

Digital RMB and Its Predecessor: A Comparison with Mobile Payment Platforms

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Abstract: While the times are developing, the means of payment are being upgraded at the same time. Mobile payment plays a very important role in China at this stage, and is one of the main means of payment for daily consumption, as well as an integral part of the entire transaction chain. As consumers, how does the emergence of new payment methods affect their consumption? From an economic point of view, the price of goods and the income of consumers affect their consumption behavior, so in this paper, mobile payment is selected as a case study from the perspective of payment methods, and theoretical analysis is made and suggestions are made to optimize the use of digital RMB from an economic point of view.

Keywords: Mobile payment, Digital RMB, Alipay, WeChat Pay.

1. Introduction

1.1. Research Background

Since the digital RMB pilot, the application scenarios have been increasing. As of December 31, 2021, the digital RMB pilot scenarios have exceeded 808.51 million, with a cumulative total of 261 million personal wallets opened and a transaction amount of 87.6 billion RMB. In April 2020, the digital RMB was tested in Shenzhen, Suzhou, Chengdu, Xiong'an New Area and the future Winter Olympics scenarios in internal closed pilot tests, and in the same year in October, six new pilots were added in Shanghai, Hainan, Changsha, Xi'an, Qingdao and Dalian. [1] In 2022, based on M0 positioning, digital RMB is mainly used for retail payment, and the application scenarios are also currently focused on retail scenarios such as food service, shopping and consumption, leisure and entertainment and transportation.

1.2. Research objectives and significance

This paper takes two major third-party mobile payment platforms, Alipay and WeChat Pay, as the research objects and digital RMB as the reference object, and analyzes the future usage trends of digital RMB by studying the usage data of Alipay up to now, and analyzes empirical analysis through modeling. Since there are differences in the positioning of digital RMB and mobile payment platforms, the differences in the survey results for both can also be analyzed for consumers. The differences in perceptions and evaluations of different third-party mobile payment systems can also be analyzed to suggest improvements for digital RMB.

In this paper, Alipay is selected as the research object mainly for the following reasons: (1) as the leading payment software in China, the first half of 2020 and the two together account for 94.4% of the mobile payment market share (2) both are commonly used within the Chinese market and easy to obtain research data.

1.3. Research content and methodology

In this paper, the main research methods used in the research process are literature research method, case study method, and comparative analysis method.

Case study method: Based on the specific cases of Alipay and WeChat Pay, the case study method is an important research method in this paper by analyzing the operational aspects and processes of their respective products.

Comparative analysis method: Comparing the actual usage and users of Alipay and WeChat Pay, discovering the commonalities and characteristics between them, and analyzing the differences between them in depth, and then coming up with suggestions for optimizing the use of digital RMB.

2. Literature Review

2.1. Review of relevant literature

According to previous studies, the rapid development of mobile payment is driven by a series of components such as people's performance expectations, social influence, trust, payment scenarios, and system quality. The convenient services of third-party payment platforms such as Alipay wallet and WeChat Pay bring consumers certain performance expectations, while people must have corresponding payment conditions to use the payment platform and want to pay less effort, when more people around use and recommend will also accelerate the adoption behavior of new users want to improve the user's stickiness, the software products also need to be constantly improved, and the payment scenario also needs to be constantly innovated at the same time in Factors such as trust and immersion experience based on the perceived level of risk are decisive for the long-term usage behavior of consumers.

Most of the existing studies are on the emergence, characteristics, opportunities, development, and impact of digital RMB, but not on the commonalities and differences between them and mobile payment. Therefore, in this paper, we hope to use mobile payment as the reference object and conduct an empirical analysis using SPSS to study the similarities and differences between digital RMB and mobile payment.

3. Status of digital RMB

Currently, in the first half of 2022, the digital RMB completed three tests. First, the pilot scenario in the Beijing Winter Olympic Games was used. Second, the digital RMB was expanded from the pilot areas to 23 areas in 15 provinces and cities. Third, as of May 31, the cumulative number of transactions through digital RMB in the pilot areas of 15 provinces and cities was about 264 million, with an amount of about RMB 83 billion, and the number of merchant stores supporting digital RMB payments reached 4,567,000.

3.1. Changes in the development of Alipay and digital RMB so far

With the rapid development of the mobile Internet, coupled with the online traffic scene that has tended to monopolize and reached saturation, the offline scene has become a gold mine for third-party payment giants to dig. At present, China's third-party payment C-end market competition pattern has formed, CaiPay (WeChat Pay) and Alipay, and other institutions with two-dimensional code payment, to seize the offline market. In the 2020 second quarter, China's third-party payment comprehensive transaction market Alipay, CaiPay, and UnionPay ranked the top three with 49.16%, 33.74%, and 6.93% market share, respectively.

Alipay development status: Last year, domestic banking institutions processed a total of more than 100 billion online payment services, amounting to more than 2300 trillion yuan, 5.32 times and 2.86 times of ten years ago, respectively. The number of strokes and amount of mobile payment services processed by domestic banking institutions increased 22.73% and 21.94% respectively over the previous year, while payment institutions processed nearly a trillion mobile payment services, amounting to 359.49 trillion yuan, up from the previous year, up 27.01% and 19.38% respectively.

In the first half of 2020, Alipay and WeChat occupied 55.6% and 38.8% of the market share respectively, with the two companies together occupying 94.4% of the mobile payment market share, while the other less than 6% was occupied by One Wallet, Link Wallet, Quick Money, Suning Payment, and other second-tier mobile payment companies. [2] Linkage wallet, fast money, Suning payment, and other second-tier mobile payment companies, and each occupy an average market share of less than 1%. It is easy to see that the gap between the first and second echelon of mobile payment is huge.

3.2. Comparison of Alipay and Digital RMB

3.2.1. Security

First of all, in terms of credit level, digital RMB is a payment system established by national credit. While the official currency is in circulation, private minted and foreign currencies also exist in varying degrees. In recent years, crypto-assets such as Bitcoin and global stable coins have attempted to perform monetary functions, starting a new round of games between privately minted money, foreign money, and legal tender. In response to this situation, the country must use new technologies to digitize the base currency and provide a universal base currency for the development of the digital economy. We believe that this is the background of the era in which the digital RMB was created and the significance of its positioning as a legal tender. In contrast, Alipay is guaranteed by the platform credit.

Second, from the perspective of privacy protection, digital

RMB can achieve controlled anonymity by ensuring user data security through privacy protection technology, avoiding leakage of sensitive information, and not compromising usability; at the same time, it achieves the management of relevant data usage rights and ensures traceability under certain conditions. [3] If you want to make large payments, you need to upgrade your wallet, and the balance and payment limit will increase as the KYC strength increases. Then as a representative of third-party payment, Alipay, is based on strong KYC of payment accounts, and third-party payment institutions collect and use user data under relevant legal regulations and user authorization. Digital RMB enables the identification of suspicious accounts through big data analysis.

Mandatory legal reimbursement: Digital RMB is unlimited legal reimbursement, while Alipay is non-reimbursable.

3.2.2. Convenience

The accounting system of digital RMB is based on the digital RMB issuance registration system managed by the central bank, which is a loosely coupled account model, while the accounting system of Alipay is based on the accounts of third-party payment institutions and the reserve accounts of third-party payment institutions at the central bank, which is a tightly coupled account model. [4]

3.2.3. Cost of expenses

The clearing mode of digital RMB is payment-as-settlement, and digital RMB relies on the "payment-as-settlement" function to achieve cost reduction and efficiency enhancement on the merchant side. Since digital RMB transactions are conducted in the core system of the central bank, and digital RMB is located at M0, which is equivalent to physical RMB, the central bank does not charge the issuing layer for exchange and circulation services, and commercial banks do not charge individual customers for exchange and return services of digital RMB. As a result, payment settlement of digital RMB is currently free of fees, resulting in lower payment costs for merchants. The third-party payment system represented by Alipay, on the other hand, requires clearing and settlement through NetBank or UnionPay.

4. Empirical Study

4.1. Model construction

This paper explores the relationship between the number of mobile payment users and the cumulative amount of non-bank payment institutions in China based on the cumulative amount of non-bank payment institutions from 2015 to 2020 and constructs a general linear regression model through SPSS 22.0. The dependent variable is the cumulative amount of non-bank payment institutions, and it is assumed that the cumulative amount of non-bank payment institutions is generated by Alipay and WeChat Pay. China's historical mobile payment market share: in 2015, Alipay occupied 72.90% and WeChat payment occupied 17.40%; in 2016, Alipay occupied 54.10% and WeChat payment occupied 37.02%; in 2017, Alipay occupied 54.26% and WeChat payment occupied 38.15%; in 2018, Alipay occupied 53.78% and WeChat payment occupied 38.87%; in 2019, Alipay occupies 53.58%, WeChat payment occupies 39.53%; in 2020, Alipay occupies 55.40%, WeChat payment occupies 38.80%. The above data shows that Alipay and WeChat Pay account for more than 90% of the total mobile payment market share between 2015 and 2020. Therefore, assuming that both split the entire market.

First, do a scatter plot to observe whether there is a trend between the two, whether there is a linear trend, and whether

there are strong outliers.

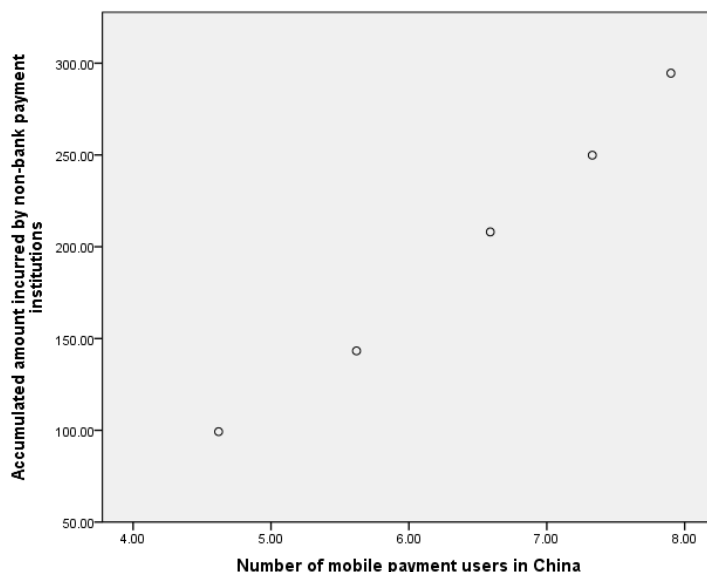


Figure 1. The relationship between the number of users and the amount incurred

As shown in the Figure 1, a linear trend and no strong outliers are found between the cumulative incidence of non-

bank payment institutions and the number of mobile payment users.

Table 1. Regression analysis of ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	6.875	1	6.875	395.343	.000b
Residual	.052	3	.17		
Total	6.927	4			

a. Dependent Variable: Number of mobile payment users in China

b. Predictors:(Constant) Accumulated amount incurred by non-bank payment institutions

The sig value < 0.05 can be seen from the table, which indicates that there is value in predicting the cumulative

incidence using non-bank payment institutions.

Table 2. Regression equation of Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1(Constant)	3.102	.177		17.567	.000
Accumulated amount Incurred by non-band Payment institutions	.17	.001	.996	19.883	.000

a. Dependent Variable: Number of mobile payment users in China

A sig value of <0.05 for the cumulative incidence of non-bank payment institutions proves that the equation is significant :

$$y = -3.102 + 0.017x$$

Analysis of the residuals of the equation

Table 3. Residual analysis of Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.996a	.992	.990	.13187	2.216

a. Predictors: (Constant), Accumulated amount incurred by non-bank payment

b. Dependent Variable: Number of mobile payment users in China

As shown in the table, the data fit the one-way regression equation.

5. Conclusion

1. Increase publicity efforts: implement word-of-mouth marketing strategies to encourage consumer habits based on

the features of dual offline payment and payment-as-settlement, while using new media platforms to strengthen publicity push and make full use of social resources to expand publicity.

2. Increase the acceptability of users

(1) The consumption habits of domestic users cannot be changed overnight. In the process of promoting digital RMB, attention should be paid to cultivating the consumption habits and consumption concepts of the general public.

(2) Select a more receptive target group

Different groups have different levels of acceptance for new things, so young people who dare to accept and try new things should be selected as the initial promotion target, with their common business, and then rapidly expand the volume of digital RMB usage with the word-of-mouth effect. [5]

3. Expanding the scope of digital RMB services

At present, the scope of services covered by digital RMB in the pilot stage is still relatively narrow and should be fully expanded in the health care and retail industries. With the convenience of low service fees, the company will be able to

attract a wider customer base and actively expand the devices and methods of payment used.

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