

Research on the Development Status of China's Mobile Payment

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ABSTRACT

In recent years, China's B2C payment methods have undergone some significant changes, which have impacted the biggest beneficiaries of traditional payment methods-banks. In the past, banks monopolized people's payments. For example, cash was issued by the bank, and transfers needed to go through the bank's system. However, the emergence of mobile payment is a major change for the majority of users on the B2C side. The laws and regulations promulgated by the Chinese government on mobile payment and the continuous improvement of third-party payment platforms themselves have brought security and authority to the user base. This makes mobile payment (ie online payment) develop more rapidly in China. In addition, due to the low market share of plastic payment cards in the Chinese market, the proportion of potential customers for mobile payment in China is greater than that of the international community. In this paper, the primary data is obtained by randomly sending questionnaires to society. And this article through empirical research, regression of gender, age and income, combined with Fama and French Three-Factor Model for comprehensive analysis. The empirical results show that mobile payment has become a large part of Chinese people's lives and the difference in payment frequency mainly lies in gender, rather than age and income. This shows that mobile payment can be adapted to groups of different age groups and incomes through algorithms. Regarding the gender difference, this article speculates that it is because women have higher shopping needs and spending power.

Keywords: *Payment System, B2C, Digital Economics*

1. BACKGROUND

According to Boyd, John H et al., a payment system is a tool for transferring inside money between banks[1]. However, the situation is different nowadays, and the definition, as well as the application of the payment system, tends to be closer to B2C. B2C is the abbreviation of business-to-consumer, which is the business behavior of a business to an individual user[2]. The popularity of B2C has been carried out with the development of the Internet, and in the continuous development, the focus of the use of payment systems has shifted from the B2B of the bank to the bank to the B2C business which is built on the new payment platform, such as PayPal and Alipay [3].

Historically, the most important payment method for consumers in the modern payment system is through bank clearing (such as bank transfer and credit card payment) and electronic transfer clearing (such as PayPal and Alipay)[4]. Since the Internet began its

large-scale development and market expansion in the mid-1990s, after decades of development and improvement of electronic transfer settlement, electronic transfer settlement has become the most convenient and efficient payment method for consumers in their daily lives[5]. Therefore, this article mainly discusses bank transfer settlement and electronic platform (third-party payment platform) transfer settlement.

2. INTRODUCTION OF THE DEVELOPMENT HISTORY OF PAYMENT SYSTEM

2.1 Development History of International Payment System

The development history of payment methods in many countries is from precious metal clearing, cash clearing, bank transfer clearing to electronic transfer clearing[6]. The settlement of precious metals has

mainly been based on gold and silver since ancient times, but in modern society, the use of gold and silver as a settlement method has been very rare. This article mainly discusses cash settlement, bank transfer settlement and electronic transfer settlement.

One significant payment method is the cash settlement. But in the development steps of cash payment, the embryonic form of the bank gradually formed in the continuous accumulation of wealth. The emergence of banks is inseparable from cash, and the development of banks represents people's demand for more convenient payment methods [6]. Modern banks originated from Europe in the Middle Ages, and mainly appeared in the world's commercial centers at the time, such as Venice and Genoa in Italy. At the end of the 16th century, banks gradually emerged in other European countries. From the end of the 17th century to the beginning of the 18th century, with the development of capitalism, to meet the requirements of socialized production, the emerging bourgeoisie urgently needed to establish and develop capitalist commercial banks. The emergence of capitalist commercial banks is mainly through two ways: one is that the old usury banks gradually adapt to new economic conditions and evolve into capitalist banks; the other is that the emerging bourgeoisie organizes joint-stock banks in accordance with capitalist production relations.

For the third-party payment platform PayPal for online transfers, it was officially launched in 1999. Thanks to the relative synchronization of its development time and the rise of the Internet, it has occupied many global markets in a short period, with 325 million users. And because it is free to register and can use credit cards, debit cards and e-checks through it, it is used in more than 200 markets. For the convenience of customers, PayPal supports more than 100 currencies. And, according to PayPal's financial report, in cross-border transactions, nearly 70% of online cross-border buyers prefer to use PayPal to pay for overseas purchases. Consumers have two modes to choose from when making cross-border payments with PayPal. One is to use the currency conversion rate provided by PayPal, which is set at a higher rate. The other is to transact through the card issuer's conversion rate, which is set at a relatively low rate. Previously PayPal defaulted to the former, but now PayPal's pages have been changed to match consumer preferences, making it easier for consumers to exchange money.

2.2 Development History of China's Payment System

For a long time in ancient China, the settlement of precious metals and the settlement of cash have been paralleled, and the rudimentary form of the bank was established hundreds of years ago, but the system and scale have not been formed [7]. In the history of the

development of modern payment methods in mainland China, cash payments and bank transfers accounted for the previous focus, but now online transfers on third-party payment platforms are the mainstay. In 2003, Steve Worthington predicted that China would become a significant market in the use of plastic payment cards. However, due to the popularity of online payment systems, plastic payment cards have not been widely used in mainland China.

For the development of China's online payment platform, Alipay is the most representative platform. The development process of Alipay has generally gone through three stages of non-independent payment methods, independent payment platforms, and deployment of the mobile payment market[8]. The first stage is the relying development stage from 2003 to 2004. In this stage, the development of Alipay mainly relied on Taobao, which only existed as a payment method of Taobao, aiming to support the development of Taobao. The second stage is from 2005 to 2008. At this stage, Alipay became independent from Taobao, gradually expanded its customer service from Taobao to large platforms such as Ctrip and JD, and continued to expand offline merchants, covering more and more industries, and gradually developed into China's largest Third-party internet payment platform. The third stage is from 2008 to the present, and Alipay has begun to deploy the mobile payment market.

2.3 Comparison of the development of China's and Foreign Payment System

By comparison, the development of payment methods in Mainland China is quite different from the development of other countries. It is due to China's particular leap in technological development. When the international community mainly used plastic payment cards, Chinese people were generally not wealthy enough at that time due to the limitations of China's economic development, so they used to keep most of their savings with them or in the bank instead of spending ahead or spending all their savings [9]. In the annual report released by the People's Bank of China, China's per capita savings is higher than that of many developed countries, even the United States. Even in the post-epidemic era when the global economy was frustrated, the total deposits of Chinese residents reached 100.12 trillion yuan, an increase of 6.68 trillion yuan compared with last year, and the per capita depositors also reached 71514 yuan. Based on this culture and habit, China's credit card market has never been well developed. In the 2010s, with the rise of e-commerce and third-party payment platforms, this low-contact, high-efficiency, and cost-effective shopping model has hit the physical retail industry year by year.

As the development of e-commerce and third-party payment platforms is significantly better than in other countries, China's B2C payment system has a much higher technological maturity than other countries. Moreover, China's urbanization rate was higher than 60% in 2019. This data exceeds the world average of 55.71%. The average urbanization rate of OECD member countries is 78.40%, which means that the level of urbanization in China and developed countries is gradually shrinking. Urbanization can help build an e-commerce logistics network, which will help e-commerce continue to develop and expand the market. Similarly, the development of online shopping and online payment platforms in developed countries is mature. As the development of e-commerce and third-party payment platforms is significantly better than in other countries, China's B2C payment system has a much higher technological maturity than other countries. Moreover, China's urbanization rate was higher than 60% in 2019. This data exceeds the world average of 55.71%. The average urbanization rate of OECD member countries is 78.40%, which means that the level of urbanization in China and developed countries is gradually shrinking. Urbanization can help build an e-commerce logistics network, which will help e-commerce continue to develop and expand the market. Similarly, the development of online shopping and online payment platforms in developed countries is mature. However, foreign credit card systems are very mature, and foreign banks have closer cooperation with online shopping platforms and third-party payment platforms[10]. They are not like Chinese banks. The relationship between Chinese banks and third-party payment platforms is more competition than cooperation[11].

The large Chinese banks are all state-controlled, while the large foreign banks are all privately owned. This has led to Chinese banks being more focused on the use of their citizens in the operation of their banks, while foreign banks are more focused on the profits of their shareholders. The authentication systems, payment security systems and personal savings of customers that third-party payments require are better met in the Chinese banking system.

3. COMPARISON BETWEEN TRADITIONAL AND ONLINE PAYMENT METHODS

3.1 Characteristics of traditional payment methods

3.1.1 Advantages of traditional payment methods

The advantages of traditional payment methods are mainly reflected in three aspects: high acceptance, high popularity and high security.

In terms of acceptance, in offline physical stores, merchants will accept cash or allow bank card payment, regardless of whether it is a debit card or a credit card. Regarding popularity, although the circulation of cash and the use of plastic payment cards are now subject to online payment, they are still the payment method with the largest market share among offline merchants connecting customers. In terms of security, cash has a means of checking money, and the payment system of the plastic payment card is protected by the bank. Even if the bank's system is threatened, the bank's risk response capabilities can ensure the safety of customers' property.

3.1.2 Disadvantages of traditional payment methods

The disadvantages of cash payment are mainly the following two points, that is, consumers need to line up when depositing and withdrawing money and there are counterfeit currencies in the market. It is difficult for merchants to connect with their customers when they only use cash. And, in-depth marketing and promotional activities also require detailed information from customers.

For plastic payment cards, it has two main disadvantages. First, if consumers want to spend but find that the card balance is insufficient, the transaction often fails. Secondly, for consumers who cannot control their desire to consume, if the repayment ability is limited and the credit card is overdrawn uncontrollably, once the arrears are not repaid, not only various interest will be generated, but also personal credit records will be affected.

3.2 Characteristics of online payment methods

3.2.1 Advantages of online payment methods

Firstly, online payments have the advantage of controlling costs. The payment platform drops the cost of government, enterprises and institutions to interface directly with banks. And, they meet the payment collection requirements of companies focused on growing their online businesses. Secondly, the payment platform has a competitive advantage in the market, because the interest of the third-party payment platform is neutral, which avoids business competition with the serviced company. More, payment platforms have innovative advantages in technology. The personalized service of the third-party payment platform enables it to simultaneously customize personalized payment and settlement services based on the business model that is innovated by the market competition and business development of the serviced enterprise.

In an online transaction environment lacking an effective credit system, the introduction of the

third-party payment model has resolved to a certain extent that online banking payment methods cannot restrict and supervise both parties to transactions. For merchants, third-party payment platforms can avoid the risk of not being able to receive payment from customers, and at the same time provide customers with diversified payment tools. It provides a convenient payment platform for small and medium-sized enterprises that cannot establish an interface with the bank gateway. For customers, not only can the risk of not being able to receive the goods be avoided but the quality of the goods is also guaranteed to a certain extent, which enhances the confidence of customers in online transactions. For banks, banks can expand their business scope through third-party platforms, and at the same time save the development and maintenance costs of providing gateway interfaces for many small and medium-sized enterprises.

3.2.2 Disadvantages of online payment methods

However, online payment also has many problems to be solved. The first is the risk of online payment. In the electronic payment process, funds will be stranded at third-party payment service providers, that is, so-called fund precipitation occurs. If there is a lack of effective liquidity management, there may be risks of fund security and payment. At the same time, a third-party payment institution opens a payment settlement account, first collects the buyer's payment, and then makes the payment to the seller. This has broken through the limitations of many existing franchises. They may facilitate the illegal transfer of funds and cash out. Therefore, potential financial risks are formed.

Secondly, electronic payment has problems of cognition, protection and development of business qualifications. Third-party payment and settlement are non-bank financial services provided by payment and clearing organizations, and banks will raise the threshold in the form of licenses. therefore. For those third-party payment companies engaged in financial business, the challenge is not only how to make a profit, but more importantly, whether they can obtain the third-party payment business license to be issued.

Although online payment has innovative and cutting-edge technology, there is a need for innovation in its business. Because payment services objectively provide financial business expansion and financial value-added services, their business scope must be clear, and innovation must be boldly implemented. So far, there are more people who own mobile phones than those who own computers in the world. Compared with pure online payment, the field of mobile payment will have greater achievements. Therefore, whether third-party payment can take advantage of this opportunity to improve its business model will

determine whether third-party payment can finally get out of the predicament and achieve development.

The fourth shortcoming is the constant vicious competition in the market. The electronic payment industry has the problem of malicious competition that damages payment services and even brings a negative impact to the development of the e-commerce industry. There are more than 40 professional electronic payment companies in China, and most payment companies and banks use pure technology gateways to access services. This payment gateway model is likely to cause serious homogeneity in the market and provoke fierce competition among payment companies. Price war. This has directly led to the industry's "profit reduction faster than market growth". In China, the usual low-price marketing strategy has caused the electronic payment industry to swallow the bitter fruit of little profit.

Finally, there is the issue of incomplete laws and regulations. Although this problem has been alleviated to a certain extent after the promulgation of the "Guidelines for the Protection of Electronic Payments (No. 2)", the government and society still need to work together to protect the overall environment of online payments.

3.3 Main difference between online payment and traditional payment

There are four main differences between electronic payment and traditional payment methods.

Firstly, they have different circulation methods. Electronic payment uses advanced technology to complete the transmission of information through digital circulation. Its various payment methods are paid through digital methods; while the traditional payment methods are through the circulation of cash, the transfer of bills, and bank transfers. Physical entities such as remittances complete the payment.

Besides, they are in different operating environments. Traditional payment is operated in a relatively closed system, and the working environment of electronic payment is based on an open system platform (that is, the Internet).

Moreover, traditional payment uses traditional communication media, while electronic payment uses advanced communication means such as the Internet and extranets. Electronic payment has very high requirements on software and hardware facilities. Electronic payment requires networked computers, related software and other supporting facilities, while the traditional payment does not have such high requirements.

The fourth difference is they have different lengths of time and cost. Traditional payment fees are high, but electronic payment fees are low. Electronic payment has

the advantages of convenience, speed, efficiency and economy. If the user has a PC with Internet access, he can complete the entire payment process in a short time without leaving his house.

In e-commerce, the payment process is a very important link in the entire business activities, and it is also the business process with the highest

accuracy and safety requirements in e-commerce. The flow of funds in electronic payment is a business process, not a technology. But in the process of electronic payment activities, many technical issues will be involved.

Traditional payment methods generally use invoices, promissory notes, money orders, credit cards, and cash. Although bill exchanges have replaced cash flow and brought huge and positive changes to the actual payment business, the business processing in this way is still in many troubles. Nowadays, electronic payment using online transactions can not only improve settlement efficiency but more importantly, speed up capital turnover and reduce the cost of capital turnover.

4. ENTERPRISE RESEARCH

4.1 Data Description

This article uses random sampling to conduct a questionnaire survey on the Internet. The samples are all Chinese. A total of 292 copies of the questionnaire were filled out. The questionnaire sets up questions such as gender, age, income, and frequency of third-party payment.

Among the samples collected this time, 54.8% of the samples were women; 64% of the samples used mobile phones to pay more than 20 times a week, indicating that the popularity of mobile payments is very high. 56.2% of the samples are 25-45 years old. The samples in this age group have a high degree of acceptance of mobile payment and relatively good financial ability, indicating that the samples collected this time are in line with reality. The income of 51.4% of the sample is below 3,000 yuan, because 52.05% of the sample are students, indicating that the sample collected this time is in line with reality.

Table1. Data Description

	VAR1	VAR2	VAR3	VAR4
N	292	292	292	292
MEAN	2.49	.45	2.54	.63
MEDIUM	3.00	.00	2.00	.00
MODE	3	0	2	0
SD	.748	.499	.950	.719

4.2 Research Model

This paper adopts the Fama-French Three-factor model. When setting dummy variables, the model sets female=0, male=1, and sets the online payment

frequency to never=0, 1 to 9 times per week (tpw)=1, 10 to 20 tpw=2, 20 plus tpw=3. . The age group is set to let under 18 years old = 1, 18 to 25 years old = 2, 25 to 45 years old = 3, 45 to 60 years old = 4, and over 60 years old = 5. In addition, this model sets the income below 3000 yuan = 0, 3000 to 6000 yuan = 1, 6000 to 10000 yuan = 2, 10000 to 20000 yuan = 5 and more than 20000 yuan = 4.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

WHERE:

Y= TIMES PER WEEK

X1= GENDER

X2= AGE

X3= INCOME

$\beta_{1,2,3}$ =FACTOR COEFFICIENTS

4.3 Data Analysis

R-squared=0.76 indicates that the independent variable can explain 76% of the variation of the dependent variable. sig=0.038<0.05, indicating that the model is significant. The sigs of the three independent variables are all less than 0.05, indicating that the three independent variables are all significant, that is, the frequency of mobile payment usage is related to age, gender, and income. It can be seen from the coefficient that gender is the biggest influence on the frequency of mobile payment usage. The reason may be that women are more responsible for the daily expenses of the family, so there are more scenarios for payment, and the frequency of use is higher. Moreover, age and income have almost the same influence on the frequency of mobile payment usage.

Table2. Regression Result 1

Model	R	R-Squared	Error of SE	Change Statistics				Durbin-Watson
				F-Test	df1	df2	Sig. F-Test	
1	.890	.760	.741	2.849	3	288	.038	1.839

Table3.Regression Result 2

Model		Non-Standardized Coefficient		t	Sig.	95.0% Confidence Interval		Collinearity Statistics	
		B	Standard Error			Min	Max	Tolerance	VIF
1	Constant	2.676	.128	20.892	.000	2.424	2.928		
	VAR2	.154	.090	1.712	.038	-.023	.330	.943	1.061
	VAR3	-.079	.056	-1.424	.016	-.189	.030	.677	1.478
	VAR4	-.080	.072	-1.122	.026	-.222	.061	.711	1.406

Table4. Regression Result 3

Model		Square	df	Mean Squared	F	Sig.
1	Regression	4.697	3	1.566	2.849	.038
	Residual	158.289	288	.550		
	Total	162.986	291			

5. FUTURE DEVELOPMENT TREND OF ONLINE PAYMENT

The penetration rate of international credit cards in the Chinese market is relatively low, while the use of mobile phones is very popular. It is a natural development trend to allow users to complete payments via mobile phones in an online mode. There are three main points in the future trend of the payment field.

First, payment platforms need to reach consumers through multiple channels. The development of technology has created diversified marketing and sales channels for enterprises such as social interaction platforms, voice assistants, wearable devices, and VR/AR. Companies need to make full use of these channels or platforms to reach consumers. If certain technical problems are encountered, the payment platform can use token technology (Tokenization) to create a seamless experience, by providing diversified payment methods and multi-currency options, and implementing various channels at the back end (especially offline). The connection between online and

online) allows merchants to provide customers with a true omnichannel buying experience.

Second, online payment platforms need to be innovated with artificial intelligence technology. New interactive channels such as facial recognition or voice are or will become a key part of the consumer experience. Intelligent customer services that are empowered by artificial intelligence and can interact with natural language have become more and more popular, and this trend is particularly prominent in the Asian market. Even voice e-commerce is expected to become the next mainstream trend.

Third, payment platforms need to improve customer payment authentication. Innovation in transaction authentication and transaction security will become another major development trend in the payment field[12]. This article predicts that China's online payment authentication methods will be further simplified in the future. At present, China's payment technology service providers have effectively applied biometrics, such as facial recognition. The online

payment model in this market will move toward a simpler, faster, and no need to connect to devices. In the future, you may only need to verify the iris to quickly pay.

6. CONCLUSION

As time progresses, the change of generation after generation will dictate a gradual positive trend in the frequency of online payments. Online payments will have more functions in the future as the user base expands, for example, Alipay's real-name authentication can already become a second ID card for people. New internet technologies will also bring a better experience of use to both the payment platform and the customer. For example, voice-interactive e-commerce platforms will not only cater to people using more leisure time for shopping, but will also help some people with disabilities to start their own businesses on the internet. On top of this, internet technology is also vital to help with identity verification.

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