The Impact of Digital Currency on Traditional Banking Business Model

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Abstract. As the digital economy thrives, the traditional landscape of banking business models faces unprecedented challenges. This article analyzes from both social and technological perspectives, aiming to delve into the background of the rise of digital currencies and their impact on the entire economic system. The article thoroughly examines how the rapid spread of digital currencies has influenced the swift development of the digital economy, affecting traditional core banking operations as well as the functions and status of banks. It also delves into how banks can effectively transform to adapt to new market environments and customer needs, along with the difficulties and challenges encountered during this transformation process. Finally, the article looks ahead to the future development pattern of digital currencies and the direction of bank development. In the context of the digital currency era, banks should actively embrace technological innovation and strengthen cooperation with fintech companies. At the same time, it emphasizes the crucial role of banks in ensuring financial safety and stability, and how they can maintain competitiveness and achieve long-term sustainable development in the wave of digital currencies.

Keywords: digital currency, banking business model, new financial system.

1 Introduction

With the wave of economic globalization at the beginning of the 21st century, the global economic environment has undergone changes. The outbreak of the global financial crisis in 2008 had an unprecedented impact on the world's financial systems, gradually exposing the limitations of traditional monetary systems and banking operations, and leading to profound reflections on the existing financial system. In this economic context, a new form of currency—digital currency—has emerged as a response. Digital currency challenges the service models and fee structures of traditional banks, prompting them to continuously enhance their technological capabilities to boost competitiveness, including exploring the research and application of central bank digital currencies (CBDCs). How traditional banking can transform, strengthen risk control systems, and leverage emerging fintech has become an important topic worth discussing.

Academic research on digital currencies covers multiple aspects. Early studies primarily focused on the comparative analysis between the proof of work (PoW)

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mechanism used in cryptocurrencies like Bitcoin and modern consensus algorithms (such as proof of stake (PoS)) [1]. As blockchain technology continues to evolve, banks have also recognized its importance and urgently need to embrace this technology [2] to ensure transaction security and privacy, while maximizing transparency and traceability to prevent fraud and corruption. Additionally, enhancing data security and credibility through digital transformation is crucial for cross-border payments and exchange rate management [3]. Furthermore, by launching digital wallets that integrate payment, transfer, and investment functions, banks have significantly improved customer experience, such as central bank digital currencies [4], which not only enhance payment efficiency and convenience but also increase financial inclusiveness.

Therefore, the core research direction of this paper is the impact of digital currency technology development on traditional banking models, exploring how banks can leverage fintech and digital currencies to establish a new financial system. This paper aims to examine the rise of digital currencies and their historical context, changes in the global financial system, and provides an in-depth analysis of the impact on traditional banking operations. Based on this, it proposes methods to enhance traditional banking capabilities, such as the application of blockchain technology, the popularization of digital wallets and central bank digital currencies, and emerging cross-border payment and exchange rate management technologies.

2 History of Digital Currency Development

2.1 Background of the Birth of Digital Currency

In 2008, the global financial crisis erupted, originating from the U.S. subprime mortgage crisis and quickly spreading worldwide. This crisis exposed numerous flaws in the traditional financial system, including inadequate regulation, excessive leverage, and asset bubbles [5]. The crisis not only led to the collapse of many financial institutions but also triggered a deep economic recession globally. Against this backdrop, people began to question the centralized financial system and sought safer, more transparent, and decentralized financial solutions. In the same year, a digital currency called Bitcoin (BTC) emerged. The advent of Bitcoin was not only a challenge to the traditional financial system but also provided a new perspective and solution for global financial markets. Based on blockchain technology [6], Bitcoin enables peer-to-peer transactions through a decentralized approach, eliminating the need for third-party intermediaries, thereby reducing transaction costs and improving efficiency.

Before the advent of digital currencies, Diffie and Hellman introduced asymmetric encryption algorithms, using public keys and private keys for encryption and decryption, which laid the foundation for secure transactions in digital currencies. With the development of modern internet and continuous technological advancements, peer-to-peer networks, or P2P networks, emerged [7]. This network architecture allows nodes within the network to communicate directly and share resources without relying on traditional central server models. Blockchain technology is a distributed database [8]. By integrating various technologies such as distributed storage, peer-to-peer transmission,

consensus mechanisms, and encryption algorithms, it ensures data security, transparency, and immutability.

2.2 Development of the Digital Economy

With the widespread adoption of digital currencies and the rapid development of the digital economy, by 2020, the global digital economy had reached an impressive scale of $32.6 trillion. In this context, China's digital economy has also achieved remarkable success, with a size of $5.4 trillion and a growth rate of 9.6%. This growth rate is not only impressive but also places China second among countries worldwide, just behind the United States.

In the wave of the digital economy, China has not only achieved remarkable success in scale but also stands out in technological innovation and application promotion. For example, China's mobile payment system has covered most of the country, becoming an indispensable part of daily life [9]. These emerging digital economies have had a significant impact on banks, particularly in the payment sector, where traditional cash payments are gradually being replaced by mobile payments. People can complete various payment activities such as shopping, transferring money, and paying bills through apps on their smartphones, greatly enhancing the convenience and efficiency of transactions. Moreover, with the further maturation and application of blockchain technology, digital currencies are gradually entering people's lives, bringing more innovation and transformation to the payment sector.

3 The Impact of Digital Currency on the Core Business of Traditional Banks

3.1 Payment and Settlement

The rise of digital currency has had a significant impact on the core business areas of traditional banks, including but not limited to payment and settlement systems, deposit and loan services, asset management and other aspects [10].

Payment and settlement, as a fundamental service of banks, are undergoing a profound transformation with the rise of digital currencies [11]. According to Visa Inc. Company's financial report in 2020 and Mastercard Incorporated in 2021, the share of digital currencies in payment and settlement is steadily increasing. This indicates that the influence of the digital economy on traditional financial markets is growing stronger. This phenomenon also reflects the rapid adaptation and competitive landscape of emerging fintech sectors. The introduction of digital currencies has significantly accelerated transaction speeds and enhanced transparency in the transaction process.

The market size of the digital economy is shown in Fig 1. In recent years, the market size of the digital economy has been increasing year by year and maintaining a stable growth rate. It increased from 27.2 trillion yuan in 2017 to 48.9 trillion yuan in 2022.

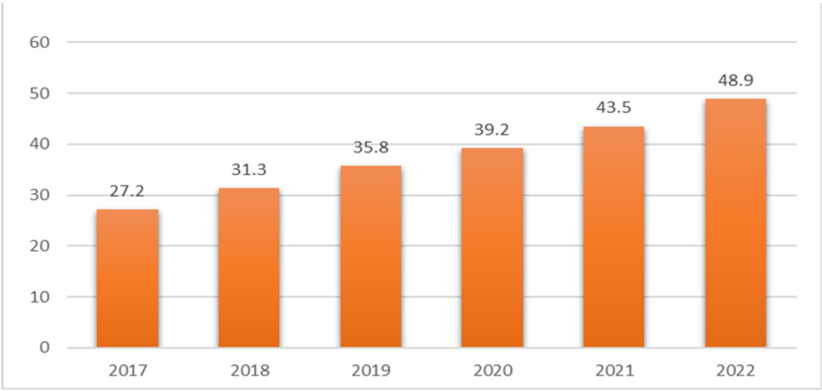

Fig. 1. Digital Economy Market Size Chart (2017-2022). (Picture credit: Original)

3.2 Deposits and Loans

Deposit and loan services also face challenges from digital currencies [12]. The DeFi platform Compound on Ethereum allows users to borrow and lend through smart contracts. Users can deposit digital currencies into the platform to earn interest or lend them out for liquidity. This model operates without the involvement of traditional banks, significantly improving lending efficiency, but it also poses a challenge to banks' loan operations. Taking Bitcoin as an example, according to reports, at the end of 2017, the price of Bitcoin approached $20,000, leading many investors to withdraw their funds from banks and invest in the Bitcoin market [13]. This resulted in a significant drop in deposit volumes at some banks, thereby affecting their ability to extend loans.

3.3 Asset Management

Asset management is another core business of banks [14]. On one hand, the low operating cost characteristic of digital currencies helps banks reduce cash management costs. The high costs associated with receiving, storing, and transporting paper money and coins are avoided in the circulation of digital currencies [10]. With the widespread adoption of central bank digital currencies like the digital yuan, the demand for physical branches and ATMs of commercial banks has decreased, further driving the transformation towards lighter and smarter banking [15]. On the other hand, the transparency and traceability of digital currencies provide banks with more efficient asset management tools. Traditional asset management often relies on complex manual operations and paper records, while the use of digital currencies can simplify these processes, enhancing the accuracy and efficiency of asset management.

3.4 The Plight of Banks

Under the impact of digital currencies, traditional banks' business models and profit methods are being severely challenged. These financial institutions must confront

changes in customer behavior and competitive pressures from emerging fintech companies. First, the obsolescence of technical architecture has become a core issue that urgently needs to be addressed [16]. Traditional banks generally rely on outdated core systems that have been running for years, making it difficult for these systems to quickly adapt to technological innovations and market system updates.

Digital currency has transformed traditional payment and settlement methods, making transactions more direct and faster. Traditional banking systems typically require a series of complex intermediary steps to complete fund transfers, whereas digital currency, through blockchain technology, enables peer-to-peer instant transactions, significantly reducing reliance on banks as intermediaries [17]. The emergence of digital currency has lowered transaction costs by eliminating many fees and intermediary charges found in traditional banking services.

In addition, digital currencies also provide higher privacy protection and security, because they usually use encryption technology to enhance transaction security [18], which will reduce the pressure and responsibility of banks in security maintenance, but also weaken the position of banks in financial security.

Secondly, the operation of the banking business is subject to strict regulatory constraints, which mainly come from the norms of government agencies and financial regulatory authorities, aiming to ensure the stability and security of the financial system [19]. In such a regulatory environment, banks have encountered significant challenges and difficulties in promoting innovation and transformation.

Fig 2 clearly shows the proportion of various entities in the financial market. Among them, supply chain management companies have the highest share at 31.03%; P2P platforms also account for 16.12%. In the context of intense competition from fintech and big data companies, traditional banks hold only 9.71% of the market share. This data reveals that traditional banks do not dominate the current financial market.

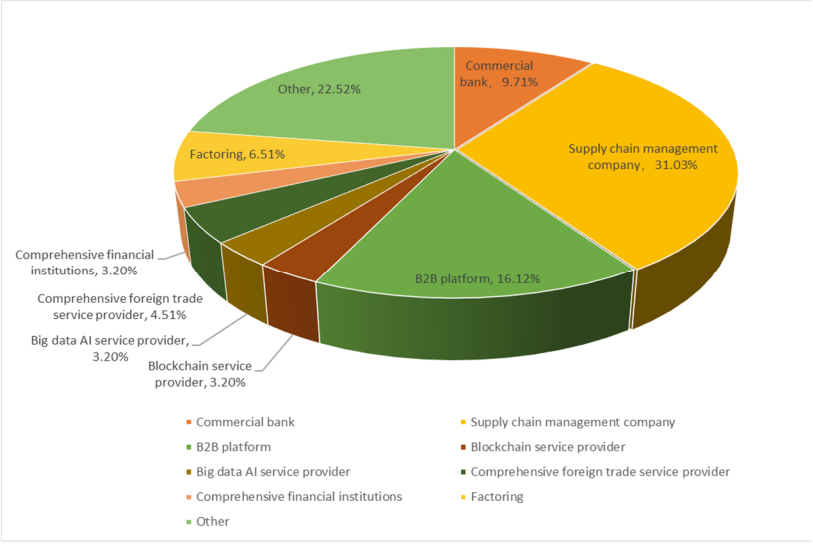

Fig. 2. Proportion of market entities in supply chain finance. (Picture credit: Original)

The phenomenon depicted in the Fig originates from emerging market participants such as fintech companies and digital currency trading platforms, who typically adopt aggressive strategies to swiftly capture market share [20]. They usually employ low-cost competition tactics to attract a large number of users and investors in a short period. For instance, in the payment sector, WeChat Pay (WeChat) and Alipay (Alipay) accounted for over 90% of the third-party payment market by 2023; in the investment and wealth management sector, Betterment and Wealth front in the United States provide personalized investment advice through algorithms with relatively low management fees. In the loan sector, Ant Financials Huabei and Jiebei leverage big data and artificial intelligence technologies to quickly assess user credit risks and offer convenient consumer credit services.

To sum up, the transformation of traditional banks is a long and challenging road. Traditional banks must actively embrace fintech to realize business model innovation and upgrading, and jointly develop financial products and services that meet market demand with the help of external innovation forces.

4 Future Development Direction

4.1 Future Development Pattern of Digital Currency

Looking ahead, people anticipate an increasing number of countries initiating the issuance process of their own digital currencies. This trend is expected to significantly drive innovations in payment systems and lead to a sustained increase in the share of the digital economy in the national economy, thereby profoundly impacting the global economic landscape. The application areas of digital currencies will gradually expand into diverse scenarios such as retail and supply chain finance, promoting deeper integration between the digital economy and traditional real industries. At the same time, with the widespread adoption of cryptocurrencies, governments around the world are expected to strengthen regulatory measures against illegal economic activities, ensuring and fostering the healthy and orderly development of this sector.

4.2 Future Measures and Development Direction of the Bank

The bank will gradually optimize its technical architecture and increase investment in cutting-edge technologies such as blockchain and big data to enhance its digital service capabilities. In this process, digital wallets are expected to take a central role, with plans to open application programming interfaces (APIs) to facilitate collaboration with third-party partners in building a financial ecosystem. Additionally, the bank will work with the central bank on the research and pilot projects for central bank digital currencies (CBDCs), exploring potential application scenarios. At the same time, the bank will establish and improve its risk management system to address new risks introduced by the introduction of digital currencies.

5 Conclusion

This study integrates multi-source literature and combines recent economic data to first provide a comprehensive review and introduction to the development process of digital currencies. Subsequently, the article delves into the impact and influence of digital currencies on traditional banking core operations, analyzing how these emerging monetary forms have altered the way banking services are conducted. Following this, the paper provides an in-depth analysis of various challenges currently faced by the banking industry, revealing the difficulties and issues encountered by traditional banks under the impact of digital currencies. Finally, the article looks ahead to the future direction of banking development, proposing that traditional banks must adapt to new trends in the digital economy era and maintain their competitiveness and sustainable development capabilities in financial markets through technological innovation and transformation of business models. The significance of this review lies in providing a theoretical basis and practical guidance for the innovation and transformation of banking operations by studying the current impact of digital currencies on banking models. It not only offers a clear path for the future development of banking but also provides important references for regulators and policymakers.

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