

Digital Finance Drives Enterprise Innovation: Challenges and Development Paths

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Abstract. Innovation is the primary driving force for economic development and the key for enterprises to maintain competitive advantages. The development of digital finance contributes to the optimization of financial resource allocation and the structure of financial markets, brings better financial services, and thus drives enterprise innovation. By addressing the challenges of difficult and expensive financing for enterprises, promoting the digital transformation of enterprises, and stimulating the innovative spirit of entrepreneurs, digital finance effectively promotes enterprise innovation. However, digital finance driving enterprise innovation still faces challenges: the development quality of digital finance is not high enough, and the impetus of driving enterprise innovation needs improvement; Risks of digital finance still exist, posing a potential threat to the environment for enterprise innovation; Digital finance may lead to financial mismatch and hinder enterprise innovation. Further, this paper puts forward relevant development suggestions from the level of financial institutions and digital financial platforms, enterprises, and governments, and clarifies the possible development paths of digital finance driving enterprise innovation.

Keywords: digital finance; enterprise; innovation.

1. Introduction

Innovation is the primary driving force for economic development and the key for enterprises to maintain competitive advantages. China is accelerating the implementation of the strategy of innovation-driven development, and its economic development is gradually transitioning from being factor-driven to innovation-driven. Building an innovative country is an important part of China's current and future development. Obviously, it is significant to further enhance the innovation ability of enterprises. In the process of enterprises conducting R&D and innovation activities, the provision of credit services and stable financial support by the financial sector is essential. By leveraging digital technologies such as mobile Internet, big data, and cloud computing, digital finance can greatly complement traditional financial services. Digital finance refers to the utilization of digital technology by both traditional financial institutions and Internet companies to achieve financing, payment, investment, and other emerging financial business models (Huang, 2018). The development of digital finance contributes to the optimization of financial resource allocation and the structure of financial markets, brings better financial services, and thus drives enterprise innovation. It is of great practical significance to promote enterprise innovation through digital finance. However, digital finance driving enterprise innovation still faces unresolved problems and challenges. This paper studies this issue and proposes some relevant recommendations.

To carry out R&D and innovation activities, which are characterized by high risk and long payback periods, enterprises require long-term financing, so it is challenging for enterprises to secure funds. The challenges of difficult and expensive financing faced by enterprises engaging in innovation activities and the impact of financial development on this issue have attracted extensive attention of scholars. Zhuang (2020) and Zhong and Wang (2017) argue that financial development has a significant positive effect on R&D and innovation activities of enterprises, and the latter point out that financial development primarily facilitates innovation output of enterprises by easing external financial constraints. From the perspective of financial eco-environment, some scholars have found that the optimization of financial eco-environment contributes to enhancing enterprises' innovation ability. Wu and Jin (2017) suggest that the improvement of financial eco-environment has a more significant impact on enhancing the innovation efficiency of small enterprises and private enterprises.

Zhai et al. (2015) argue that there is a significantly positive relation between the optimization of financial eco-environment and the innovation capacity of manufacturing enterprises. Li C and Li Y (2022) and Tong et al. (2022) both find that financial misallocation has a significant inhibitory effect on enterprise innovation. The former indicate that financial misallocation increases the level of financial constraints and financial costs for enterprises, driving corporate financialization and subsequently inhibiting enterprise innovation. The latter suggest that financial misallocation inhibits enterprise innovation through two pathways: policy distortion and financial frictions.

In the traditional financial system, there exist financial mismatch problems and challenges in accessing financing for enterprise innovation. Then can digital finance, which can effectively match the supply and demand of funds, mitigate financial mismatch and propel enterprise innovation? Many scholars have conducted research on this topic. Zhao et al. (2021) and Tang et al. (2020) argue that the development of digital finance can efficiently mitigate financial mismatch existing in traditional financial services, optimize allocation of financial resources, and thus drive enterprise innovation. Li et al. (2022) also argue that digital finance significantly promotes enterprise innovation. Wan et al. (2020), Yang and Zhao (2021), Xie and Gao (2021), Hu et al. (2022), and Li and Pang (2023) all find that digital finance has a significant driving effect on enterprise innovation, especially on SMEs innovation. Among them, Xie and Gao (2021) point out that merely expanding coverage breadth could not improve the financial environment for SMEs innovation. And Hu et al. (2022) suggest that digital finance plays a more significant role in supporting the investment in innovation of enterprises with obvious characteristics of entrepreneurial spirit. Hou and Song (2020) argue that the development of digital finance strengthens the incentive effect of different financial structures on enterprise innovation.

Existing studies in the field have primarily employed quantitative methods to explore the effects and pathways of digital finance driving enterprise innovation. The relevant research findings provide theoretical support for this study. However, currently, there are few qualitative researches on digital finance driving enterprise innovation. In addition, with the development of digital finance, risks such as information distortion, data leakage and regulatory loopholes have started to emerge (Wang et al., 2021). Accordingly, this paper takes a qualitative approach to explore the potential difficulties and challenges faced by digital finance propelling enterprise innovation, aiming to provide effective theoretical support for the development of digital finance driving enterprise innovation. This paper studies how digital finance drives enterprise innovation and contributes to expanding the theoretical understanding of the transmission mechanism through which digital finance drives enterprise innovation, thereby enriching the relevant qualitative research. And this paper studies the challenges faced by digital finance driving enterprise innovation and puts forward relevant development suggestions.

2. Channels for digital finance to drive enterprise innovation

2.1 Addressing the challenges of difficult and expensive financing for enterprises

The financial system is generally classified into two types: bank-based and market-based, and China's financial system is a typical bank-based system (Xia, 2014). Bank loans remain the most important source of financing for Chinese companies (Chen et al., 2018). Bank loans are characterized by strict risk control. When approving loans, banks conduct comprehensive assessments of borrowers' credit status, asset status, repayment ability, etc., and require collateral or guarantors to reduce loan risks. Generally, higher information transparency, larger company size, stronger profitability, and greater ability to provide collateral make it easier for enterprises to obtain bank loans (Yang, 2009). However, in these aspects, small and medium-sized enterprises, as the majority group, tend to perform poorly and face challenges in accessing bank loans. Apart from the stringent loan application requirements, bank loans are also characterized by the lengthy approval process, which hinders enterprises from raising funds rapidly.

Compared to traditional finance, digital finance offers more direct, convenient, and flexible financing channels. The development of digital finance has improved the level of financial marketization to a certain extent, enabling enterprises to raise funds directly through digital finance platforms. Digital finance employs technologies such as big data and artificial intelligence to assess the risks and credit status of enterprises, enabling a more accurate evaluation of the credit risks of enterprises and the provision of more suitable financing schemes for enterprises. Traditional financial institutions tend to adopt conservative evaluation approaches, which pose challenges for many innovative companies to access financing. In contrast, digital finance has the ability to better identify the innovative potential of enterprises, thereby facilitating a more effective fulfillment of their financing needs. Furthermore, digital finance platforms can reduce the information cost and transaction cost of enterprise financing through Internet technology, improve the efficiency and transparency of financial services, further expand financing channels and reduce financing costs. Therefore, by improving credit evaluation and reducing information cost and transaction cost, digital finance effectively addresses the challenges of difficult and expensive financing in the traditional financial system, thus contributing to enterprise innovation.

2.2 Promoting digital transformation of enterprises

Digital finance expands the financing channels for enterprises and provides diverse financing methods such as supply chain finance and consumer finance, thus offering solid financial support for digital transformation of enterprises (Tang et al., 2020). Secondly, digital finance mitigates the information asymmetry between the providers and recipients of funds, and digital finance platforms facilitate the acquisition of effective information related to investment and financing for both parties. The high-quality technology provided by digital finance enables enterprises to conduct information analysis, allowing them to have a better understanding of their own risks, make informed and effective decisions and choose the optimal path for digital transformation. Thirdly, the services provided by digital financial institutions contribute to the advancement of digital transformation of enterprises. Digital payment services, including online payment, mobile payment, and QR code payment, offer enterprises safer, faster, and more efficient payment methods. The vast amount of data generated in the context of mobile payments also necessitates enterprise digital transformation to achieve effective utilization of data. Through big data technology and artificial intelligence algorithms, digital risk management services assess and monitor enterprise risks and provide more precise and scientific risk control and early warning services, which helps enterprises better mitigate risks and ensures the stability and sustainability of enterprise digital transformation. Moreover, the government supports and promotes enterprise digital transformation. As driven by policy incentives, the financial system is more inclined to offer financial services and credit support to enterprises that actively pursue digital transformation. Implementing digital transformation enables companies to identify diverse innovative resources including fund resources at low search cost through enhancing information transparency and improving communication efficiency. It facilitates the timely acquisition and processing of these resources, allowing corporates to better utilize these resources in innovation activities to promote innovation output (Li and Jiang, 2023).

2.3 Stimulating the innovative spirit of entrepreneurs

The innovative spirit of entrepreneurs plays a prominent role in driving enterprise innovation. In the process of enterprise innovation, entrepreneurs excel at capturing market demand, thereby facilitating opportunity identification and promoting the commercialization of research outcomes (Zhou, 2020). In addition, excellent entrepreneurs attach importance to sustainable development and core competitiveness of enterprises. They increase investment in research and development to enhance the innovation performance of the company and strengthen its innovative capabilities (Zhang et al., 2021). However, in China's traditional financial markets, the government has significant influence on resource allocation, and the nature and political background of the actual controller are crucial to whether an enterprise can obtain financing (Liang and Zhang, 2019). Therefore, the

phenomenon of "government-enterprise collusion" still exists, which undoubtedly deals a blow to the innovative spirit of entrepreneurs. The unreasonable allocation of financial resources also poses a hindrance to the manifestation of the innovative spirit of entrepreneurs, which plays a vital role in propelling enterprise innovation. In contrast, digital finance can give play to the role of the innovative spirit of entrepreneurs in driving enterprise innovation by mitigating financing constraints and improving the external business environment. Digital finance mitigates the information asymmetry between the providers and recipients of funds, and fosters the development of private lending, enabling entrepreneurs to obtain formal or informal loans more easily. The development of digital finance has enhanced the transparency of lending information and contributed to creating an open and sound financial environment. Digital finance not only assists enterprises in obtaining more funds for innovative activities, but also facilitates the government in improving the efficiency and quality of resource allocation, which reduces the cost for enterprises to acquire innovative resources, and thereby stimulating entrepreneurs' enthusiasm for innovation, providing impetus for enterprise innovation.

3. Challenges faced by digital finance driving enterprise innovation

3.1 The development quality of digital finance is not high enough, and there is still room for improvement in digital finance driving enterprise innovation.

Although digital finance has experienced rapid growth with the development of the Internet, it has not yet reached a high enough development level, and there is still room for improvement in digital finance driving enterprise innovation. This phenomenon can be attributed to multiple factors. First of all, the digital divide exists among different regions in China, with notable disparities in the development of digital finance. And the distribution pattern of digital finance is "strong in the east and weak in the west" (Yang and Kuo, 2022 and Du and Huang, 2023). Empirical studies have demonstrated that in regions with higher development level of digital finance, digital finance has a greater influence on promoting innovation output (Lvu and Zhang, 2023). Differences in infrastructure, residents' perceptions, policy support and investment in science and technology contribute to regional differences in digital finance development, which results in spatial heterogeneity in the promoting effect of digital finance on regional innovation output. In underdeveloped regions, SMEs face challenges in accessing both traditional financial support and digital financial services. Secondly, the usage depth of digital finance still needs to be enhanced, and there exists a certain gap between its current development status and the expectations of the majority of enterprises. The insufficient development of usage depth of digital finance is not only reflected in significant variations in financial service quality across different regions but also reflected in the inadequate provision of personalized financial services. In the early stage of digital finance development, there was rapid growth in coverage breadth. However, at present, the scope for improvement of coverage breadth is limited, and the significant driving force for the growth of digital finance has shifted from expanding coverage breadth to enhancing usage depth (Guo et al., 2020).

3.2 Risks of digital finance still exist, posing a potential threat to the environment for enterprise innovation.

On one hand, the new business forms and models developed under the digital financial system have inherent risks. The online peer-to-peer (P2P) lending industry in China serves as a typical example. Online P2P lending refers to realizing the direct finance between fund suppliers and fund demanders through online platforms, bypassing traditional financial intermediaries (Yin and Guo 2021). Due to severe information asymmetry between online lending platforms and investors and the lagging supervision, these platforms are exposed to high risks, and there were frequent negative reports such as instances of business misconduct and fraud by some platforms, which disturbs the normal financial order and seriously affects the security and stability of financial markets. It contradicts the long-term and reliable financial support required by enterprise innovation, resulting

in the inability of enterprises to secure stable financial support and hindering their innovative capabilities.

On the other hand, in the face of the rapid growth of digital finance, China's current regulatory system and framework are lagging behind. From the perspective of the development history of digital finance, digital finance started to develop relatively late in China. Recognizing that premature regulation could impede or distort the development of technology, the Chinese government exercised relatively lenient supervision over digital finance, in order to comprehensively promote its development. While this has facilitated the rapid growth of digital finance, it has also led to low development quality of digital finance and the increase of chaos in financial markets, which undermines the stability of the entire financial system. Consequently, the current regulation of digital finance needs to be further developed to effectively bolster financial stability and ensure wider access to digital financial services, thereby creating a more conducive financing environment for enterprise innovation.

3.3 Digital finance may lead to financial mismatch and hinder enterprise innovation.

The regulatory approach of China towards digital finance primarily involves territorial supervision (Lin and Li, 2020). The development of digital finance in China is characterized by significant government intervention. The level of regional policy support greatly influences the development of regional digital finance. In the Chinese context, local governments exert substantial influence over the allocation of financial resources within their jurisdictions. As a result, ownership discrimination exists in the allocation of financial resources including digital financial resources within regions. In order to maintain the sustainable development and performance of state-owned enterprises, local governments often use financial means to support their growth, resulting in a bias of local financial resources, including digital financial resources, towards state-owned enterprises. This leads to the misallocation of financial resources among enterprises of different ownership. In this case, financial resources are not allocated according to market mechanisms and may flow more to enterprises in traditional industries or those with relatively poor innovation capabilities, such as corporates in the steel and chemical industries, resulting in the inefficient utilization of financial resources and inhibiting the upgrading of regional industrial structure. This is consistent with some empirical research results—digital finance may inhibit the upgrading of regional industrial structure (Tang et al., 2019). And this makes it challenging for non-state-owned enterprises, whose innovation efficiency is higher, to access financial resources, resulting in reduced innovation activities and output.

4. Development paths of digital finance driving enterprise innovation

4.1 Financial institutions should expand digital financial services and enhance the inclusiveness of financial services.

Financial institutions can enhance the inclusiveness of financial services by adopting a business development model that integrates traditional finance with digital finance. It is crucial for financial institutions to expedite the layout of digital finance, strengthen relevant infrastructure, actively introduce and utilize digital financial technologies, and give full play to the promoting impact of digital finance on enterprise innovation. Financial institutions of different types and sizes have different main service targets and should be differentiated in digital finance layout. Taking commercial banks as an example, the characteristics of large enterprises with sufficient collateral align with the characteristics of large banks, leading to a greater focus of large banks on serving large enterprises. While small banks are better at utilizing soft information, which matches the characteristics of small and medium-sized enterprises that lack collateral, resulting in a stronger emphasis of small banks on serving small and medium-sized enterprises (Zhang Y et al., 2019). Financial institutions of different sizes and at various stages of development should align their digital strategic planning with their own characteristics, taking into account customer transactional habits and credit profiles of customers, to achieve long-term growth. As for digital finance platforms, they

should continuously pursue innovative development models, foster a more diverse range of financial services, offer a broader array of novel products and services, and enhance the quality of digital financial services, which will facilitate enterprises in obtaining more convenient and better financial services. Financial institutions and digital finance platforms should also attach importance to risk management while innovating, and strengthen risk management in areas such as data, models, and products.

4.2 Enterprises should actively drive digital transformation and proactively cooperate with digital financial service providers.

Enterprise innovation is characterized by high risk and long cycles, thus necessitating stable financial support. However, in reality, many enterprises lack cooperation with digital finance platforms and access to digital financial services, due to the constraints of traditional mindsets and development models. On one hand, enterprises should proactively follow the development trend, break away from traditional financing concepts, and embrace digital finance with an open, positive, and inclusive attitude, so as to seek better fund support for their own innovation and development. Enterprises should improve information disclosure, actively offer relevant credit information to the digital financial market, enhance cooperation with digital finance platforms, strengthen information symmetry with financial institutions, and establish sound cooperative relationships with financial service providers, which helps enterprises enhance their capabilities to raise funds and reduce the cost of financing and contributes to providing investors with more investment opportunities. On the other hand, enterprises should actively explore the optimal path for digital transformation, enabling efficient utilization of data and better alignment with the financing characteristics of digital finance. This will foster a positive interaction between enterprises and digital finance, facilitating the sharing of the achievements in digital finance development. Furthermore, while obtaining more financial support through digital finance, innovative enterprises should strategically plan the direction of R&D investment and innovation. It is also important for enterprises to attract, retain and effectively utilize talents to yield better innovation outcomes.

4.3 The government should support the development of digital finance and strengthen risk prevention.

Firstly, the government should actively support the development of digital finance, facilitate its deep integration with industrial development and give play to its driving impact on enterprise innovation. Given that the development level of digital finance varies greatly among different regions, differentiated support measures should be implemented to bridge the digital divide and foster balanced development in digital finance. The government should create a favorable environment for digital finance development, employ means such as tax incentives to encourage digital financial service providers in offering high-quality financial services to enterprises, facilitate the establishment of long-term cooperative relations between the two sides, and improve investment and financing efficiency. Secondly, the government should effectively leverage its role as a resource manager and, considering the characteristics of different enterprises and digital financial providers, guide the rational allocation of financial resources. Thirdly, the government can formulate relevant policies to support the development of digital financial technology in financial institutions and act as an intermediary between financial institutions and digital finance platforms to facilitate cooperation between two parties, so as to expand the coverage breadth and usage depth of financial services. While supporting the development of digital finance, the government should strengthen regulation and establish a robust digital financial credit information system, which contributes to enhancing the prevention and control of digital financial risks. This is crucial to prevent the disruption of the enterprise innovation ecosystem caused by digital financial risks, which may impede the progress of enterprise R&D and the conversion of scientific and technological achievements. By doing so, the role of digital finance in driving enterprise innovation can be adequately ensured.

5. Conclusion

Utilizing digital finance to support the innovation and development of enterprises is one of the crucial aspects in the current and future development of China's digital economy. At present, the relationship between digital finance and enterprise innovation has not yet been adequately analyzed. By analyzing the channels, challenges and development paths of digital finance driving enterprise innovation, this paper explores the relationship between digital finance and enterprise innovation and provides reference for understanding their relationship. In conclusion, digital finance has already provided good financial services and financial support for Chinese enterprise innovation, but there are still many deficiencies in practical situations. And this paper puts forward development suggestions on how to further promote digital finance to support enterprise innovation from three perspectives: financial institutions and digital finance platforms, enterprises, and governments.

Although this paper has made significant efforts to provide a foundation for understanding the relationship between digital finance and enterprise innovation, further research or demonstration is necessary due to the limitation of the availability of relevant data. This paper does not find specific real-life cases to analyze the detailed process of digital finance supporting enterprise innovation. Further exploration can be conducted in this direction. By searching and studying real-life cases, a better understanding of the entire process of digital finance supporting enterprise innovation can be achieved, which includes the source of funding, the risk mitigation process of platforms, and the specific contributions to supporting enterprise innovation.

References

- [1] Huang Y, Huang Z. The development of digital finance in China: Present and future[J]. *China Economic Quarterly*, 2018, 17(04): 1489-1502.
- [2] Zhuang Y, Chu Q, Ma Y. Financial development, firm innovation, and economic growth[J]. *Journal of Financial Research*, 2020(04): 11-30.
- [3] Zhong T, Wang C. Financial development and firm-level innovation output: A perspective of comparing different financing patterns[J]. *Journal of Financial Research*, 2017(12): 127-142.
- [4] Wu H, Jin T. The financial eco-environment and the efficiency of firm innovation[J]. *Finance Forum*, 2017, 22(12): 57-67.
- [5] Zhai S, Wang H, Lu Z. Financial ecological environment and the firm innovation: An empirical study of Chinese listed manufactured companies[J]. *Research on Economics and Management*, 2015, 36(07): 53-59.
- [6] Li C, Li Y. Financial misallocation, corporate financialization and innovation inhibition[J]. *Journal of Shanxi University of Finance and Economics*, 2022, 44(12): 62-76.
- [7] Tong X, Ran M, Li W. Financial misallocation and enterprise innovation: Research on policy distortion and financial frictions[J]. *Science Research Management*, 2022, 43(07): 69-76.
- [8] Zhao X, Zhong S, Guo X. Digital inclusive finance development, financial mismatch mitigation and enterprise innovations[J]. *Science Research Management*, 2021, 42(04): 158.
- [9] Tang S, Wu X, Zhu J. Digital finance and enterprise technology innovation: Structural feature, mechanism identification and effect difference under financial supervision[J]. *Journal of Management World*, 2020, 36(05): 52-66.
- [10] Li Y, Liu X, Zhao Q. Digital finance, absorptive capacity and enterprise dual innovation: an empirical analysis on mediation and threshold effects[J]. *Asian Journal of Technology Innovation*, 2022: 1-32.
- [11] Wan J, Zhou Q, Xiao Y. Digital finance, financial constraint and enterprise innovation[J]. *Economic Review*, 2020(01): 71-83.
- [12] Yang Y, Zhao H. Financial investment behavior, digital Inclusive finance and enterprise innovation[J]. *Southern Finance*, 2021(12): 18-33.
- [13] Xie T, Gao L. Research on the influence and mechanism of digital finance on technological innovation of SMEs—Based on the mismatch analysis of traditional financial structure[J]. *Journal of Financial Development Research*, 2021(12): 60-68.

- [14] Hu Q, Li Z, Zhang G. The influence of digital inclusive finance on innovation investment of small and medium-sized enterprises based on the moderating effect of entrepreneurship[J]. *Journal of Industrial Technological Economics*, 2022, 41(10): 32-41.
- [15] Li W, Pang W. Digital inclusive finance, financial mismatch and the innovation capacity of small and medium-sized enterprises: Evidence from Chinese listed companies[J]. *Heliyon*, 2023, 9(2).
- [16] Hou S, Song L. Development of fintech, adjustment of financial structure and performance of enterprise innovation[J]. *China Business and Market*, 2020, 34(04): 100-109.
- [17] Wang Z, Chen Y, Zhang M. Traditional financial supply and digital finance development: Supplement or substitute? Based on the perspective of regional system differences[J]. *Business and Management Journal*, 2021, 43(05): 5-23.
- [18] Xia X. Financing scale, financing structure and economic growth: the empirical study on China[J]. *Shanghai Finance*, 2014(03): 8-13+116.
- [19] Chen K, Ren J, Zha T. The nexus of monetary policy and shadow banking in China[J]. *American Economic Review*, 2018, 108(12): 3891-3936.
- [20] Yang Y. The availability of bank loans in SME financing: the main factors and regional differences[J]. *Journal of Dalian University of Technology (Social Sciences)*, 2009, 30(02): 46-51.
- [21] Li X, Jiang L. Digitalization and corporate innovation[J]. *International Business*, 2023, No.210(01): 139-156.
- [22] Zhou D. Entrepreneurship and Schumpeterian growth and transformation of China's economy[J]. *Academic Monthly*, 2020, 52(07): 57-68.
- [23] Zhang L, Geng S, Zhang L. Entrepreneurship, enterprise performance and regional economic growth: A micro investigation of small and medium-sized enterprises in the New OTC (over the counter) Market[J]. *Commercial Research*, 2021(04): 39-47.
- [24] Liang B, Zhang J. Can the development of digital inclusive finance stimulate innovation?—evidence from Chinese cities and SMEs[J]. *Modern Economic Science*, 2019, 41(5): 74-86.
- [25] Du M, Huang J. Spatial differences, source decomposition and formation mechanism of digital inclusive finance in China[J]. *Social Sciences in Guangdong*, 2023, No.219(01): 57-67.
- [26] Yang J, Guo C. Spatial Pattern and Evolution Characteristics of China's Urban Digital Inclusive Finance[J]. *Statistics & Decision*, 2022, 38(22): 130-135.
- [27] Lvu Y, Zhang S. The influence and its mechanism of digital finance on regional innovation output[J]. *Soft Science*, 2023, 37(02): 86-92.
- [28] Guo F, Wang J, Wang F, et al. Measuring China's digital financial inclusion: Index compilation and spatial characteristics[J]. *China Economic Quarterly*, 2020, 19(04): 1401-1418.
- [29] Yin X, Guo F. Does the transfer of creditor's rights on P2P lending platforms have the effect of risk identification?[J]. *Management Review*, 2021, 33(11): 223-237.
- [30] Lin W, Li S. Spatial externality and institutional choice of central-local decentralization in digital finance regulation[J]. *Zhejiang Social Sciences*, 2020, No.281(01): 31-39+156.
- [31] Tang W, Li S, Tao Y. The development of digital inclusive finance and industrial structure upgrading: empirical evidence from 283 cities[J]. *Journal of Guangdong University of Finance & Economics*, 2019, 34(6): 35-49.
- [32] Zhang Y, Lin Y, Gong Q. Firm size, bank size and optimal banking structure: from the perspective of new structural economics[J]. *Management World*, 2019, 35(03): 31-47+206.