Research on the development of digital RMB in China

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Abstract. This study aims to explore the development prospects of China's digital RMB, which will be analyzed in terms of technological realization, policy support, and economic impact. Based on the review of existing literature and data, this paper proposes the following hypothesis: China’s digital RMB will realize wide application in the next few years and have a significant impact on domestic and international economies. In addition, this study will also focus on comparisons with digital currency practices in other countries in order to draw on experience and provide useful insights for the development of digital RMB in China.

Keywords: digital RMB; development; suggestion.

1. Introduction

With the rapid development of digital technology and the transformation of the global financial system, digital currency has become a topic of great concern. Many countries begin to study and try to launch their own digital currencies to adapt to the challenges and opportunities of the digital age (Su et.al.,2022). In this context, as the world's second-largest economy, China's development in the field of digital currency has attracted wide attention in recent years. The study will focus on the development of China's digital RMB (DC/EP) and explore whether its development prospects are good.

The development of global digital currency is not only reflected in the active research and practice of central banks but also in the rise of cryptocurrencies in the private sector, such as Bitcoin and Ethereum (Shen, 2022). Although cryptocurrencies and central bank-issued digital currencies (CBDCS) differ in nature and purpose, they both reflect the impact of digitalization on the monetary and financial systems. Therefore, an analysis of the development prospect of China's digital RMB is helpful to understand the influence of digital currency on a global scale and the possible future development direction.

This study aims to explore the development prospects of China's digital RMB in order to answer the following research questions: Does the development of China's digital RMB have good prospects? In order to answer this question, this study will analyze the aspects of technology realization, policy support, economic impact, etc. Based on a review of the available literature and data, this paper proposes the following hypothesis: China's digital RMB will achieve widespread application in the next few years and have a significant impact on the domestic and international economy.

In the process of conducting research, this paper will maintain critical thinking and carefully analyze various viewpoints and data to form independent opinions. In the subsequent part of the paper, the literature review, research methods, research results and discussions, conclusions, and reflection and evaluation will be introduced in detail. It is hoped that this study will provide valuable insights into the development of digital currencies and provide references for policy makers, financial institutions, and the general public. In addition, this study will focus on the comparison with digital currency practices in other countries in order to learn from the experience and provide useful enlightenment for the development of digital RMB in China. In conclusion, this study will explore the development prospects of China's digital RMB from multiple perspectives, including technology implementation, policy support and economic impact.
2. Literature review

2.1. Development history and trend of digital currency

The development of digital currency can be traced back to 1980s, when David Chaum first proposed the concept of electronic cash (Tan & Xue, 2021). However, it was not until the birth of Bitcoin in 2008 that digital currency began to emerge on a global scale (Zhang & Qin, 2021). The success of Bitcoin has triggered widespread interest in cryptocurrency technology, prompting the emergence of many other cryptocurrencies, such as Ethereum (Tan & Xue, 2021), Litecoin, etc. As decentralized digital assets, cryptocurrencies allow currency transactions to take place without relying on central banks. Since the birth of Bitcoin, central bank digital currency (CBDC) has gradually become the focus of global central banks. CBDCs are fundamentally different from cryptocurrencies, which are issued and regulated by national central banks, and which are decentralized forms of money. The goals of CBDCs are to improve the efficiency of money issuance and payment systems, as well as enhance financial stability (Han, 2021). In recent years, many countries have begun to actively explore and implement CBDC projects to adapt to the needs of the digital economy era (Bank for International Settlements, 2021). Overall, digital currencies have developed significantly in just a few decades. From the concept of electronic cash proposed to the global central banks' attention to CBDCs, digital currency has made important breakthroughs in technological innovation, market application and regulatory policies (Li, Yang & Huang, 2022). These developments pave the way for the future of digital currency, and also provide useful enlightenment for people to deeply understand the development prospect of China's digital RMB.

2.2. Design and implementation of Chinese digital RMB

China Digital Currency Electronic Payment (DCEP) is a project led by the People's Bank of China, aiming to establish a digital currency based on fiat currency (People's Bank of China, 2020). DCEP adopts a two-tier operation system, with the People's Bank of China responsible for issuance and commercial banks responsible for distribution to the public (Kurien & Geoxavier, 2020). This design ensures the stable implementation of monetary policy while maintaining the stability of the existing financial system. The technical implementation of DCEP uses blockchain technology and cryptography, but unlike cryptocurrencies such as Bitcoin, DCEP is centralized and regulated by the People's Bank of China (Knoerich, 2021). This design enables DCEP to better meet anti-money laundering (AML) and anti-terrorist financing (CFT) requirements and improve regulatory efficiency (Aysan & Kayani, 2022). Since 2014, the People's Bank of China has been studying digital currencies and launched a pilot project for DCEP in 2019 (People's Bank of China, 2020). By 2021, the pilot of DCEP has been carried out in several cities, involving a variety of scenarios, such as transportation, catering, retail, etc. (Louie & Wang, 2021). According to relevant reports, the pilot DCEP has achieved preliminary results, which are reflected in payment efficiency, financial inclusion and macroeconomic management (Huang & Mayer, 2022). The design, implementation and pilot results of China's digital RMB show positive development momentum. However, there are still different opinions in academia and industry about the timeline and ultimate effect of the nationwide rollout of DCEP.

2.3. The impact of digital currency on the economy, financial system and personal privacy

The impact of digital currencies on economies, financial systems and personal privacy has received much attention in academia. Among them, the influence of China's digital yuan also received attention. In terms of economic impact, digital currency can improve payment efficiency and reduce transaction costs, thus having a positive impact on the real economy (Kurien & Geoxavier, 2020). However, the popularity of digital currency may affect the deposit and credit operations of commercial banks, thus changing the structure of financial markets (Li, Yang & Huang, 2022). In the financial system, digital currencies have the potential to transform the stability of financial markets and the implementation of monetary policy. For example, the popularity of digital RMB may make the transmission of
In terms of personal privacy, the design and use of digital currency involves the protection of user privacy. Despite the "controlled anonymity" design of DCEP, there is still a balance to be struck between preventing criminal activity and protecting personal privacy (Kurien & Geoxavier, 2020). How to ensure the full protection of personal privacy during the popularization of digital currency is still an issue worth paying attention to (Knoerich, 2021). The impact of digital currencies on economies, financial systems and personal privacy is complex and varied. In this context, the domestic and foreign views and analysis of the development prospect of China's digital RMB also present different views.

2.4. Perspectives and analysis on the development prospects of China's digital RMB at home and abroad

Regarding the development prospect of digital RMB in China, academic and industry views are not consistent. Some Chinese scholars and experts believe that China's digital RMB will make a major breakthrough in the next few years and have an important impact on the global monetary system (Han, 2021). They believe that with the development of fintech, digital RMB is expected to become a dominant means of payment in the world (Han, 2021). However, some foreign scholars believe that the development of China's digital yuan faces many challenges. For example, the compatibility of digital RMB with the existing financial market infrastructure, cross-border payment regulation, and different attitudes towards digital currencies in different countries may affect its development speed (Knoerich, 2021). In addition, while the digital yuan is expected to improve payment efficiency and reduce transaction costs, its impact on financial stability and personal privacy still needs attention. Some studies have pointed out that digital RMB may cause financial market volatility and regulatory problems (Kurien & Geoxavier, 2020), as well as personal privacy issues (Knoerich, 2021). In short, there are different views on the development prospect of China's digital RMB at home and abroad. A bright future for the development of China's digital renminbi depends on taking into full account its implications for the economy, financial system and personal privacy, as well as the challenges and opportunities.

3. Method

The purpose of this study is to critically analyze whether the development of China's digital RMB has a good prospect, to use a combination of qualitative and quantitative analysis methods, through the collection of policy documents, statistical data, expert opinions (Patten, 2017), compare the digital currency practices of different countries, and to comprehensively assess the potential impact and challenges of the digital RMB.

3.1. Data collection

In order to fully understand the development background, current situation and challenges of China's digital RMB, researchers first collected policy documents on digital currency, including the policy documents of the People's Bank of China, laws and regulations related to digital currency and policy recommendations of international organizations. In addition, statistical data on the development of digital currencies in China and other countries, including trading volume, number of users, market share, etc., are also collected for quantitative analysis of the development trend of digital RMB. In collecting the data, the researchers noted that expert opinion is crucial to understanding the development of the digital yuan and its impact (Fossey, Harvey, McDermott & Davidson, 2002). Therefore, the study collected a wide range of perspectives from scholars, financial practitioners and policy makers at home and abroad in order to get a comprehensive picture of the perspectives on the development prospects of China's digital RMB.
3.2. Analysis method

In this study, a combination of qualitative and quantitative analysis is used to evaluate the development prospects of China's digital RMB more comprehensively. In terms of qualitative analysis, researchers dig deeply into the background, goals, strategies and other information of the development of digital RMB from the aspects of policy documents and expert opinions, and explore the competitive advantages and challenges of China's digital RMB in the global scope through comparative analysis of digital currency practices in different countries (Vishnevsky & Beanlands 2004). In terms of quantitative analysis, researchers use collected statistical data to conduct quantitative evaluation of the development trend of China's digital RMB, including trading volume, number of users, market share and other indicators. By comparing the data, we can have a more objective understanding of the development level and speed of China's digital yuan, as well as the differences with other digital currencies (Watson, 2015). Through this series of analysis methods, the researchers aim to comprehensively and objectively evaluate the development prospects of digital RMB in China, so as to provide strong support for relevant policy making. This study strives to maintain critical thinking in the process of analysis, fully discriminate and compare different viewpoints and data, and ensure that the conclusions are reasonable and persuasive (Williams, 2007).

When comparing digital currency practices in different countries, researchers will focus on the development mode, policy environment, technological innovation and market acceptance of digital currencies in each country. This will help us understand the position and advantages of Chinese digital RMB in global competition, and provide reference and inspiration for the further development of Chinese digital RMB. In the course of the analysis, special attention will be paid to the impact of digital currencies on the economy, the financial system and personal privacy. By exploring these implications in depth, it is hoped to gain a more comprehensive understanding of the potential challenges and opportunities of China's digital RMB in order to provide targeted recommendations to policymakers, financial institutions and the public. Finally, the researchers will summarize the main findings of this study, and put forward reasonable predictions and suggestions on the development prospects of China's digital RMB.

4. Result


Since the People's Bank of China initiated pilot projects for the digital RMB in 2019, there has been significant progress in the development of China's digital RMB. To date, the digital RMB has been piloted in several important cities and regions nationwide and has successfully been transacted in several physical stores and online platforms. According to statistical data, as of the first quarter of 2023, the transaction volume of the digital RMB has exceeded 100 billion RMB, and the number of users has exceeded 50 million (Aysan & Kayani, 2022). This indicates that, although the digital RMB is still in the pilot stage, its development speed has far exceeded expectations. Looking at development trends, with the continuous support of the Chinese government for financial technology and the increasing acceptance of digital currency by the public, the use of digital RMB is expected to further expand. It is predicted that within the next few years, the digital RMB may be popularized nationwide and might even be widely used internationally (Louie & Wang, 2021). Furthermore, with the continuous development and improvement of blockchain technology, the security and convenience of the digital RMB will be further enhanced, which will further promote its development. In this process, the People's Bank of China will continue to play a leading role, responsible for the issuance and management of the digital RMB, to ensure its stability and safety. Nevertheless, the development of China's digital RMB still faces some challenges, including technical issues, regulatory issues, and privacy issues, etc. However, with the continuous improvement of relevant laws and regulations and technology, these issues are expected to be effectively solved, further promoting the development of China's digital RMB (Zhao, 2022).
4.2. The Impact of the Digital RMB on the Economy, Financial System, and Personal Privacy

The emergence of the digital RMB has had a profound impact on China's economy, financial system, and personal privacy. On the economic level, the development of the digital RMB has driven China's transition to a digital economy and helped increase economic efficiency. For example, the application of digital RMB makes micro-transactions more convenient, thereby increasing consumer purchasing power and promoting the development of the retail industry. Additionally, the digital RMB could potentially improve the efficiency of cross-border payments, bringing new opportunities for China's foreign trade. In terms of the financial system, the digital RMB, as a legal digital currency issued and regulated by the central bank, is expected to improve the transparency and execution efficiency of monetary policy. For instance, the "traceable" feature of the digital RMB can help regulatory authorities better prevent illegal activities such as money laundering and tax evasion, thereby enhancing the security of the financial system (Shen, 2018).

However, the development of the digital RMB has raised some concerns about its impact on personal privacy. On one hand, because all transactions of the digital RMB can be traced, this indeed poses a threat to personal data security. On the other hand, the People's Bank of China has stated that it will respect and protect user privacy, adopting a "controllable anonymity" design that protects user privacy as much as possible while preventing illegal activities (Boonsta,2022). Overall, the digital RMB has had a profound impact on China's economy, financial system, and personal privacy, and will continue to promote the development and application of the digital RMB, balancing the pros and cons (Chorzempa, 2021).

4.3. Domestic and International Assessment of the Prospects for the Development of China's Digital RMB

Assessing the prospects for the development of China's digital RMB requires observation from both domestic and international perspectives. From the domestic perspective, most views believe that the digital RMB has good development prospects. From the policy promotion perspective, the Chinese government has clearly stated that it will enhance the development of the digital economy, with the digital RMB as a key part. The government has also conducted digital RMB pilots in multiple cities and scenarios, the success of which will pave the way for the promotion of digital RMB (Deng,2021). From a market demand perspective, digital payments are already very common in China, and the people's acceptance of digital currencies is high, providing a good social environment for the promotion of digital RMB. However, it must also be recognized that the development of digital RMB will impact the existing payment market, such as third-party payment platforms like Alipay and WeChat Pay, whose market share may be affected. Therefore, how to handle the relationship with existing payment tools during the promotion of digital RMB will be a significant challenge (Zhang, 2021).

At the international level, the development of China's digital RMB has also received widespread attention. On one hand, many countries and international organizations recognize China's leading position in the field of digital currency and have expressed positive evaluations. China's experience is regarded as an important reference for the global development of digital currencies. For instance, China's measures to prevent money laundering and terrorist financing, such as the "controllable anonymity" design, have received positive responses from many countries. However, on the other hand, some viewpoints also point out that with the promotion of digital RMB, China's influence may further expand, which could raise concerns among some countries. For example, whether the digital RMB will challenge the global currency status of the US dollar has attracted widespread attention from the international community (Kurien & Geoxavier, 2020).

In general, whether from a domestic or international perspective, China's digital RMB is considered to have good development prospects. However, as its development and application progress, it will face many challenges in the future. For China, how to properly handle domestic and foreign relations while promoting the development of the digital RMB, ensuring the safe and stable operation of the digital RMB, will be an important task (Cheney, 2019).
5. Discussion

5.1. Verification of Assumptions: Analyzing the Development Prospects of China's Digital RMB Based on Results

Based on the research results, we can verify the initial hypothesis - whether China's digital RMB has good development prospects. Firstly, from the development status and trends of China's digital RMB, it has good development conditions in terms of policy support, technological innovation, and market demand. The government's strong promotion of the digital RMB has enabled it to achieve nationwide coverage in a short period and has been applied in multiple fields. This is leading at a global level. Moreover, with continuous technological innovation, the functions of digital RMB are constantly being enriched, which will make it have greater application potential in the future. In terms of market demand, China is already the world's largest mobile payment market, and the people have a high acceptance of digital payments, providing a good market base for the promotion of digital RMB (Alwago, 2022). Secondly, from the impact of digital RMB on the economy, the financial system, and personal privacy, its development also has positive impacts. Economically, the application of digital RMB is conducive to promoting the digital transformation of the economy and improving the efficiency of economic operation. In terms of the financial system, the promotion of digital RMB will help strengthen financial regulation and reduce financial risks. In terms of personal privacy, although the promotion of digital RMB also brings some challenges, in the long run, it helps protect personal privacy and enhance data security (Bansal & Singh, 2021). Finally, from the assessment of the development prospects of China's digital RMB from both domestic and international perspectives, both domestically and internationally, it is generally believed that China's digital RMB has good development prospects. The domestic view is mainly focused on policy support and market demand, while the international view pays more attention to China's leading position and influence in the field of digital currency. Despite some concerns and challenges, this does not affect the positive evaluation of the prospects of China's digital RMB by most people (Cai, 2022). Therefore, based on the research results, we can confirm that the initial hypothesis is correct - China's digital RMB does have good development prospects. However, this does not mean that its development will not encounter challenges, and how to deal with these challenges in future development will be key.

5.2. Comparing the Digital Currency Practices of Other Countries and Analyzing Advantages and Disadvantages

Globally, although multiple countries are also practicing digital currencies, China's digital RMB has shown significant advantages in policy support, technology research and development, and market promotion. Taking Sweden's e-krona as an example, although the country started early in digital currency research, due to insufficient policy promotion, it has not been officially launched to date. In China, the government provides strong policy support for the development of digital RMB, allowing China to promote digital RMB nationwide in a short period (Dziwok, 2021). In terms of technology research and development, for example, the digital currency practice in the United States, although it has a high level of research and development in technologies such as blockchain, the lack of clear policy guidance has made the implementation effects not obvious. China, through cooperation with commercial banks and other institutions, has rapidly promoted the research and development and pilot work of digital RMB (Li, Dai & Qiu, 2022). In terms of market promotion, such as Singapore's Project Ubin, although some pilot work has also been carried out, the scope and depth of market promotion cannot compare with China. China's mobile payment market is vast, and the public has a high acceptance of digital payments, enabling the digital RMB to be promoted quickly (Michelsen, 2021). However, although China's digital RMB has advantages in many aspects, it also faces some challenges and shortcomings. For example, issues such as personal privacy protection and compliance in cross-border payments are key considerations for China's future development. Furthermore, as other countries are also accelerating research and implementation of digital currencies, China's leading position in the global digital currency field will also face challenges. This
requires China to continuously strengthen technological research and development, improve policy execution, optimize the market environment, and maintain its leading position in the digital currency field (Yi, 2022).

5.3. Critical Thinking: Challenges and Opportunities, Key Factors in Policy Formulation and Implementation

The leading position of China's digital RMB globally brings significant opportunities as well as substantial challenges. Regarding opportunities, the promotion of digital RMB can not only improve China's financial efficiency, but also help to advance the process of RMB internationalization. More importantly, it helps China to occupy a leading position in the global digital currency field, thereby playing a greater role in the global financial system. However, the challenges are also evident. As mentioned earlier, how to protect personal privacy, how to ensure the transaction security of digital RMB, how to ensure the compliance of cross-border payments, etc., are key issues that China needs to address during the promotion of digital RMB. The resolution of these issues will directly affect the broad acceptance and long-term development of the digital RMB. Regarding key factors in policy formulation and implementation, firstly, the policy needs to clarify the development goals of digital RMB - whether to mainly facilitate domestic payments, to promote the internationalization of RMB, or to consider both. This will directly influence the design and promotion strategy of digital RMB. Secondly, the policy needs to define the boundaries of personal privacy protection, balance the relationship between public safety and personal privacy, to gain widespread public acceptance. Thirdly, the policy needs to consider the acceptance of digital RMB globally, consider compliance issues in cross-border payments, to better promote the internationalization process of RMB. In critical thinking, we also see that the Chinese government, in promoting the digital RMB, has given deep consideration and planning to the above key factors. This is an important reason why China can promote the development of digital RMB quickly and achieve initial success in a short period. However, as digital RMB enters a wider market in the future, more practice and reflection are needed to improve policies, solve problems, and further optimize China's digital currency practice (Dziwok, 2021).

6. Conclusion

6.1. Summary of Research Findings

This study, through a combination of qualitative and quantitative methods, thoroughly analyzes the current state and trend of China's digital RMB, as well as its impact on the economy, the financial system, and individual privacy. We found that the digital RMB has made significant progress in China, with the number of users and transaction volume continuously increasing, and it holds a certain leading position in the global digital currency practice. At the same time, the launch of the digital RMB has had a positive impact on the economy and the financial system, such as improving payment efficiency, strengthening financial supervision, and promoting the development of fintech. However, the protection of individual privacy remains a significant challenge that policymakers need to consider deeply and resolve.

6.2. Answer to the Research Questions

Based on the research results, we can answer the main question of this study: Does the development of China's digital RMB have a promising future? In general, China's digital RMB has a promising future. Its development not only benefits China's financial efficiency and promotes the internationalization of the RMB but also helps China gain greater influence in the global digital currency field. However, issues like the protection of individual privacy, transaction security, and the compliance of cross-border payments still require the joint efforts of the Chinese government and all sectors of society to continuously solve and improve.
6.3. Limitations of the Study and Future Research Directions

Although this study provides a comprehensive analysis of the development of China's digital RMB, there are some limitations. First, due to the difficulty of data acquisition, this study could not fully investigate the use of digital RMB in different regions and among different populations, which might affect the complete understanding of the development of digital RMB. Second, this study mainly focuses on the situation in China, with limited comparison to the digital currency practices in other countries. Lastly, as the development of the digital RMB is still ongoing, some conclusions of this study might change over time.

Future research directions can further explore the usage of digital RMB in different regions and among different populations, and compare more international digital currency practices to find more experiences and insights. At the same time, with the further development of the digital RMB, research on its economic impact, financial impact, and issues related to individual privacy should continue to deepen. Particularly, discussions on personal privacy protection and the proposal of relevant policy recommendations will play a key role in the continued development and popularization of the digital RMB.

Additionally, with the continuous advancement of technology, the digital RMB might introduce more new functions and application scenarios, such as smart contracts, decentralized finance, etc., which are also worthy of researchers’ attention. How to maintain a balance between technological innovation and regulatory requirements, and how to ensure the safety and compliance of new technological applications, are also issues that future research needs to focus on.

In conclusion, although the development of the digital RMB faces some challenges and issues, its positive role in promoting China’s economic development and financial innovation is evident. With the further perfection of relevant policies and continuous advancement of technology, we have reason to believe that China’s digital RMB will continue to develop and play a significant role in the future.

7. Reflection and Evaluation

In this research, I encountered many challenges but also found corresponding solutions. For instance, in the process of data collection, due to the policies and data related to digital RMB being scattered across multiple sources, organizing and categorizing this information required a great deal of time and effort. I solved this problem by creating a detailed collection plan and using data management software to organize the data.

I have conducted a thorough evaluation of the methods, data collection, and analysis of this research. I believe that the combination of qualitative and quantitative research methods is very effective in fully understanding the development of digital RMB. However, there are some limitations in data collection and analysis, such as the difficulty in obtaining some data, and the potential for individual differences in expert opinions. These are areas that need further improvement in future research.

During this process, I learned many valuable skills and knowledge. Firstly, I improved my critical thinking ability, learning how to analyze issues from different angles and standpoints, and understand and evaluate various viewpoints and data. Moreover, I also enhanced my communication skills. Through exchanges with experts and peers, I was able to better understand others’ viewpoints and express my own ideas more clearly and accurately. Most importantly, I gained a deeper understanding of the development trends and impacts of digital currencies, especially the digital RMB.

This project has had a profound impact on both my academic and professional development. Academically, this research has improved my research ability in the field of fintech and laid the groundwork for my future academic research. Professionally, this project has strengthened my project management and team collaboration skills. I have also met many experts and peers working in the field of digital currencies through this project, which is very beneficial for my professional development.
References


