Scientific and Social Research, 2025, Volume 7, Issue 8
https://ojs.bbwpublisher.com/index.php/SSR
Online ISSN: 2981-9946
Print ISSN: 2661-4332

The Impact Mechanism of Digital Currency on Commercial Bank Deposit Business

Ruiwen Wang*

Fuyang, Anhui, China

**Author to whom correspondence should be addressed.*

Abstract: With the rapid development of digital currency, its impact on commercial bank deposit business has become increasingly significant. This paper conducts an in-depth analysis of the fundamental effects of digital currency on commercial bank deposit business, including the role of digital currency characteristics in driving deposit business transformation and the restructuring of deposit business models. It explores the impact of digital currency on deposit scale, revealing the substitution effect of digital currency and changes in deposit volume, the money multiplier effect, and deposit expansion, as well as shifts in deposit structure and stability analysis. Furthermore, the study examines the influence of digital currency on deposit business operations, including the optimization of deposit processing workflows, the transformation of risk management, and the enhancement of customer service experiences. Finally, strategies for commercial banks to respond to the impact of digital currency on deposits are proposed. The research indicates that digital currency exerts profound effects on commercial bank deposit business, necessitating proactive adaptation through strengthened digital infrastructure, innovative deposit products and services, enhanced risk management, and interbank collaboration to meet the demands of the digital currency era.

Keywords: Digital currency; Commercial banks; Deposit business; Impact mechanism

Online publication: September 17, 2025

1. Introduction

Driven by the wave of digitalization, digital currency, as an emerging form of money, is gradually reshaping the operational landscape of the traditional financial system. As a core component of the financial system, commercial banks have witnessed profound impacts on their deposit business due to digital currency. Studying the impact mechanism of digital currency on commercial bank deposit business not only facilitates a deeper understanding of the intrinsic characteristics of digital currency and its repercussions on the financial system but also provides theoretical foundations and practical guidance for the transformation and innovation of commercial banks in the digital currency era. This paper aims to systematically analyze the impact mechanism of digital currency on

commercial bank deposit business, unveiling the underlying economic logic and financial principles, thereby offering valuable insights for commercial banks to address the challenges of digital currency and achieve sustainable development. The analysis will focus on four key dimensions: The fundamental impact of digital currency on deposit business, its influence on deposit scale, its effects on deposit business operations, and the corresponding strategies for commercial banks. Through this comprehensive examination, the paper seeks to elucidate the full spectrum of digital currency's impact on commercial bank deposit business [1].

2. Basic impact of digital currency on commercial bank deposit business

2.1. Characteristics of digital currency and transformation of deposit business

Digital currency, with its unique attributes, has had a profound impact on commercial bank deposit services. The programmability of digital currency enables deposit services to flexibly adapt to diverse market demands. Through preset smart contracts, deposit products can automatically adjust interest rates, terms, and other elements based on market conditions, enhancing business flexibility and customer experience. For example, when market interest rates rise, smart contracts can automatically increase deposit rates, allowing customers to enjoy timely benefit increases [2].

The immutability of digital currency ensures the security and transparency of deposit transactions through distributed ledger technology. Each deposit transaction is permanently recorded on the blockchain, and any attempt to tamper with the data will be quickly identified and rejected by the network, effectively preventing fraud and erroneous operations and enhancing the security of deposit services [3].

The anonymity of digital currency plays a significant role in protecting depositors' privacy. Although transaction records of digital currency are public, the identity information of both parties involved in the transaction can be protected through encryption technology, ensuring that depositors' privacy is not disclosed. This characteristic enhances customers' trust in deposit services and promotes the healthy development of deposit services [4].

2.2. Reconstruction of the deposit business model

The emergence of digital currencies has driven the transformation of deposit business models from account centralization to decentralization. Traditional deposit businesses rely on the centralized account system of banks, while digital currencies have achieved peer-to-peer transfer and storage of deposits through decentralized distributed ledger technology. This transformation not only improves the efficiency of deposit businesses but also reduces operating costs [5].

The trend towards online and physical-free deposit services is becoming increasingly evident. With the widespread adoption of digital currencies, customers can now conduct deposit operations anytime, anywhere, through terminal devices such as mobile phones and computers, eliminating the need to visit bank branches. This online and physical-free deposit model not only enhances the customer experience but also promotes inclusive financial services [6].

Innovation in deposit interest and interest calculation methods is also a crucial aspect of the restructuring of deposit business models. The introduction of digital currency has made the calculation and payment of deposit interest more flexible and diverse. Banks can design differentiated deposit products based on factors such as customers' deposit amounts, terms, and risk preferences, and offer personalized interest calculation methods, thereby attracting more deposit funds [7].

2.3. Reshaping of competition pattern in the deposit business

Digital currency has broken the geographical constraints of traditional commercial banks in the deposit business. In the past, small and medium-sized banks were at a disadvantage in attracting deposits from other regions due to their limited branch network. However, with the help of the internet, digital currency enables customers to easily deposit funds into any bank that has opened relevant services, giving small and medium-sized banks the opportunity to compete with large banks for deposit resources on a broader scale [8].

Meanwhile, digital currencies have given rise to new competitors. Leveraging their strong technological R&D capabilities and vast user base, technology companies have ventured into the field of digital currency deposits. The deposit products they offer are often innovative and highly attractive, posing a challenge to traditional commercial banks. Commercial banks need to continuously enhance their digital currency service capabilities and optimize their deposit products to occupy a favorable position in the new competitive landscape.

3. Impact of digital currency on commercial bank deposit scale

3.1. Substitution effect of digital currency and changes in deposit volume

The proliferation of digital currency has generated a notable substitution effect on commercial bank deposit volume. As digital currency gains traction, customers increasingly prefer converting cash and demand deposits into digital currency for storage and transactions. This shift not only reduces cash circulation within the banking system but also affects overall deposit volume.

The migration from cash deposits to digital currency deposits is a primary manifestation of this substitution effect. Driven by convenience and security considerations, customers are more inclined to store cash in digital wallets rather than traditional bank accounts, leading to a decline in cash deposits and a rise in digital currency deposits [9].

Similarly, the conversion of demand deposits to digital currency deposits represents another significant aspect of this effect. Demand deposits, characterized by high liquidity and low interest rates, are increasingly being replaced by digital currency deposits, which offer greater flexibility and potential returns [10].

3.2. Money multiplier effect and deposit expansion

The introduction of digital currency has significantly influenced the money multiplier, thereby facilitating the expansion of bank deposit volume. The money multiplier refers to the ratio by which a unit of central bank-issued base money amplifies the total money supply. The adoption of digital currency has accelerated money circulation velocity and reduced holding costs, thereby strengthening the money multiplier effect [11].

The programmability and anonymity of digital currency enhance the efficiency and security of money circulation. Customers can effortlessly conduct deposit, withdrawal, and transfer operations, minimizing idle cash outside the banking system. This streamlined circulation mechanism elevates the money multiplier, enabling central bank-issued base money to be more rapidly converted into bank deposits [12].

Moreover, the issuance of digital currency reduces banks' reserve requirements. Traditionally, banks are required to maintain a certain reserve ratio to meet withdrawal demands. However, digital currency allows customers to conduct deposit and withdrawal operations anytime, diminishing the need for reserves and further amplifying the money multiplier effect.

3.3. Deposit structure changes and stability analysis

The widespread adoption of digital currency has significantly altered the deposit structure of commercial banks,

thereby influencing deposit stability. As digital currency becomes more prevalent, customers increasingly favor storing funds in digital wallets over traditional bank accounts. This shift has led to a rise in the proportion of time deposits relative to demand deposits [13].

From a stability perspective, the growing share of time deposits enhances the stability of bank deposits. Time deposits, characterized by longer tenures and stable interest rates, provide banks with a reliable funding source. In contrast, demand deposits, with their high liquidity and volatility, are more susceptible to market sentiment and customer behavior. The increasing proportion of time deposits thus mitigates liquidity risks and bolsters deposit stability [14].

However, these structural changes also impose new demands on banks' risk management capabilities. Banks must strengthen the management and deployment of time deposits to ensure optimal fund allocation and returns. Simultaneously, they must monitor fluctuations in demand deposits and implement measures to address potential liquidity risks [15].

4. The impact of digital currency on the operation of commercial bank deposit business

4.1. Optimization of deposit business processing flow

The introduction of digital currency has optimized the processing flow of commercial bank deposit services. Traditional deposit services require customers to visit bank branches for deposit and withdrawal procedures, which are cumbersome and inefficient. The popularization of digital currency has enabled customers to conduct deposit operations anytime and anywhere through terminal devices such as mobile phones and computers, greatly improving the efficiency of business processing [16].

Specifically, the process of depositing and withdrawing digital currency is simpler and faster. Customers only need to initiate a deposit or withdrawal request in their digital wallet, and the system can automatically complete the transfer and recording of funds. This decentralized approach reduces intermediary steps and human intervention, thereby lowering operational risks and error rates [17].

Interbank transfers of digital currency deposits have also become more convenient and cost-effective. Traditional interbank transfers require clearing and settlement through multiple intermediary banks, which is cumbersome and expensive. However, interbank transfers of digital currency utilize distributed ledger technology to facilitate peer-to-peer fund transfers, eliminating the need for clearing and settlement through intermediary banks, thereby reducing transfer costs and time [18].

4.2. Transformation of deposit business risk management

The widespread adoption of digital currencies has had a profound impact on the risk management of commercial bank deposit services. Traditional risk management for deposit services primarily relies on manual review and monitoring, which is inefficient and prone to errors. The introduction of digital currencies has enabled more intelligent and automated risk management [19].

Specifically, the traceability of digital currency enables every deposit transaction to be recorded and traced. Banks can analyze these transaction data to promptly identify potential money laundering, fraud, and other risky behaviors, and take corresponding measures to prevent and handle them.

The smart contract technology of digital currency also provides new tools for risk management. Smart contracts can automatically execute preset risk management rules, such as limiting the transfer-in and transfer-out

of large deposits and monitoring abnormal transaction behaviors. This automated risk management approach not only improves efficiency but also reduces the risk of human intervention.

4.3. Improvement of customer service experience in the deposit business

The widespread adoption of digital currencies has significantly enhanced the customer service experience in commercial banks' deposit services. Traditional deposit services require customers to visit bank branches, resulting in long waiting times and an unsatisfactory service experience. However, the introduction of digital currencies has enabled customers to conduct deposit operations anytime and anywhere, enjoying a more convenient and efficient service.

Specifically, personalized services for digital currency deposits have become possible. Banks can design differentiated deposit products and provide personalized services based on factors such as customers' deposit amounts, terms, and risk preferences. For example, exclusive deposit products and wealth management services can be provided for high-net-worth customers, while convenient mobile deposit services can be offered to younger customers.

The intelligent service for digital currency deposits has also enhanced customer experience. Through artificial intelligence and big data technology, banks can provide customers with more precise deposit suggestions and risk warnings. Customers can inquire about deposit-related issues at any time through the intelligent customer service system and receive timely and accurate answers [20].

5. Strategies for commercial banks to cope with the impact of digital currency deposits

5.1. Strengthen digitalization construction and enhance deposit business processing capabilities

Facing the challenge posed by digital currencies, commercial banks should strengthen their digitalization efforts and enhance their deposit business processing capabilities. Specifically, banks should increase their investment in financial technology and introduce advanced technological means such as blockchain, artificial intelligence, and big data to improve the information processing capacity and business efficiency of their deposit operations.

Banks should optimize their deposit business information systems and infrastructure construction. By establishing efficient, stable, and secure business systems, they can ensure the smooth operation of deposit services and data security. Banks should also strengthen cooperation with other financial institutions and technology companies to jointly promote the development and innovation of digital currency deposit services.

5.2. Innovate deposit products and services to meet diversified needs

Commercial banks should actively innovate deposit products and services to meet the diversified needs of customers. Specifically, banks should design differentiated deposit products and provide personalized services based on factors such as customers' deposit amounts, terms, and risk preferences. For example, they can launch high-yield fixed-term deposit products, flexible demand deposit products, and innovative deposit products that combine the characteristics of digital currencies.

Banks should also strengthen the marketing and promotion of their deposit services. Through multi-channel and multi-form marketing strategies, they can enhance customers' awareness and acceptance of deposit products. Additionally, banks should enhance communication and interaction with customers, promptly understand their needs and feedback, and continuously optimize deposit products and services.

5.3. Strengthen risk management to ensure the stable operation of the deposit business

Commercial banks should strengthen risk management to ensure the stable operation of their deposit business. Specifically, banks should establish a comprehensive risk management system and internal control mechanism to ensure that risks associated with the deposit business are manageable. Banks should enhance their monitoring and early warning efforts for deposit business, promptly identifying and addressing potential risky behaviors.

Banks should also strengthen communication and collaboration with regulatory authorities. By promptly understanding changes in regulatory policies and requirements, they can adjust and improve their risk management systems and internal control mechanisms. Banks should also actively participate in the activities and work of industry self-regulatory organizations, jointly promoting the healthy development of digital currency deposit business.

5.4. Carry out interbank cooperation to jointly address the challenges posed by digital currencies

Commercial banks should actively engage in interbank cooperation to jointly address the challenges posed by digital currencies. Specifically, banks should strengthen cooperation and exchanges with other financial institutions and technology companies, jointly researching and exploring development models and innovative paths for digital currency deposit services. By sharing resources and complementing each other's strengths, they can achieve mutual benefit, win-win results, and common development.

Banks should also actively engage in international cooperation and exchange activities. By staying informed about the latest developments and trends in international digital currency and drawing on international best practices, banks can promote the development and innovation of their own digital currency deposit services. Furthermore, banks should strengthen communication and collaboration with international financial organizations and regulatory bodies, jointly promoting the standardized development and healthy operation of global digital currency deposit services.

6. Conclusion

This paper provides an in-depth analysis of the impact mechanism of digital currency on commercial bank deposit business, highlighting its role in driving deposit business transformation, influencing deposit scale, and optimizing deposit operations. The findings underscore the profound effects of digital currency on deposit business, presenting both challenges and opportunities. Commercial banks must proactively adapt by strengthening digital capabilities, innovating deposit products, enhancing risk management, and fostering collaboration to thrive in the digital currency era. This study enriches theoretical research on digital currency and deposit business while offering practical guidance for banks navigating digital transformation. It holds significant theoretical and practical value.

Disclosure statement

The author declares no conflict of interest.

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