Research on the Innovation Strategy of Central Bank's Digital Currency Application Based on Four Dimensions of Service Innovation

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Abstract. Based on the development of Internet technology and the inevitable trend of the evolution of monetary forms. The beginning of the global central bank digital currency competition has promoted the effective landing from the conceptual stage to the practical stage. This paper is based on the perspective of service innovation, with the help of the four dimensions of service innovation on the central bank digital currency innovation mode for preliminary exploration and summary. The analysis shows that the digital currency innovation is the integration of the four dimensions of concept, interface, organisation and technological innovation, and that in the future, the development and implementation of the central bank digital currency will also become a major innovative reform in the payment field.

Keywords:.Central bank digital currency; Innovative models; Central bank digital currency promotion

1 Introduction

Digital currencies have their origins in "the anonymous and untraceable electronic cash system (E-cash) that emerged in the 1980s".The emergence of digital virtual currencies, represented by Bitcoin The emergence of digital virtual currencies, represented by Bitcoin, marked the beginning of digital currencies. The issuance of a central bank digital currency is a major undertaking. The issuance of CBDC is a complex systematic project, a new product and a new type of service.

Compared with the rapid development of central bank digital currencies, the current relevant research results are relatively scarce.This study is valuable for deepening China's local service innovation theory research and promoting the innovation research of central bank digital currency.

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2 Progress and Development of Central Bank Digital Currency Research

2.1 Global Central Bank Digital Currency Development

As of October 2022, a total of 105 countries and regions have explored central bank digital currencies.The Bank for International Settlements joining forces with the central banks of the seven largest economies to carry out co-operative research work on central bank digital currencies. In addition to the central banks of the seven major economies, the current official issuance of central bank digital currency countries are Ecuador, Venezuela, Lithuania, the Bahamas and so on,many of them have failed to issue them due to weak financial infrastructure, imperfect financial systems, weak national credit and insufficient user bases, etc. .

2.2 Development of Digital Currency in China's Central Bank

As China's legal tender, the digital RMB has strong support from national laws and policies, and the General Office of the Central Committee of the Communist Party of China (CPC) and the General Office of the State Council have also strongly supported the research and development of the digital RMB. In addition to the People's Bank of China, Hong Kong, China, jointly initiated the Multilateral Central Bank Digital Currency Bridge (m-CBDC Bridge) project with the central banks of many countries in 2021, which means that in the future, the central bank digital currency may achieve cross-border payments.

3 A Brief Analysis of the Current Status of Service Innovation in Central Bank Digital Currency and Its Applications

In the four dimensions of service innovation proposed by Bilderbeek and other scholars, the new service concept is a kind of conceptualisation innovation; the new customer interface is the new service platform; the new service delivery system is the organisational innovation; the new technology is the new technological achievement that is used, and the spillover effect it brings will promote the innovation of the other dimensions, i.e. led by the technology. New technology is the result of the new technology used.

3.1 Analysis of the Current Status of Innovation in Service Concepts

Currencies have evolved from physical money, metal money, paper money to digital money. E-money is generally understood as "electronic RMB", such as online banking, WeChat Pay and Alipay Pay; virtual money refers to non-real money, such as game coins, Q-coins, bitcoins, etc.; legal tender is defined as the digitisation of the central bank's base currency, which the IMF defines as a new form of money with legal capacity for payment issued by the central bank in digital form .The People's

Bank of China defines digital RMB as a legal tender issued in digital form by the PBOC.

3.2 Analysis of the Current Status of Service Interface Innovations

The digital RMB wallet is the carrier of the central bank's digital currency and the medium through which the central bank's digital currency reaches users. It can be divided into four types: Type I, according to the strength of customer identification is divided into four major types of wallet types. Type II is divided into personal wallets and public wallets according to the subject of opening: natural persons and individual businessmen can open personal wallets, and other legal persons and unincorporated organisations can open public wallets. Type III is divided into soft wallets and hard wallets according to the different carriers; type IV is divided into parent wallets and sub-wallets according to the attribution of authority.

3.3 Analysis of the Current State of Innovation in Service Organisations

3.3.1Operation side: two-tier operation system.The operation mode of digital currency of China's central bank adopts the two-tier delivery mode of "central bank-commercial bank", which corresponds to the "digital currency issuance bank - digital currency bank bank - personal digital currency wallet". digital currency wallet". The first layer of the two-tier delivery model is between the central bank and the operating institution (commercial bank), and the second layer is between the operating institution and the users.

3.3.2*Issuing end: one coin, two banks and three centres.*The core elements of the overall architecture of the digital RMB system are "one coin, two repositories and three centres". Among them, "one coin" refers to the encrypted digital string representing a specific amount of money guaranteed and signed by the central bank; "two libraries" refers to the digital currency issuance library and the digital currency bank library; The "three centers" refer to the authentication center responsible for centralized management of user information, the registration center responsible for completing the entire process of registration of the central bank's digital currency from its creation to its demise, and the big data analysis center responsible for the analysis of payment behaviors or regulatory control.

3.4 Analysis of the Current Status of Technological Innovation

Innovations in technology are driving currency away from its physical attributes and providing technical support for the launch of digital currencies.

*3.4.1Blockchain technology.*The main technical foundation of the digital RMB is the blockchain technology based on the broad account system, which follows the core element framework of "one coin, two banks and three centres".The core elements of the framework are "one coin, two banks and three centres". In the issuance process, it involves chip technology and basic security technology; in the exchange process, it involves banks' IT technology; in the circulation process, it involves payment terminal application technology.In the circulation process, it involves the application technology of payment terminals.

*3.4.2Big data technology.*Central banks assume responsibility for big data subjects in the monetary operating system.The use of big data to monitor and analyze transaction information can avoid data violations and crimes while analyzing user behavior. At the same time, the efficient processing and utilization of raw and complex information will also reverse the development of the digital economy. With the technical support of big data system, it is also possible to mine and integrate users' information, transform complex data information into accurate customer profiles, and utilize big data to realize scenario promotions to better meet users' needs.

*3.4.3Cloud computing technology.*The arithmetic support provided by cloud computing is the hardware foundation for the circulation of digital RMBs in the market, providing technical support for the use of digital RMBs in high concurrency scenarios. Cloud computing also provides data processing for the issuance and circulation of digital RMB to realize efficient financial settlement. The combination of cloud computing technology and blockchain produces an aggregation effect, which can enhance the computational efficiency of blockchain, and also solve the shortcomings of cloud computing in terms of data safety and security, forming a credible arithmetic power sharing platform.

4 Innovative Strategies for the Application of Digital Currency in Central Banks Based on the Four-Dimensional Model of Service Innovation

4.1 Service Concept Innovation Strategy

The central bank digital currency is mainly located in the cash class payment certificate (M0), from the management mode, the digital RMB should adhere to the central bank's centralised standardised management;From the issuance mode, the function of exchanging the digital RMB with the public should be borne by the commercial bank. Digital RMB can develop more innovative financial products on the basis of meeting users' payment needs. In the future, digital RMB should gradually infiltrate into other money supply levels and work together to build a payment ecosystem.

4.2 Service Interface Innovation Strategy

In the future, the digital RMB app should ensure as much as possible the usage needs and experience of special groups such as the visually impaired, cognitively impaired, physically impaired, children, the elderly, and short-term foreigners coming to China. In order to retain the digital RMB wallet customer base, we should increase the acceptance of the digital wallet by potential customers, and use the digital wallet as an important traffic entrance to build a digital customer base.

4.3 Innovative Strategies for Service Organisation

The issuance of digital RMB requires the participation and support of sectors including government agencies, financial institutions, technology providers and standards development organizations. The central bank, as the first-tier entity, should strengthen

coordination and communication with the second-tier organizations; the designated commercial banks' function is to provide digital RMB exchange services and ensure that payments are made safely and efficiently; and other financial institutions and technology companies provide application scenarios, technical support, and basic service facilities for digital RMB to build the digital RMB industrial ecosystem together.

4.4 Service Technology Innovation Strategy

With the help of blockchain, big data, cloud computing and other technologies to accurately monitor the full-cycle flow of currency in real time, it helps the central bank to grasp microeconomic information in depth, and improves the central bank's ability to control the money supply as well as to implement financial regulation. Secondly, relying on innovative technology to tap user demand and improve digital wallets and service quality from user demand. Starting from multiple technical levels, such as mobile operating system, client and interface design, we have strengthened the platform construction to enhance the ease of use of the currency; prevented and controlled security risks to enhance user trust; and enriched the usage context to enhance user stickiness.

5 Conclusions and Implications of the Study

Based on the perspective of service innovation, this paper discusses the service innovation mode of central bank digital currency, and the study shows that the innovation of central bank digital currency is the integration of four dimensions: concept, interface, organisation and technological innovation.

The failure of the launch of digital currencies in Latin American countries shows that the public's general acceptance and large-scale use of the central bank's digital currency is the core of its steady existence. From the current domestic payment market pattern found that WeChat, Alipay occupied most of the market share, so how to cause fundamental changes in user behaviour is to promote the digital RMB to the market need to consider the practical problems. Therefore, it is also necessary to pay attention to the popularisation of digital RMB knowledge and the promotion of publicity, to pay attention to user needs, and to continuously improve user satisfaction.Promote the benign development of the central bank's digital currency system.

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