

A Study on the Impact of Digital Finance on the Financing Efficiency of Small and Medium-sized Enterprises

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Abstract

In recent years, with the rapid development of financial technology, digital finance has gradually become an important supplement to traditional finance and is increasingly emerging as a new driving force for financing small and medium-sized enterprises (SMEs). This paper employs literature review and logical analysis methods to explore the mechanisms through which digital finance enhances the efficiency of SME financing and to analyze its practical significance in addressing challenges such as difficult and expensive financing. Additionally, this paper identifies the current challenges faced by digital finance in areas such as information asymmetry, risk control, and regional development. Finally, this paper proposes policy recommendations to promote the healthy development of digital finance, including improving the regulatory framework, optimizing credit assessment models, and strengthening technical infrastructure, with the aim of providing theoretical support for the high-quality development of SMEs.

Keywords

Digital finance, Small and medium-sized enterprises, Financing efficiency, Financial technology, Policy recommendations

Introduction

Small and medium-sized enterprises (SMEs) are an important part of China's national economy, playing an irreplaceable role in employment, technological innovation, and social stability. However, for quite a long time, the difficulties and high costs of financing for SMEs have constrained their further development overall. Traditional financial institutions have been particularly cautious in providing credit support to SMEs due to various factors such as risk preferences and information asymmetry.

With the emergence of new-generation information technologies such as big data, artificial intelligence, and blockchain, digital finance has rapidly developed, demonstrating strong inclusiveness and efficiency, and has become a new avenue for alleviating SMEs' financing difficulties. This paper aims to analyze how digital finance can enhance SMEs' financing efficiency from both theoretical and practical perspectives and propose optimization pathways.

The essence and current state of digital finance

Definition of digital finance

Digital finance is a new form of finance that has emerged with the development of digital technology. It primarily utilizes technologies such as internet platforms, mobile payments, big data, artificial intelligence, and blockchain to enhance the efficiency and intelligence of traditional financial activities. At its core, it is an innovative model that deeply integrates financial services with modern information technology, aiming to overcome the limitations of traditional finance in terms of service reach, operational costs, and risk management capabilities, thereby achieving more optimal allocation of financial resources. Compared to traditional finance, digital finance offers greater convenience and flexibility in service delivery, enabling it to reach a broader user base at lower marginal costs [1]. This is particularly beneficial for small and medium-sized enterprises,

“long-tail customers,” and residents in remote areas, where it has a significant inclusive effect.

Its core lies in breaking down the traditional barriers of time and geographical location that limit financial services, enabling users to access financial services anytime, anywhere via mobile phones, computers, and other devices. At the same time, leveraging big data analysis and artificial intelligence modeling, digital finance has achieved precise identification of customer risks, personalized product recommendations, and automated service processes, significantly enhancing the operational efficiency of financial institutions and the user experience [2].

Furthermore, emerging technologies such as blockchain are playing an increasingly important role in enhancing transaction transparency, preventing financial fraud, and optimizing asset rights confirmation. In summary, digital finance is not only a financial transformation driven by technological progress but also an important pathway to achieving financial inclusivity, intelligence, and sustainable development.

It holds profound significance for promoting the digital transformation of the real economy and building a modern financial system.

Overview of China’s digital finance development

According to the “Financial Technology Development Plan (2022-2025)” released by the People’s Bank of China, China’s digital finance has been applied in multiple fields such as payments, credit, wealth management, and insurance. Platforms such as Alipay, WeChat Pay, Ant Financial, and JD Digits have established a relatively complete digital finance ecosystem.

Especially during the pandemic, digital finance played a positive role in providing financing support to small and medium-sized enterprises due to its online, intelligent, and low-threshold characteristics.

The mechanism of digital finance’s impact on the financing efficiency of small and medium-sized enterprises

Breaking down information asymmetry barriers

Small and medium-sized enterprises generally suffer from a lack of credit information and financial transparency. Without effective information, traditional

financial institutions often find it difficult to make accurate assessments.

Digital finance, however, analyzes non-traditional data such as daily business operations, e-commerce data, and social media data to build more dynamic credit assessment models, significantly improving financing matching efficiency.

Lower transaction costs and barriers to entry

Digital finance relies on online platforms to automate processes such as loan applications, reviews, and disbursements, effectively reducing intermediate steps and lowering labor and time costs. At the same time, its user interface is user-friendly and has a low barrier to entry, making it more suitable for the flexible and rapid capital needs of small and medium-sized enterprises.

Improving the inclusiveness of financial services

Traditional financial institutions tend to favor serving large and medium-sized enterprises, resulting in uneven resource allocation.

Digital finance, on the other hand, leverages algorithms and data-driven insights to reach a broader range of long-tail users, enabling personalized service customization tailored to individual needs. This approach ensures that small and medium-sized enterprises can also access service quality comparable to that of large corporations [3].

Challenges and issues faced

Credit assessment still has discrepancies

With the rapid development of fintech, digital finance has widely adopted non-traditional data (such as social behavior, e-commerce transaction records, logistics trajectories, device information, etc.) for customer credit assessment, breaking away from traditional financial institutions’ reliance on hard data such as financial statements and collateral. This has significantly expanded the coverage of financial services, particularly in supporting small and medium-sized enterprises (SMEs) and “credit-deficient populations.” However, despite the broad applicability and real-time nature of such data, significant challenges remain in terms of authenticity, completeness, and privacy compliance, directly impacting the accuracy and robustness of algorithmic models.

First, the complex and non-standardized sources of unstructured data may contain noise or manipulated content, leading to biases in credit scoring [4,5]. Second, data barriers between different platforms have not been fully broken down, and customer behavior across multiple scenarios cannot be fully captured, leading to data fragmentation and further weakening the representativeness of assessment results. Additionally, to comply with laws and regulations such as the Personal Information Protection Law and the Data Security Law, some platforms have had to restrict the scope of data collection and sharing, which has to some extent weakened the algorithmic model's ability to deeply characterize user behavior.

More critically, algorithm-based credit assessment models lack transparency and explainability, and "black box decision-making" may lead to systemic discrimination or unintended harm against certain groups. If this results in incorrect credit approvals or improper loan rejections, it may not only harm user rights but also increase the institution's own default risk. Therefore, while promoting innovation in digital financial credit assessment, it is essential to place high priority on data quality management, model review mechanisms, and algorithmic ethics. This can be achieved by establishing multi-source data cross-validation mechanisms, enhancing model explainability, and strengthening data governance frameworks to mitigate the potential cumulative effects of credit risks.

The regulatory system is still incomplete

In recent years, China's digital finance sector has experienced robust growth, encompassing multiple areas such as mobile payments, online lending, supply chain finance, and virtual asset trading, thereby injecting significant momentum into financial inclusion and service efficiency improvements. However, during its rapid expansion, digital finance has also exposed issues such as regulatory lag, institutional gaps, and insufficient risk identification capabilities. Particularly in the context of an incomplete regulatory framework and inconsistent rules and standards, some platforms have exploited technological means to circumvent regulatory red lines, leading to violations such as unlicensed lending,

excessively high interest rates, excessive data collection, personal information leaks, duplicate credit approvals, and even "violent debt collection." If such risks were to erupt simultaneously, they would not only jeopardize user rights but also potentially trigger a market trust crisis, thereby undermining the stability of the entire financial ecosystem.

Additionally, some digital financial platforms currently operate under the guise of "technology companies," bypassing the risk assessment and capital constraint mechanisms that traditional financial institutions should assume, leading to the "deregulation" of financial activities. Compounded by severe data silos, the lack of effective information sharing and blacklist mechanisms between different platforms has resulted in users repeatedly borrowing across multiple platforms and taking on excessive leverage, creating potential systemic credit risks [6-8]. In the event of economic fluctuations or deteriorating asset quality, these hidden risks could rapidly spread and amplify, potentially triggering a financial chain reaction. Therefore, it is imperative to strengthen top-level design, enhance regulatory technology tools, promote the establishment of a tiered and categorized regulatory framework tailored to the development of digital finance, and accelerate the construction of cross-platform, cross-departmental information linkage and risk prevention mechanisms to truly achieve a balance between innovation and safety, as well as development and regulation in the digital finance sector.

Uneven regional and industry development

Currently, China's digital finance sector has achieved significant progress, particularly in the eastern coastal regions, where robust economic foundations, well-developed digital infrastructure, and active market entities have contributed to the maturation of a digital financial services system. However, compared to these regions, central and western areas still face numerous practical challenges in advancing digital finance. First, due to insufficient infrastructure investment, these regions lag in key areas such as 5G network coverage, data center deployment, and digital identity authentication systems, making it difficult to ensure the

accessibility and stability of digital financial products. Second, digital literacy and financial awareness among users in some areas are relatively weak, and business owners and residents have low acceptance of new financial tools, making it challenging to generate widespread and effective demand-side responses.

Additionally, local financial institutions have shortcomings in terms of technological capabilities and service capacity, making it difficult to achieve efficient collaboration with fintech companies.

Meanwhile, the digital transformation of traditional industries such as manufacturing and construction remains in its early stages, with core business processes heavily reliant on offline operations and lacking standardized, structured data accumulation. This directly constrains the precise integration of digital financial products, preventing relevant enterprises from fully benefiting in terms of financing efficiency, cost control, and risk management. Particularly in application scenarios such as supply chain finance, accounts receivable financing, and intelligent risk control, data gaps and information silos are especially prominent. To achieve inclusive and balanced development of digital finance, it is imperative for the government to increase investment in digital infrastructure development in central and western regions and traditional industries, enhance technological access capabilities and the penetration rate of digital financial services, and promote the formation of a virtuous development pattern characterized by “regional coordination-industry collaboration-financial integration.”

Policy recommendations

To further leverage the positive role of digital finance in financing small and medium-sized enterprises, this paper proposes the following recommendations.

Improve the regulatory framework for financial technology

Against the backdrop of rapid development in digital finance, traditional regulatory models face numerous challenges, including technological lag, information asymmetry, and slow response times. To address the complex risks posed by new financial models, there is an urgent need to establish dynamic, flexible, and efficient

regulatory mechanisms to promote the development and application of regulatory technology. By incorporating advanced technologies such as big data, artificial intelligence, blockchain, and cloud computing, real-time monitoring, intelligent early warning, and precise intervention of financial activities can be achieved, effectively enhancing the timeliness, penetrability, and adaptability of regulation. For example, a data-stream-based regulatory system can automatically identify abnormal transaction behaviors, assisting regulatory authorities in swiftly identifying potential risk points and preventing risks from escalating into systemic events.

At the same time, digital financial platforms are diverse in type, vary in business models, and exhibit highly differentiated and concealed risk characteristics. In response, a tiered and categorized regulatory system should be implemented, setting differentiated regulatory rules and compliance requirements based on the platform’s business type, asset scale, user base, and potential risk level [9]. On one hand, for platforms involving public funds and possessing strong financial attributes, prudent regulation should be strengthened in areas such as capital adequacy, data security, and anti-money laundering; On the other hand, for technology-service-oriented platforms, regulatory flexibility should be granted to encourage compliant innovation. Additionally, regulatory data sharing and coordination should be strengthened to promote information linkage and resource integration among regulatory authorities, thereby establishing a comprehensive, end-to-end digital finance risk governance system. By combining technological empowerment with institutional innovation, a balanced approach can be achieved between promoting financial innovation and maintaining risk control.

Optimizing the credit system for small and medium-sized enterprises

Small and medium-sized enterprises (SMEs) often face difficulties in obtaining financing due to their small scale and weak risk-bearing capacity. One of the core obstacles is the lack of complete and transparent credit information, which makes it difficult for financial institutions to accurately assess their creditworthiness.

To address this issue, the government should play a guiding role in promoting the establishment of a national unified and regionally interconnected SME credit information sharing platform, serving as a key hub connecting enterprises, government departments, and financial institutions. This platform should integrate multi-dimensional data resources such as tax filings, social security contributions, e-commerce transactions, logistics fulfillment, and judicial records to create a dynamic credit profile covering the entire lifecycle of a business. By leveraging data collaboration and technological empowerment, it can break down “information silos,” providing financial institutions with more comprehensive and real-time credit assessment criteria, thereby effectively reducing credit risks caused by information asymmetry.

Additionally, the platform can utilize an open-sharing mechanism to provide credit service support for guaranteed institutions, supply chain enterprises, investment institutions, and others, thereby expanding financing channels for SMEs. The government can establish incentive mechanisms to encourage enterprises to actively participate in information reporting and data verification, ensuring the authenticity and timeliness of credit information. Based on this, a credit scoring model based on big data analysis can be constructed, transforming “no collateral” into “creditworthiness,” and enhancing the ability to precisely allocate financial resources. This initiative not only helps stimulate the vitality of SMEs but also provides important support for building a social credit system and promoting high-quality development of the real economy.

Increase investment in infrastructure and technology

Currently, fintech has become an important engine for driving innovation and efficiency improvements in financial services. To further unleash its enabling effects, we should vigorously support fintech companies in increasing their investment in the research, development, and application of core technologies such as cloud computing, big data, blockchain, and artificial intelligence, thereby enhancing the

intelligence, precision, and inclusiveness of financial services.

Especially in areas such as risk identification, credit assessment, and anti-fraud measures, advanced technologies can significantly reduce the cost of financial services, improve risk control efficiency, and enhance financial accessibility for small and medium-sized enterprises and remote communities. At the same time, efforts should be made to guide the deep integration of fintech into the real economy, focusing on key sectors such as manufacturing, agriculture, logistics, and energy to develop industry-specific financial solutions [10]. This will help establish a seamless “data-asset-financing” pathway, thereby improving resource allocation efficiency and industrial synergy capabilities.

Furthermore, to achieve coordinated regional development, it is necessary to accelerate the construction of digital infrastructure in central and western regions, including the deployment of key platforms such as 5G networks, industrial internet, and data centers, to establish a digital economy foundation comparable to that of eastern coastal developed regions.

By actively promoting the extensive and innovative application of fintech in central and western regions, we can not only further stimulate the enormous local economic potential but also effectively help narrow the existing regional digital divide, enhance endogenous development momentum, and gradually form a virtuous cycle of coordinated development among “technology, finance, and regions”. In the long run, this comprehensive approach will ultimately lay a solid foundation for China to steadily achieve its strategic goals of high-quality financial development and regional coordinated development.

Promoting the coordinated development of industry and finance

To address the long-standing issues of difficult and expensive financing for small and medium-sized enterprises (SMEs), it is imperative to explore new models of industrial finance that involve multi-party collaboration and shared development. Encouraging

banks, platform institutions, and leading enterprises in the industrial chain to establish close cooperative relationships and jointly build industrial financial service platforms is a key path to improving the overall financing efficiency of the industrial chain. On the one hand, leading enterprises control the core resources and information of upstream and downstream enterprises in the industrial chain and can provide financial institutions with real and dynamic transaction data, which helps banks effectively identify the creditworthiness of SMEs and improve the accuracy of risk assessment. On the other hand, financial platforms can use digital means to connect banks and enterprises, break down information barriers, and improve financing transparency and service efficiency.

By establishing mechanisms for information sharing and risk-sharing, banks can expand their credit scales while controlling risks. SMEs can obtain financing support based on assets such as accounts receivable, orders, and warehouse receipts without traditional collateral or guarantees, thereby effectively alleviating the structural challenges of “financing difficulties.” Ultimately, this industrial financial cooperation model not only enhances the resilience and collaborative capabilities of industrial chains but also drives the high-quality development of the real economy.

Conclusion

Digital finance, as a product of the integration of finance and technology, provides small and medium-sized enterprises with more efficient and convenient financing channels, effectively alleviating the problems of “difficult and expensive financing.” Although issues such as assessment errors and insufficient regulation still exist, its development trend is irreversible. In the future, we should promote the development of digital finance in serving the real economy through comprehensive efforts in improving regulation, optimizing the credit system, and strengthening technological innovation, thereby helping small and medium-sized enterprises achieve sustainable and high-quality development.

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Conflicts of Interest

The authors declare no conflict of interest.

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