

Current Development Status and Challenges of Digital Finance in China

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ABSTRACT

Against the backdrop of the in-depth integration of the digital economy and information technology, digital finance has become a crucial pillar for the transformation and upgrading of China's financial system, empowering the real economy and promoting inclusive finance. This paper sorts out four developmental stages of China's digital finance from initial electronization to comprehensive innovation and popularization. From the three core business dimensions of digital payment, digital lending, and digital wealth management, it systematically analyzes the industrial development scale, performance of market participants, and operational characteristics of business formats. The study finds that China's digital finance continues to expand in overall scale, with continuously extended business scenarios and a prominent leading role of leading institutions. Nevertheless, prominent challenges remain in the development process, including unbalanced regional and urban – rural development, insufficient integration of digital technologies, disorderly market competition, lagging regulatory and compliance systems, and weak protection of data security and user privacy. On this basis, the paper proposes development strategies in terms of optimizing regional layout, deepening technological integration, standardizing market order, improving the regulatory framework, and strengthening the defense line of data security, aiming to provide theoretical references and practical implications for the standardized, sound, high-quality and sustainable development of China's digital finance industry.

KEYWORDS

Digital finance; Digital payment; Digital lending; Digital wealth management; Data security

1 Introduction

Empowered by the in-depth development of the digital economy, information technologies such as the Internet, big data, and artificial intelligence have been deeply integrated with traditional finance, giving rise to digital finance as a new form of finance. With the advantages of high efficiency, convenience, low cost and wide coverage, digital finance has restructured the financial service model and become a core engine for implementing inclusive finance, serving the real economy and activating market vitality. In recent years, China's digital finance has achieved leapfrog development with remarkable achievements in core fields such as payment, lending and wealth management. Meanwhile, it also faces problems including unbalanced regional development, inadequate regulatory adaptation, and hidden risks in data security. This paper reviews the development course and current situation of digital finance in China, systematically analyzes existing challenges, and provides references for the high-quality development of the industry.

2 Development Course of Digital Finance in China

Digital finance is an innovative financial model formed by the deep integration of information technologies such as the Internet and big data with traditional finance. Its core is to break the temporal–spatial constraints and information barriers of traditional finance by utilizing data elements and algorithmic models. It covers financial technological support provided by technology companies and the digital transformation of traditional financial institutions, forming a whole-industry-chain innovation system. The development of China's digital finance presents distinct phased characteristics. The initial stage (1974–2002) witnessed the transformation toward electronization. In 1974, Bank of China introduced a host computer system to realize computer batch processing of deposit and loan businesses. From 2001 to 2002, Bank of China established a cross-border digital certification center, and China Construction Bank set up an e-banking department. By the end of 2002, the number of online banking customers exceeded 8 million, marking its entry into the stage of systematic development.

Thereafter, China's digital finance has gone through four key stages: the budding stage of Internet finance from 2000 to 2010, during which Alipay and Tenpay promoted the popularization of online payment; the rapid development stage from 2010 to 2015, with the emergence of Yu'E Bao, P2P online lending and Internet insurance; the fintech prosperity stage from 2015 to 2020, in which the central bank issued regulatory documents, blockchain technology was gradually applied, and tightened regulation promoted industrial standardization; and the comprehensive popularization and innovation stage from 2020 to the present, featuring the launch of digital yuan pilots, in-depth application of artificial intelligence and other technologies, and the prioritization of green finance and inclusive finance.

3 Current Development Status of Digital Finance in China

3.1 Rapid Development of Digital Payment Business

Digital payment in China has formed a large-scale development pattern with rising transaction volume, expanding application scenarios, and coordinated growth at home and abroad, making it the most mature segmented field of digital finance. According to data from the People's Bank of China (published by the Payment and Clearing Association of China, as shown in Figure 1 and Figure 2), the volume of national bank electronic payment transactions from 2021 to 2024 reached 274.969 billion, 278.965 billion, 296.163 billion and 301.668 billion transactions respectively, with corresponding transaction amounts of 2976.22 trillion yuan, 3110.13 trillion yuan, 3395.27 trillion yuan and 3426.99 trillion yuan, maintaining steady growth. In 2025, the transaction volume reached 319.721 billion transactions with a value of 3623.20 trillion yuan, representing a year-on-year increase of 5.32% and 5.73% compared with 2024. Among them, mobile payment recorded 231.464 billion transactions worth 571.97 trillion yuan, a steady rise from 210.980 billion transactions and 563.70 trillion yuan in 2024. Online payment conducted by non-bank payment institutions remained stable at 1325.445 billion transactions and 337.81 trillion yuan, compared with 1340.00 billion transactions and 331.68 trillion yuan in 2024.

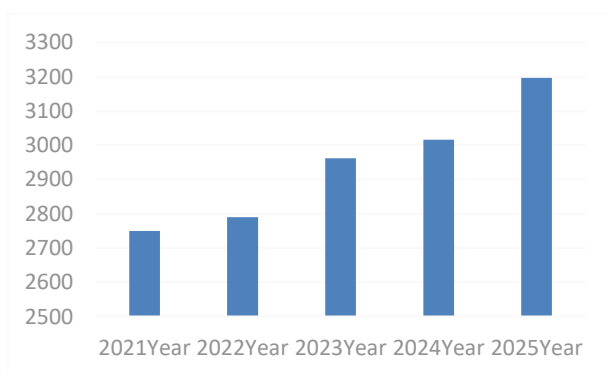


Figure 1 Total Electronic Payment Transactions Processed by National Banks(Unit: 100 million transactions)

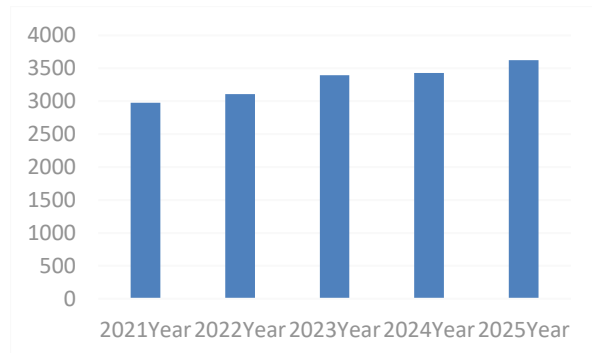


Figure 2 Transaction Value of National Bank Electronic Payment Business(Unit: Trillion RMB)

3.2 Rapid Development of Digital Lending Business

With the popularization of internet technology and the iteration of fintech, digital lending has broken the limitations of traditional credit business, achieving simultaneous improvement in scale and quality. It has become an important driving force for advancing inclusive finance and stimulating consumption as well as the vitality of micro and small enterprises. Relying on digital technologies such as big data and artificial intelligence, digital lending products have expanded from single consumer credit to diversified scenarios including operating loans and technology innovation loans. The whole process of online application, intelligent review and rapid loan disbursement has realized full digitalization, greatly enhancing credit accessibility and operational efficiency.

At present, the digital lending market has formed a diversified competitive landscape with coordinated development among commercial banks, internet enterprises and fintech companies. For instance, Ant Consumer Finance recorded an operating income of 21.56 billion yuan at the end of 2025, representing a year-on-year increase of 41.72%, with a net profit of 3.111 billion yuan. WeBank's Weilidai has served more than 70 million borrowers cumulatively, with over 930,000 daily loan approvals and a non-performing loan ratio of approximately 1.5%. JD Technology, Du Xiaoman and other platforms have also launched featured products, promoting refined and differentiated competition within the industry.

Digital lending has lowered application thresholds and benefited groups that are difficult to cover by traditional credit services. Through accurate credit evaluation enabled by digital technologies, the review cycle has been shortened to

minutes or hours, reducing operational costs and credit risks. Its penetration rate among young people and small and medium-sized enterprise owners has continued to rise. By the end of July 2024, the national Credit Easy Loan platform had issued a cumulative loan volume of 28.8 trillion yuan, of which private enterprises accounted for 79.1%, effectively alleviating the financing difficulties of micro, small and medium-sized enterprises.

3.3 Rapid Development of Digital Wealth Management Business

Leveraging the advantages of convenience and low entry thresholds, digital wealth management has rapidly penetrated all types of investor groups with steady expansion in market scale. It has become one of the core choices for residents' wealth management and promoted the digitalization and inclusiveness transformation of the wealth management market.

China's online wealth management market size maintained steady growth from 2021 to 2025 (see Figure 3), reaching 21.4 trillion yuan, 25.1 trillion yuan, 28.7 trillion yuan, 29.95 trillion yuan and 31.2 trillion yuan respectively, with a five-year compound annual growth rate of 11.2%. According to predictions by Zhongyan Puhua Industry Research Institute, the market scale is expected to approach 45 trillion yuan by 2030, maintaining an annual compound growth rate between 10% and 12%. The industry boasts broad growth prospects and will continue to release development potential.

As an essential component, bank wealth management has maintained strong momentum. By the end of December 2025, the outstanding balance of wealth management products reached 33.29 trillion yuan, up 11.15% from the beginning of the year. A total of 33,400 new wealth management products were issued throughout the year, raising 76.33 trillion yuan in funds. Meanwhile, the number of wealth management investors reached 143 million, an increase of 14.37% year-to-date, including 141 million individual investors (accounting for 98.64%) and 1.94 million institutional investors (accounting for 1.36%). Among individual investors, prudent investors accounted for 33.54%, while the proportions of conservative and aggressive investors both increased compared with the start of the year.

The user structure presents a dumbbell-shaped distribution: young users aged 25–35 account for more than 50%, while high-net-worth users aged over 45 account for 30%. Diversified investor demands further drive product innovation in the industry.

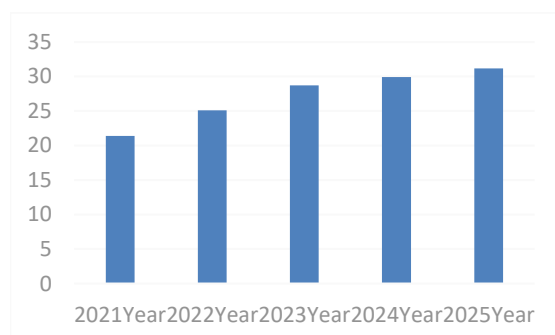


Figure 3 Market Scale of China's Online Wealth Management (Unit: Trillion RMB)

4 Challenges Facing the Development of Digital Finance in China

4.1 Imbalanced Regional Development and Inadequate Technology Integration

The development of digital finance is confronted with dual challenges of marked regional imbalance and insufficient technological integration, which restrict the release of its inclusive value and high-quality development.

In terms of regional distribution, the penetration rate of digital finance in eastern coastal areas is far higher than that in the central and western regions. By the end of 2025, electronic payment transaction volume in the eastern region accounted for 62.3% of the national total, and online wealth management users reached 58.7%, while the combined share of the central and western regions was less than 40%. From the urban–rural perspective, the coverage rate of digital financial services in urban areas stood at 92.1%, compared with merely 68.5% in rural areas. The adoption rates of digital payment and digital wealth management among rural residents are more than 30 percentage points lower than those of urban residents. Some remote rural areas still rely heavily on traditional financial services, leaving the inclusive value of digital finance insufficiently realized. Such imbalance not only widens the regional gap in financial development but also hinders the full implementation of inclusive finance, deviating from the core objectives of digital finance of wide coverage and low cost.

Meanwhile, inadequate technological integration has become a critical bottleneck constraining high-quality industrial development. On the one hand, the digital transformation of some traditional financial institutions lags behind, with poor compatibility between core business systems and emerging digital technologies, and technological iteration fails to keep pace with industrial progress. On the other hand, the technological applications of some technology firms lack practical scenario support, and the integration of technology and financial businesses remains superficial, making it difficult to

translate technological advantages into service superiority. In addition, inconsistent technical standards further aggravate integration difficulties. Divergences in technical frameworks and data formats across institutions impede cross-institutional and cross-sector data sharing and technological collaboration.

4.2 Market Competition and Regulatory Compliance Issues

Competition in the digital finance market has become increasingly intense, characterized by concentration among leading institutions alongside frequent market irregularities. Unfair competitive behaviors occur from time to time and disrupt the normal industrial order. Currently, the market is dominated by leading internet technology enterprises and large commercial banks, supplemented by small and medium-sized banks, licensed fintech companies, and local payment institutions. Market concentration continues to rise, as leading players leverage advantages in scenarios, technology, and capital to squeeze the living space of smaller institutions.

In the digital payment sector, the combined market share of the top two payment institutions reached 78.2% in 2025, leaving less than 20% for small and medium-sized counterparts. To capture market share, some smaller institutions adopt unfair competition tactics such as cutting service fees and illegally expanding business scenarios, compressing industrial profit margins and pushing some institutions into losses. In digital lending, some platforms relax risk control standards to pursue scale expansion, launching irregular products featuring mortgage-free access, low interest rates, and instant approval. Excessive lending and false advertising have become prominent problems. In 2025, nationwide complaints related to online lending reached 1.236 million cases, among which false advertising accounted for 18.9%, further exacerbating market disorder.

The regulatory and compliance system lags behind the pace of digital financial innovation, posing obstacles to standardized industrial development. New business forms such as virtual currency transactions, cross-border online wealth management, and AI-powered robo-advisors often go beyond the scope of traditional regulatory frameworks, creating notable regulatory gaps that some institutions exploit to conduct non-compliant businesses. Furthermore, regulatory responsibilities among different authorities are not clearly delineated, resulting in overlapping supervision and insufficient coordination. Digital lending, for instance, is supervised simultaneously by multiple authorities including the State Administration of Financial Regulation and the People's Bank of China, where conflicting regulatory policies raise institutional compliance costs and make regulatory requirements difficult to interpret accurately.

In addition, the digitalization and intelligent level of regulation remain inadequate, and traditional supervisory methods struggle to adapt to the rapid evolution of digital finance. New types of irregular conduct such as algorithmic discrimination and big data price discrimination are difficult to monitor, limiting regulatory efficiency. Although the authorities have issued policies including the Notice on Strengthening the Management of Internet Assisted Lending by Commercial Banks and Improving the Quality and Efficiency of Financial Services and the Implementation Plan for the High-Quality Development of Digital Finance in the Banking and Insurance Industry to improve the regulatory system, the alignment between regulation and innovation as well as overall regulatory capacity still require further enhancement.

4.3 Data Security and Privacy Protection Risks

Data application lies at the core of digital finance. With rapid industrial expansion, problems concerning data security and user privacy protection have become increasingly prominent, posing hidden dangers to sound industrial development and falling short of the requirement to strengthen data security defense stipulated in the Implementation Plan for the High-Quality Development of Digital Finance in the Banking and Insurance Industry.

First, irregular data collection is prevalent. Some digital financial institutions excessively collect personal information beyond business necessity, including user contact lists, geographical locations, and browsing records irrelevant to financial services. Forced authorization and bundled information collection are also common practices. In 2025, nationwide complaints regarding personal information infringements in the financial sector reached 487,000 cases, among which over-collection of personal information accounted for as high as 42.3%.

Second, security vulnerabilities exist in data storage and transmission. Many institutions lack robust data encryption and comprehensive security management systems, leading to frequent user data leakage incidents. Worse still, some participants engage in illegal data trading and unauthorized data sharing, selling users' financial information to third parties and seriously infringing personal privacy, in violation of the Personal Information Protection Law and the Measures for Data Security Management of Banking and Insurance Institutions.

Furthermore, deficiencies in data governance and algorithmic security further amplify data risks. Many digital financial institutions lack systematic data governance frameworks, resulting in inconsistent standards, uneven data quality, data falsification, and data redundancy, which undermine the accuracy and security of data application. Meanwhile, algorithm opacity and unfairness are prominent. Some institutions adopt algorithmic advantages to conduct big data price discrimination and algorithmic bias, such as offering differentiated loan interest rates and wealth management returns to different user groups, harming the legitimate rights and interests of financial consumers.

With the cross-border expansion of digital finance, security risks arising from cross-border data flows have become

more pronounced. Divergent data security regulations across jurisdictions make it difficult to guarantee the compliance and safety of cross-border data transmission, adding complexity to data security governance. Although regulators have strengthened oversight and penalties for violations, many institutions still lack adequate compliance awareness, and a long-term mechanism for data security and privacy protection has not yet been fully established, making it difficult to fundamentally prevent potential risks.

5 Countermeasures for Addressing Challenges in China's Digital Finance Development

5.1 Alleviating Regional Imbalance and Promoting In-depth Integration of Digital Technologies

To address the unbalanced digital finance development (stronger in eastern and urban areas, weaker in western and rural areas), this section proposes narrowing regional and urban-rural gaps through policy and infrastructure improvements, while advancing coordinated digital technology integration to break fragmentation and enhance industrial application efficiency.

For balanced regional and urban-rural development: First, increase policy and resource inclination to central, western and rural regions, accelerate digital financial infrastructure deployment, and improve rural network coverage and intelligent terminal layout. Supported by the rural revitalization strategy, establish a county-township-village three-level digital financial service network, focusing on rural-adapted products (e.g., mobile payment, simplified digital wealth management), aiming to narrow the urban-rural adoption gap and raise rural digital financial service coverage to over 85% by 2028.

Second, launch special initiatives to enhance public digital literacy. For rural and central-western residents, popularize digital payment and risk prevention knowledge via offline lectures and online science popularization to resolve barriers to using digital financial services.

Third, promote cooperation between leading eastern digital financial institutions and central-western local institutions. Leading platforms can drive local development through technology export, talent support and business collaboration, such as opening technical interfaces and sharing risk control models and service experience with regional small and medium-sized payment institutions.

For digital technology integration: First, establish a national unified digital finance technical standard system. Led by the State Administration of Financial Regulation, jointly formulated with industry associations and leading institutions, it will set unified application specifications and data formats for big data, artificial intelligence, blockchain and cloud computing, breaking cross-institutional and cross-sector technical barriers to improve capital circulation efficiency.

Second, accelerate the digital transformation of traditional financial institutions. Increase policy support for technological investment by small and medium-sized banks and local financial institutions, encourage their cooperation with fintech firms to upgrade core business systems, and promote full-process digitalization of online credit granting and intelligent risk control to reduce manual intervention and narrow the technological gap.

Third, deepen technology-business scenario integration. Focus on cross-border payment, supply chain finance and inclusive credit, promote large-scale application of blockchain and artificial intelligence. AI can optimize credit risk control models and improve the accuracy and efficiency of micro, small and medium-sized enterprises' loan approval.

5.2 Improving Market Competition Order and Regulatory Compliance System

It is essential to balance market innovation and standardized development, curb unfair competition, optimize the market competition structure, and construct a regulatory framework compatible with digital financial innovation to enhance regulatory efficiency.

In standardizing market competition: First, strengthen market supervision to severely crack down on unfair competition—imposing strict penalties on irregular price cuts, false promotions by small and medium-sized institutions, and monopolistic practices by leading ones. Define clear competition red lines, reasonably regulate the market share of dominant digital payment institutions (controlling the top two's share within 70%), and encourage small and medium-sized institutions to focus on segmented scenarios and featured services, forming a diversified competition pattern.

Second, standardize digital financial institutions' operations. Strictly implement regulations on disclosing personal loans' comprehensive financing costs, requiring full disclosure of annualized interest rates in line with private lending interest rate ceilings. Strengthen supervision over debt collection, prohibit unauthorized collection via private numbers, aiming for an annual 15%+ reduction in online lending complaints.

Third, guide industry self-regulation. Give full play to digital finance industry associations, formulate self-regulatory conventions, standardize business conduct, and improve the industry's overall service quality.

In improving the regulatory compliance system: First, establish a dynamically adaptive regulatory framework. Keep pace with innovation, fill gaps in new businesses (e.g., virtual currency transactions, cross-border online wealth management, AI robo-advisory), clarify responsibilities, and avoid regulatory vacuum.

Second, optimize cross-departmental regulatory coordination. Clarify responsibilities of authorities such as the State

Administration of Financial Regulation and the People's Bank of China, build a collaborative supervision platform to unify policies, share information, conduct joint law enforcement, and reduce regulatory overlap and compliance costs.

Third, promote digital and intelligent regulation. Establish a big data regulatory platform, use AI and big data for real-time business monitoring, prioritize investigating algorithmic discrimination, big data price discrimination, and illegal capital flows. Strengthen regulator training to enhance capacity in supervising emerging businesses, ensuring regulation keeps pace with industrial innovation.

5.3 Strengthening Data Security Protection and Privacy Protection Mechanisms

Given the data-driven nature of digital finance, it is necessary to standardize data management, reinforce security protection, improve data security and privacy protection systems, defuse risks, safeguard financial consumers' legitimate rights and interests, and consolidate the safety baseline for the industry's sound development.

In standardizing data management: First, strictly implement the Personal Information Protection Law and the Measures for Data Security Management of Banking and Insurance Institutions. Clarify the scope of legitimate data collection for digital financial institutions, prohibit excessive and bundled collection of personal information, and impose heavier penalties on unauthorized over-collection, aiming to reduce related complaints to below 20% of financial sector complaints.

Second, improve the data governance system. Promote unified data standards for digital financial institutions, standardize the entire data lifecycle (collection, storage, utilization, destruction) to eliminate redundancy and falsification, and enhance data quality and security. Clarify data ownership norms, standardize data sharing, prohibit unauthorized data trading and illegal disclosure, and impose severe fines and public notifications on violators to form effective deterrence. In strengthening security protection: First, encourage digital financial institutions to upgrade data security capabilities by increasing investment in encryption technologies and security defense systems. Establish comprehensive data security frameworks, conduct regular vulnerability detection and remediation to prevent data leakage, and hold responsible parties accountable, require rectification, and enforce apologies and compensation for affected users in case of breaches. Second, standardize algorithm application. Require institutions to disclose core algorithm logic, eliminate algorithmic and big data price discrimination to ensure equal access to financial services, and establish an algorithm security review mechanism to audit consumer-rights-related core algorithms for fairness and transparency.

Third, address cross-border data flow risks. Strengthen international regulatory cooperation, clarify cross-border data transmission compliance requirements, and build a monitoring mechanism to ensure safety and legitimacy. Encourage institutions to formulate internal cross-border data security systems adapting to different jurisdictions, enhance compliance awareness through special training, and establish long-term protection mechanisms to fundamentally prevent potential risks.

6 Conclusion

After multi-stage evolution, digital finance in China has achieved large-scale development in payment, lending and wealth management, and plays a vital role in advancing inclusive finance and serving the real economy. Nevertheless, it still faces multiple challenges, including unbalanced regional development, inadequate technological integration, disorderly market competition, insufficient regulatory adaptation, and prominent data security risks.

In the future, based on the current industrial situation, it is necessary to balance innovation and standardization. By optimizing regional resource allocation, promoting in-depth technological integration, regulating market competition order, improving the regulatory system, and strengthening data security protection, China's digital finance can achieve high-quality development. It can better meet the demands of digital economic growth, fully release the value of inclusive finance, and provide sustainable impetus for the high-quality development of economy and society.

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