

# RMB digitisation, fintech private sector competitiveness

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## Abstract:

The digital economy era has promoted the in-depth development of RMB digitization, changed the traditional financial service model, and had a significant impact on the competitiveness of private enterprises. Since 2014, the People's Bank of China (PBOC) has continued to promote the research and piloting of digital RMB, and by the end of 2022 its circulating stock had reached 13.61 billion yuan. The promotion of digital RMB improves payment efficiency, reduces the cost of traditional cash transactions, and provides private enterprises with convenient access to financing. In the new digital context, the application of fintech has improved innovation, financing efficiency and risk control, especially the implementation of cloud computing and blockchain technology, which significantly reduces operating costs and promotes competitiveness. Despite the opportunities brought by digital transformation, private enterprises still face multiple challenges such as technology integration, capital investment and risk management. This study aims to analyze the impact mechanism of RMB digitization on private enterprises in the field of fintech and to propose coping strategies to help private enterprises participate more effectively in the development of the digital economy.

**Keywords:** Digitization of the RMB, Fintech, Private enterprises, Competitiveness, Digital economy

## 1. Introduction

The arrival of the digital economy era has promoted profound changes in the financial system, and the digitisation of the RMB, as an important breakthrough in China's financial innovation, is reshaping the traditional financial landscape. Since 2014, the People's Bank of China has actively promoted the

research and pilot work on the digital RMB, and as of the end of 2022, the circulating stock of the digital RMB has reached 13.61 billion yuan[1]. In this context, it is of great theoretical and practical significance to study the impact of digital RMB on the development of fintech and the relationship between it and the competitiveness of private enterprises.

## 1.1 Research Background and Significance

The launch of the digital RMB pilot program represents a new phase in China's payment system development. The instantaneous clearing mechanism of electronic payments greatly improves transaction efficiency and saves market participants a significant amount of time. The introduction of the digital RMB reduces the physical costs of traditional cash transactions and promotes the modernization and efficiency of the payment system [2]. This technological innovation has had far-reaching and comprehensive impacts on the financial industry, playing a key role in enhancing the universality of financial services and promoting the development of data-driven financial service models.

As an important force in China's economic development, private enterprises contribute over 50% of tax revenue, over 60% of GDP, and over 70% of technological innovation [3]. Technology-driven financial innovation provides new solutions to the financing problems of private enterprises. The popularization and application of the digital RMB provides private enterprises with a more convenient and efficient payment and settlement method, which can significantly improve operational efficiency, reduce transaction costs, and enhance market competitiveness by constructing a digital financial ecosystem.

From a theoretical perspective, the development of the digital RMB can be described by the following mathematical model, which illustrates its impact on enterprise competitiveness.

Where  $C$  represents the enterprise competitiveness index,  $E$  represents operational efficiency improvement,  $T$  represents technological innovation capability, and  $F$  represents financing convenience,  $\alpha$ ,  $\beta$ , and  $\gamma$  are the corresponding impact coefficients.

## 1.2 Objectives and Scope

This study aims to explore the impact mechanism of digital RMB development on the competitiveness of fintech private enterprises and analyze the challenges they face in the digital transformation process, such as technological integration difficulty, public acceptance, and legal and regulatory support issues. Through systematic research, this study provides theoretical support and practical guidance

to promote the healthy development of digital RMB and enhance the competitive advantages of private enterprises in the digital economy era.

## 2. The theory and practice of digitising the Renminbi

As an important innovation in China's monetary system, the digital RMB marks a significant shift from physical to digital currency. Driven by technological advancements and market demand, the digital RMB is gradually transforming the operational model of the traditional financial system[4]. The digital RMB is traded electronically, enabling near-instantaneous fund clearing and significantly improving transaction efficiency, especially in high-frequency trading markets, where it has clear advantages.

### 2.1 Impact on Traditional Financial Systems

Promoting the digital RMB has had a far-reaching impact on the traditional financial system. In the field of payments, the digital RMB's convenient and low-cost features make users more inclined to use digital payment methods. This has an impact on traditional banking businesses, which face challenges such as customer loss and business decline. Traditional banks must actively innovate and transform to adapt to the digitalization wave [5]. Traditional payment systems rely on banks and financial institutions as intermediaries, whereas digital RMB enables peer-to-peer transactions through decentralized technology. This requires the payment system to undergo technological upgrades and integration to adapt to the new payment mode.

### 2.2 Security and Efficiency Challenges

As an important financial technology innovation in China, the digital RMB improves the security and efficiency of the payment system. However, it faces challenges in practical application, such as security risks related to personal information and possible information leakage during transactions, including regulatory-level risks of information leakage and power abuse, as well as transaction-level risks of information processing [6].

### 2.3 .Commercial Bank Transformation

The digital RMB has significantly impacted the business models of commercial banks by promoting technological innovation and upgrading financial infrastructure. It has also prompted digital transformation. At the same time, the digital RMB's full digitization allows commercial banks to solve the problems of high labor costs and geographical restrictions in traditional retail businesses. Cloud computing and big data analysis help achieve this transformation through financial science and technology [7].

As the digital RMB is promoted, the currency's form undergoes fundamental changes compared to traditional physical forms, such as banknotes and coins. Digital currency exists in digital form and is stored in electronic wallets or digital currency trading platforms. This form has a higher degree of portability and security [8]. This change is not only technological, but also profoundly influences the operation mechanism and efficiency of the entire financial system.

## 3. Status and trends in financial technology development

According to the Financial Stability Board's definition, fintech refers to technological innovations that apply big data, cloud computing, artificial intelligence, blockchain, and other technologies to financial fields such as payments, clearing, lending, financing, and wealth management[9].

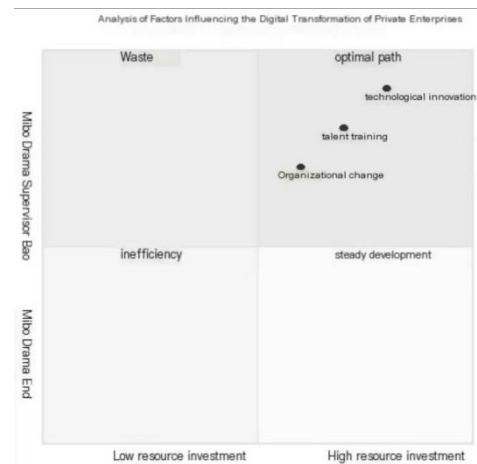
In the context of the digital economy, fintech provides technology enterprises with an important opportunity to enter the financial industry. Traditional financial institutions and technology enterprises have shown a trend of complementary integration. At the beginning of 2022, the People's Bank of China issued the "Development Plan for Financial Science and Technology (2022-2025)," which explicitly states that "accelerating the digital transformation of financial institutions is the main focus."

The Financial Technology Development Plan (2022-2025), also issued by the People's Bank of China, explicitly proposed accelerating the digital transformation of financial institutions as the main line. This marked the comprehen-

sive entry of financial technology into a new stage, moving beyond the initial "building pillars and beams" phase [10].

### 3.1 Technological Applications

Cloud computing, big data, blockchain, and other technologies broaden the scope of traditional financial services and make up for the shortcomings of consumer credit in traditional supply chain financing. These technologies can meet consumers' diverse financial needs in a timely manner, promote consumption growth in the market, and enhance consumption capacity [11].



**Figure 1 Digital Transformation Influencing Factors for Private Enterprises**

Retailers are more likely than financial institutions to want to improve efficiency and service innovation. There are new difficulties with risk management and regulatory models because of the rapid development of these companies. Regulators must decide how to proceed in order to avoid danger and create a regulatory framework that aligns with fintech advancements.

### 3.2 Future Development Trends

Looking to the future, fintech will continue to stimulate innovation and accelerate the development of new, high-quality productivity by providing financial resources, such as risk identification, risk pricing, and investment financing, to related industries. With the in-depth application of new technologies, such as big data, artificial intelligence, and blockchain, in the financial sector, fintech will become a core driving force for the high-quality

development of the financial industry [12].

## 4. The Role of Private Enterprises in Financial Technology

Private enterprises play an important role as drivers of innovation in FinTech development. Accompanied by the acceleration of RMB internationalization, private enterprises have improved cross-border payment and settlement efficiency through FinTech innovation, providing a convenient international settlement channel for foreign trade [13]. In the digital economy era, technological innovation's impact on enterprise competitiveness has deepened further, and private enterprises continue to enhance their competitive advantages in the international market through financial technology development [14].

### 4.1 Internationalization and Financial Liberalization

The development of financial technology has brought new opportunities for private enterprises. The deepening of regional economic integration has provided enterprises with a broader space for cooperation, especially with the support of the "Belt and Road" initiative and the Asian Infrastructure Investment Bank and other platforms, private enterprises can better participate in international financial cooperation. Through a high level of financial liberalization, private enterprises can obtain more flexible and convenient financial support and actively participate in the financial construction of countries along the Belt and Road [15].

### 4.2 Strategic Adaptations

The internationalization of financial markets has created new opportunities for private enterprises. The internationalization of the RMB has made it more convenient for enterprises to engage in international trade and investment activities [16]. The number of merchants accepting the RMB is increasing globally, which greatly reduces the cost and risk of currency exchange in trade and investment. In this process, private enterprises have improved the quality and efficiency of financial services by using financial technology tools and promoting the deep integration of financial technology and the real economy.

Private enterprises play an important role in the RMB's internationalization process. The opening and internationalization of financial markets has improved the convenience of cross-border capital flows, providing strong support for private enterprises to compete in the international market [17]. Through financial reform, the introduction of foreign financial institutions, and the improvement of financial market competitiveness, private enterprises can obtain lower financing costs, thus enhancing their competitive strength in the international market.

With the development of the digital economy, private enterprises need to take the initiative to adapt to the changes in the domestic and international situation under the wave of new technologies, make full use of the advantages of China's digital economy power, and continuously improve their innovation ability and competitiveness. In the new stage of development, private enterprises should actively grasp the development opportunities of regional economic and trade cooperation, low-carbon finance, financial technology, etc., promote the internationalisation of the RMB, and contribute to the construction of a modern financial system [18].

## 5. Impact of RMB digitisation on the competitiveness of private enterprises

The digitization of the RMB and the development of financial technology have injected new vitality into private enterprises and significantly changed the traditional financial service model. As an important part of China's national economy, private enterprises contribute more than 50 percent of tax revenue, more than 60 percent of GDP, and more than 80 percent of urban labor employment. The development of digital finance has opened new paths for private enterprise financing and effectively alleviated financing difficulties.

### 5.1 Financing and Operational Efficiency

The application of new information technologies, such as cloud computing, big data, and blockchain, has improved the efficiency of financial services and significantly reduced operational costs.

#### 5.1.1 Cost Reduction in Innovation

The penetration of digital technology enables small and

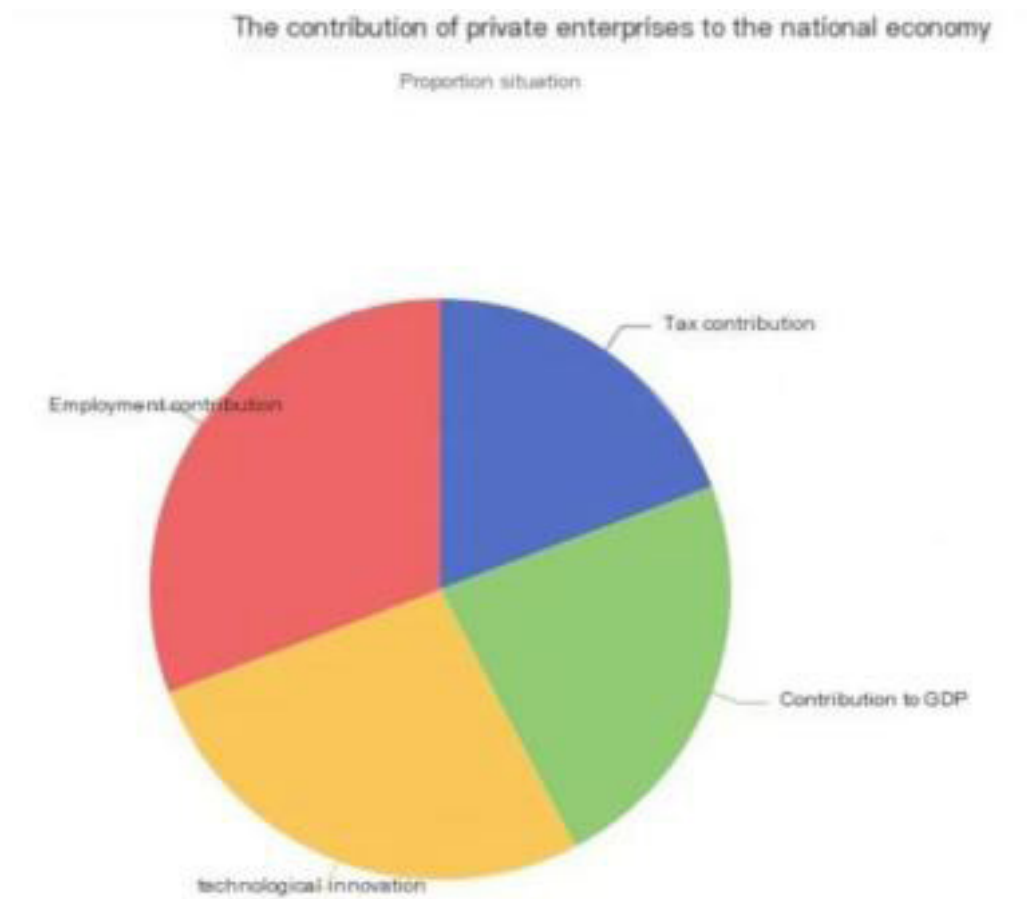
medium-sized enterprises (SMEs) to innovate at lower costs and enhance their market competitiveness [19].

### 5.1.2 Risk Control Optimization

The development of fintech promotes business innovation and effectively reduces the level of financialization and the risk of debt default [20].

**Table 1 Analysis of Fintech's Impact on Key Operational Dimensions of Private Companies**

Dimensions of Fintech's impact on private companies	concrete expression	Degree of impact
Financing efficiency	Enhancing credit supply and lowering borrowing costs	statistically significant
innovation capacity	Reducing the cost of innovation and promoting technological innovation	relatively strong
risk control	Reducing default risk and optimising risk management	conspicuous
operational efficiency	Improve operational efficiency and reduce operating costs	statistically significant



**Figure 2 Dimensions of the core contribution of private enterprises to the national economy**

The effect that fintech has on private enterprises is measured by the amount of concrete expressed in terms of effect. Finance efficiency: Increasing the amount of credit available and decreasing the expense of financing. The ability of the innovation to decrease, statistically, the level of innovation capacity. Reduction of the cost of

innovation; moderately high danger control; and lowering the expense of technology.

In recent years, China's digital economy has developed vigorously, breaking through the spatial and temporal limitations of factor supply and production and consumption through technological advantages, and significantly



improving economic vitality and risk resistance[21]. In the context of the digital economy, market competition is no longer limited to traditional price and quality competition, but has shifted more to the competition of innovation, brand, customer experience and data assets.

## 5.2 Challenges in Digital Transformation

For the digital transformation of private enterprises, they still face resistance such as the pressure of capital investment[22]. For this reason, it is necessary to improve the efficiency of financial services and optimise the financial service process through the development of financial science and technology at the micro level, thereby alleviating the financing constraints of private enterprises. Focusing on the needs of cloud computing, big data and other basic major science and technology in the financial and real industries, we should carry out financial science and technology industry-university-research and innovation, and make efforts to promote the promotion and development of key technologies in the field of financial science and technology[23].

## 6. Conclusion

China has entered the financial technology market with the introduction of the Digital RMB, which is a new development opportunity in the world of financial technology. It not only increases transaction efficiency and greatly lowers physical costs, but also encourages the modernization of the payment system and increases its efficiency as a key component of financial technological innovation. In the face of this, private fintech companies are currently facing both new and unfamiliar opportunities and problems.

From the technical level, private enterprises still have many problems in the process of digital transformation. The speed of technological update is too fast, and the iteration of emerging technologies such as artificial intelligence, cloud computing, and big data analysis is frequent, while private enterprises are limited by factors such as capital, talent, and experience, which makes it difficult to keep up with this rapid pace of technological iteration[24]. To cope with this challenge, private enterprises need to strengthen their awareness of digital transformation, collect relevant data information through big data technology,

build a perfect digital system, and leverage their technological advantages to help enterprise development[25].

Looking ahead, with the deepening of the digital RMB pilot work, the fintech sector will show new developments. On the one hand, the promotion of digital RMB will bring more market opportunities and provide broad development space for private enterprises; on the other hand, it is also necessary to be vigilant against financial risks such as personal information leakage. Therefore, while grasping the development opportunities, private enterprises should also focus on risk prevention and control, and build a perfect data security protection system.

Where  $C$  represents the enterprise competitiveness index,  $T$  represents the technological innovation ability,  $R$  represents the risk control ability,  $I$  represents the information security level, and  $\alpha$ ,  $\beta$  and  $\gamma$  are the corresponding weight coefficients. Through this model, the comprehensive competitiveness of private enterprises in the era of digital finance can be quantitatively assessed.

Cultivating digital talents and strengthening cooperation between industry, academia and research will become an important direction for the future development of private enterprises. Through the school-enterprise co-establishment of talent bases, seminars and other forms, can effectively enhance the enterprise's R&D capabilities and market adaptability. At the same time, private enterprises should also actively explore the mode of cooperation with state-owned capital, and optimise the allocation of resources to enhance the efficiency of digital transformation by means of "reverse hybridisation"[26].

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