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The Impact of the Penetration Rate of Digital RMB Wallets on the Small Payment Handling Fee Income of Commercial Banks

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Abstract: The issue that the handling fee income of small payments by commercial banks is affected by the penetration rate of digital RMB wallets is discussed in this article. With the continuous expansion of the pilot scope of digital RMB, the penetration rate of its wallets has risen rapidly, which brings new challenges and opportunities to the small payment business of traditional commercial banks. This study collected relevant data from digital RMB pilot regions from 2020 to 2022 using quantitative analysis methods, and established a relationship model between the penetration rate of digital RMB wallets and the small payment handling fee income of commercial banks. The results show that when the penetration rate of digital RMB wallets increases, the small payment handling fee income of commercial banks decreases. The increase in the penetration rate will lead to varying degrees of reduction in the small payment handling fee income of commercial banks. However, the research also found that some banks have new income growth channels after actively developing digital RMB-related businesses. This article further analyzes the impact of this trend on the business transformation and innovation of commercial banks and puts forward corresponding strategic suggestions. The research results can provide important references for commercial banks to adjust and develop their business in the era of digital currency.

Keywords: Digital RMB Wallet penetration rate; Commercial bank; Small payment; Fee income

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1. Introduction

In the global digital payment field, China is a pioneer and has been actively developing central bank digital currency (CBDC) in recent years, promoting related pilot work. The emergence of the official legal Digital Currency Digital RMB (Digital Currency Electronic Payment, DC/EP) means that China has taken an important step in the field of digital currency [1]. After the pilot programs were launched in the first batch of pilot cities such as Shenzhen, Suzhou, Xiongan and Chengdu at the end of 2020, the application scenarios and coverage of the digital RMB have been continuously expanding. By 2023, the pilot scope had been extended to 26 urban agglomerations in 28 provinces across the country. The latest data from the People's Bank of China shows that by the end of 2022, there were over 26 million pilot scenarios for the digital RMB, with a cumulative transaction volume of over 105 billion yuan and over 261 million personal wallets opened. The development momentum is very strong [2].

In such a macro environment, the digital RMB wallet is the key entry point for users to enter the digital RMB ecosystem. Therefore, the level of its penetration directly affects the depth and breadth of the application of digital RMB. However, as the penetration rate of digital RMB wallets increases, traditional financial institutions, especially commercial banks, will face new challenges in their payment services, as small payment fees have long been one of the relatively stable sources of income for commercial banks [3]. The "Report on the Development of China's Banking Industry (2022)" released by the China Banking Association shows that in 2021, the income from handling fees and commissions of China's banking industry was 573.1 billion yuan, with payment and settlement handling fees accounting for approximately 25%.

With the current booming digital economy, the market share of traditional bank payment services has been squeezed by third-party payment institutions. And this situation may become even more complicated after the promotion of the digital RMB.

This study aims to explore the correlation between the penetration rate of digital RMB wallets and the income from small payment handling fees of commercial banks, as well as to analyze the impact mechanism of the promotion of digital RMB on the traditional payment business of commercial banks. For this purpose, a quantitative analysis was conducted on the data of digital RMB pilot regions from 2020 to 2022 to reveal the correlation between the changes in wallet penetration rates and the fluctuations in handling fee income, thereby providing decision-making references for commercial banks in business transformation and innovation in the digital currency era [4]. Research has found that as the penetration rate of digital RMB wallets increases, the income from small payment handling fees of commercial banks is subject to a certain substitution effect. However, this also creates new business opportunities for banks, such as digital currency wallet services, scenario innovation, and the development of financial products based on digital currency. Therefore, commercial banks need to actively adjust their strategies. Viewing the digital RMB as an opportunity for business innovation rather than merely a threat from competitors will enable a smooth digital transformation.

2. The current popularity and development trend of digital RMB wallets

2.1 Definition and characteristics of digital RMB wallet

The operating institution authorized by the People's Bank of China provides a digital carrier for storing and using the digital RMB, which is the digital RMB wallet. Users access and manage the digital RMB through it. Compared with traditional electronic payment tools, the digital RMB wallet has four distinct features. The first is a hierarchical wallet system. Digital RMB wallets are classified into four types based on the degree of real-name registration and credit limit to meet payment needs in various scenarios. The second type is the dual offline payment function, which enables users to make payments even in poor network conditions, thereby significantly enhancing the universality of payments. The third type is controllable anonymity, as digital RMB wallets not only protect user privacy but also prevent illegal and criminal activities through technical means. Fourth, interoperability. The digital RMB wallet can be seamlessly integrated with the existing bank account system and payment system, facilitating users to switch between different payment systems. As defined by the Digital Currency Research Institute of the People's Bank of China, the digital RMB wallet is essentially a payment tool that "payment is settlement". It can replace part of the M0 cash circulation, thereby optimizing payment efficiency and reducing social transaction costs [5].

2.2. The current popularity of Digital RMB wallets in China

The popularity of digital RMB wallets in China has been growing rapidly. The latest data from the People's

Bank of China shows that by June 2023, the cumulative number of personal wallet accounts opened in the digital RMB pilot areas exceeded 360 million, an increase of approximately 38% compared to the end of 2022.

Moreover, in the pilot cities, the average coverage rate of personal wallets reached 32% of the local permanent resident population. The coverage rates in Shenzhen, Shanghai and Suzhou are 45%, 41% and 39% respectively, leading other cities. Looking at the user distribution, the young group aged 18 to 45 is the main user of digital RMB wallets, accounting for about 68% of the total number of users, indicating that digital currency has a high acceptance rate among the young group.

In terms of application scenarios, the digital RMB wallet was initially only used in scenarios such as government subsidies and public service payments. Later, it gradually expanded to many fields, including retail, catering, transportation, and healthcare. By the first half of 2023, it had connected over 5.9 million merchants, with an average daily transaction volume of 3.3 million transactions and a transaction amount exceeding 1.3 billion yuan. However, it should be noted that small and high-frequency transactions dominate, with transactions of less than 200 yuan accounting for 83% of the total transaction volume. This is quite similar to the traditional small payment business of commercial banks, and the technical forms of digital RMB wallets are constantly increasing. From the earliest APP wallets, various forms such as hardware wallets, wearable devices, and SIM card wallets have developed to make payments more convenient for users in different scenarios [6].

2.3. Future development trends of the penetration rate of digital RMB wallets

At present, the popularization speed of digital RMB wallets is relatively fast, and the policy promotion is very strong. Therefore, its future trend of sustained and rapid growth can be foreseen. The Digital Currency Research Institute of the People's Bank of China predicts that by 2025, over 50% of China's urban population is expected to be covered by digital RMB wallets, and the cumulative number of opened wallets will exceed 800 million [7]. In terms of geographical expansion, the pilot program of the digital RMB will expand from the current urban agglomerations to the entire country and gradually penetrate into counties and rural areas. In terms of technological innovation, it is foreseeable that payment experiences will become more intelligent, wallet forms will be more diverse, and they will be deeply integrated with the construction of smart cities [8]. Moreover, as the interconnection and interoperability between the digital RMB and traditional financial infrastructure continue to strengthen, innovative financial products based on the digital RMB will gradually emerge and further enhance the functionality and appeal of wallets. It should be noted that the pilot program for cross-border payment of the digital RMB has been expanded, and digital RMB wallets for international travelers and cross-border trade will also become an important growth point for popularization [9]. The People's Bank of China has already launched pilot projects for cross-border digital RMB payments in Hong Kong, Macao and other places. This trend will become stronger in the future and promote the application of digital RMB in countries along the Belt and Road Initiative, thereby further increasing the popularity and usage frequency of digital RMB wallets.

3. Analysis of small payment fee income of commercial banks

3.1. Overview of small payment services in commercial banks

The various forms of payment and settlement services provided by banks to customers, such as bank card swiping payment, online banking transfer, mobile banking payment, and quick payment, which have small single transaction amounts and high transaction frequencies, are collectively referred to as the small amount payment business of commercial banks. This business features large transaction volumes, small single transaction amounts, and high frequencies, and holds an important position in the daily retail business of banks [10]. The "China Payment & Clearing Industry Operation Report (2022)" released by the China Payment &

Clearing Association shows that In 2022, the total transaction volume of small payment services of Chinese commercial banks, mainly including bank card acquiring business (including POS machine swiping, gateway payment, etc.), intra-bank transfer, inter-bank transfer and QR code payment, reached 185.6 billion transactions with a transaction amount exceeding 342 trillion yuan. The number of transactions with a single amount of less than 5,000 yuan accounted for 86.7% of the total transactions. With the development of digital technology, the small-amount payment business of banks has shifted from traditional counter services to online, mobile and scenario-based ones. Major banks have launched innovative products such as mobile payment apps and biometric payment to maintain their market share in competition with third-party payment institutions.

However, despite continuous technological innovation, the share of banks in the C-end payment market has been continuously declining. It might be even more serious with the promotion of the digital RMB.

3.2. The position of small payment handling fee income in the income structure of commercial banks

Among the intermediary business income of commercial banks, the income from small payment handling fees is an important part and accounts for a certain proportion in the bank's income structure [11]. According to statistics from the China Banking Association, in 2022, the net income from handling fees and commissions of Chinese commercial banks reached 589.3 billion yuan, up 5.7% year-on-year, accounting for 14.3% of the total operating income. Among them, payment and settlement handling fees were approximately 133.1 billion yuan, accounting for 22.6% of the net income from handling fees and commissions. Among various types of banks, large state-owned commercial banks and national joint-stock banks have the highest proportion of payment handling fee income, at 26.4% and 23.8% respectively, while urban commercial banks and rural financial institutions have a lower proportion, at 19.5% and 16.2% respectively [12].

Just by looking at the data of a single bank like Industrial and Commercial Bank of China, it can be found that in 2022, ICBC's income from settlement and clearing fees reached 24.01 billion yuan, accounting for 18.6% of its total fee and commission income. In contrast, China Construction Bank's income from electronic banking service fees and settlement fees in the same year was 23.67 billion yuan, accounting for 19.2%. This indicates that although the handling fee income from small payments is not the main source of income for banks, it is very important in non-interest income and supports the diversification of banking business. It should be noted that in recent years, regulatory authorities have standardized the charging items of banks and implemented policies to reduce fees and offer benefits, which has led to an overall decline in the handling fee rate for small payments. In 2022, the average rate for bank card acquiring was 0.38%. Compared with 0.51% in 2018, it has dropped by 25.5%, which has brought certain pressure to the payment business income of commercial banks.

3.3. Main factors affecting the small payment handling fee income of commercial banks

The handling fee income of small payments by commercial banks is influenced by a variety of complex factors, which can generally be classified into internal and external categories. Among them, internal factors include the banks' own capabilities in payment product innovation, customer base, and channel construction, etc. Data shows that the growth rate of handling fee income of banks with strong mobile payment innovation capabilities is much faster than the industry average. Take Industrial and Commercial Bank of China and China Merchants Bank as examples.

Relying on their leading mobile banking apps, their electronic banking transaction substitution rates reached 98.7% and 99.1% respectively in 2022, and the growth rates of payment-related handling fee income were 6.8% and 7.2% respectively. This is higher than the industry average [13].

Regulatory policies, market competition patterns and technological changes are external factors. Among them, regulatory policies have a direct impact on the handling fee rate. In 2021, the People's Bank of China issued a notice asking banks to lower the acquiring fee rate, which led to a general decrease of 15% to 20% in the acquiring business income of banks. After the rise of third-party payment institutions, a large number of small-amount payment businesses were diverted. Analysys data shows that the transaction volume of China's third-party mobile payment market reached 645.1 trillion yuan in 2022. The combined market share of Alipay and WeChat Pay exceeded 85%, while the proportion of bank-affiliated mobile payments was only about 9% [14]. The rise of the digital RMB, a new payment method, has also brought new challenges to the traditional payment business of banks. In the pilot cities of the digital RMB, some banks have reported a 5% to 10% decline in their small-amount payment business volume, especially in high-frequency consumption scenarios such as retail and catering. Facing these challenges, commercial banks are actively adjusting their strategies. On the one hand, they are strengthening the research and development of their own payment products. On the other hand, they actively participate in the operation of the digital RMB to seek a new position in the new payment ecosystem.

4. Conclusion

The small payment handling fee income of commercial banks is influenced by the popularization of digital RMB wallets in multiple dimensions. Research shows that as the penetration rate of digital RMB wallets increases, commercial banks are facing challenges in small payment handling fee income, especially in high-frequency small payment scenarios [15]. This situation is jointly caused by the direct replacement of traditional payment methods by the digital RMB, the changes in the payment market pattern, and the transformation of the banking business model. However, the digital RMB has also brought new business opportunities to commercial banks, especially in the operation services of digital wallets, the construction of scene ecosystems, and the innovation of financial products. Therefore, in the face of such changes, commercial banks should actively engage in the construction of the digital RMB ecosystem, optimize the payment business structure and explore innovative service models based on the digital RMB. They should view the digital RMB as an important opportunity for digital transformation rather than merely a challenge in terms of income.

Ultimately, the popularization of digital RMB wallets will lead China's payment system towards a more open, efficient and inclusive direction. Commercial banks need to make strategic adjustments to adapt to this trend.

Disclosure statement

The author declares no conflict of interest.

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