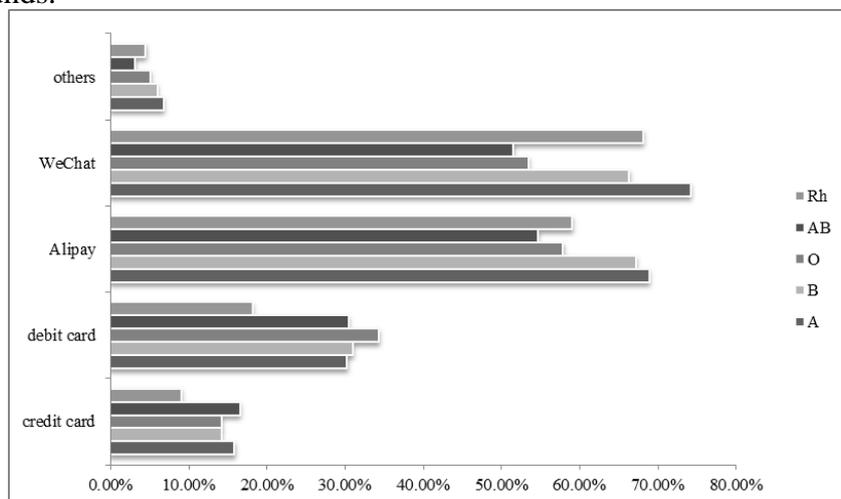


Fig. 7. Consumers' payment methods in shopping

3. Results and discussion

According to the result of analysis on the willingness of consumer credit application based on the difference of blood type, it shows that consumers with different blood types have different willingness to use consumption credit, and their reasons and perspectives are different. Therefore, it is very necessary for the designers of consumer finance product to grasp the blood types and the related information of consumers. And the IoT environment provides them with the possibility that the blood types of consumers can be gotten through IoT technology, the big data, and RFID in vending machines installed in subway stations, shopping malls and supermarkets, so that the providers of consumer finance products can improve their existing function to meet the consumers' demands for consumer finance according to the product sales area covered and the distribution of consumers' blood types in the location area or the city.

In the light of the result of analysis on the demands for consumer credit products based on blood type difference, human' blood type will affect consumers' choice of consumer finance products. Therefore, with the help of RFID tags on people's hands, the data server loading consumer' genetic code information by the IoT, the authorized consumers' personal information like blood types can be gathered. In this way, the providers of consumer finance product can use the Internet of Things and the big data to improve the characteristics of the existing consumer finance products according to the distribution of blood types of the population in the product-providing area to improve the quality of the products of the company, and attract more consumers to use their consumer finance products.

In terms of the result of analysis on consumer payment modes based on blood type difference, it implied that when designing consumer finance products, their providers should try to provide consumers with the convenient means of payment and repayment by consumption loan, which is conducive to improve the frequency of using consumer finance products. Because the IoT can identify the people's relevant information through RFID and the big data, the consumer terminals equipped with the IoT recognition technology can obtain the blood types of consumers and their bank card information used elsewhere through the Internet of Things. This system can increase their market shares of consumer finance products.

4. Conclusion

The regression results between the factors related to the consumption demands and the blood types of consumers show that consumers with different blood types have greater differences in choice of consumption credit. The consumers' preferences for consumption credit products from consumer finance companies are different with different blood types. The reasons for consumers who have different blood types choose consumer finance products form different companies are also different. The products that consumers choose to pay by consumption credit are usually the ones that have high value. But the concentration of consumer finance products varies with different blood groups, the number of products used varies with them, and the preference for cash loans varies with them. For consumers' payment modes, consumers have slightly different choices in Alipay, WeChat, debit card, credit card or other payment mode like cash because of different blood types.

In short, the research uses the questionnaire data and the regression models to compare the similarities and differences of consumers' blood type and their preference of consumer finance demand under the IoT environment. It helps the providers of consumer finance product to locate the consumer groups of the products they provide, thereby increases the activity and market share of consumer finance products. However, because the scope of the survey under the offline survey is limited, the conclusions obtained may be limited.

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