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# *Application and challenge of financial technology in financing of small and medium-sized enterprises*

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***Abstract:*** The rise of financial technology provides a new financing solution for small and medium-sized enterprises (SMEs). Through the application of big data, cloud computing, blockchain and other technologies, the financing efficiency has been significantly improved and the cost has been reduced. P2P peer-to-peer lending, Internet factoring, financial leasing and equity crowdfunding provide diversified financing channels for SMEs through the empowerment of financial technology. However, the application of financial technology in SMEs financing also faces challenges such as lagging regulatory policies, data security and privacy protection, and insufficient technology maturity and popularity. Regulatory gaps and unsuitable policies lead to increased risks in financial activities, while data security and privacy protection have become the main difficulties in cooperation. In addition, the maturity and popularity of technology directly affect the stability and accessibility of services. Nevertheless, the integration of financial technology and traditional finance, such as cooperation mode and benefit distribution, is also a difficult problem to be solved urgently. The purpose of this paper is to explore the application status of financial technology in SME financing, analyze the challenges it faces, and put forward countermeasures and suggestions in order to promote the healthy and sustainable development of SMEs.

## 1. Introduction

Small and medium-sized enterprises (SMEs), as an important force to promote economic growth, employment and innovation, have increasingly prominent financing needs. However, the traditional financing model is often difficult to meet the flexible and diverse financing needs of SMEs, which restricts the development of SMEs to some extent [1]. In this context, the rise of financial technology provides a new opportunity for SMEs financing.

Financial technology, as a product of the deep integration of finance and technology, is reshaping the ecological pattern of SMEs financing with its unique technological advantages and innovative ideas [2]. By using advanced technologies such as big data, cloud computing and blockchain, financial technology not only improves financing efficiency, but also reduces financing costs, enabling more SMEs to obtain financial support conveniently [3]. However, the application of financial technology in SMEs financing is not always smooth. With the deepening of its application, a series of challenges have gradually emerged, such as the lag of regulatory policies, data security

and privacy protection issues, the limitation of technology maturity and popularity, and the difficulty of integrating financial technology with traditional finance [4-5]. The existence of these problems not only affects the effect of financial technology in SME financing, but also poses a potential threat to the steady development of SMEs.

Therefore, this paper aims to deeply explore the application status of financial technology in SMEs financing, analyze the main challenges it faces, and put forward corresponding countermeasures and suggestions on this basis. Provide theoretical support and practical guidance for the deep integration of financial technology and SME financing, and then promote the healthy and sustainable development of SMEs.

## 2. Application of financial technology in SMEs financing

### 2.1. P2P online lending

P2P peer-to-peer lending in financial technology reduces the adverse impact of information asymmetry on SMEs in the traditional lending model by improving information symmetry and transparency, and simplifies the financing process by directly connecting borrowers and lenders. This method not only reduces the intermediary cost and financing cost, but also uses big data analysis to achieve accurate matching between the supply and demand sides of funds, thereby reducing transaction costs and improving financing efficiency. At the same time, its simple and fast application process and flexible loan options can better meet the diversified capital needs of SMEs.

### 2.2. Internet factoring

Financial technology has played an important role in SMEs financing, especially the innovative way of Internet factoring. With the help of big data and cloud computing, it has realized real-time analysis of enterprise operation and credit status, thus simplifying the approval process and accelerating the financing speed. In addition, Internet factoring shares information through cooperation with enterprises in the supply chain, reduces the credit risk caused by information asymmetry, and uses intelligent risk control system to evaluate the risk of financing projects, thus ensuring the safety of funds.

### 2.3. Finance lease

Financial leasing provides a flexible financing method for SMEs by combining funds with equipment or assets needed by enterprises. In this process, the application of financial technology has greatly promoted the convenience and efficiency of financial leasing services.

The application of financial technology enables financial leasing services to be seamlessly connected through online platforms. For example, Zhongguancun Science and Technology Leasing Co., Ltd. developed a subject growth credit rating model suitable for early science and technology enterprises by means of financial technology to provide technology and finance products that meet the whole life cycle of science and technology enterprises. Through the online platform, enterprises can quickly complete financing application, material submission, risk assessment, online approval, electronic contract signing, capital investment and other links. The intelligent processing of these processes not only improves the efficiency and quality of financial services, but also enhances the transparency and security of financial services.

Financial technology helps financial leasing companies to establish a more accurate risk assessment model through big data analysis and artificial intelligence technology, which realizes process automation, shortens the financing cycle and reduces the financing cost of SMEs. In the

field of intellectual property financing lease, the problem of intangible assets evaluation and risk management is solved by using blockchain and smart contract. In addition, the application of digital platform promotes the transformation of financial leasing industry, improves the efficiency of asset management, provides more convenient financing channels for SMEs, and enhances the availability of financial leasing services.

### 2.4. Crowdfunding

As a new financing mode, China Equity Crowdfunding provides a new financing channel for SMEs and has played a positive role in promoting its development [6]. Equity crowdfunding means that companies release financing information through Internet channels and attract many investors to invest by transferring part of their shares [7]. This model not only solves the financing problem for SMEs, but also promotes the innovation and growth of enterprises [8].

Equity crowdfunding uses the Internet platform to provide financing for SMEs efficiently and quickly, which lowers the threshold for investors and enables ordinary investors to participate in it. At the same time, it provides enterprises with new financing options besides traditional channels, which promotes the development of enterprises and expands their popularity. Its operation process includes project initiation, platform review, public fundraising, fund raising, equity allocation and follow-up management. Enterprises need to report their operations to investors regularly to maintain transparency. Equity crowdfunding solved the financing problem of SMEs, promoted innovation, optimized the capital structure of enterprises and enhanced the brand image by increasing exposure.

### 2.5. Blockchain technology

Blockchain technology shows significant potential in SMEs financing, which is mainly reflected in three aspects: improving transaction efficiency, ensuring transaction security and reducing financing costs. Automatic execution of contract terms through intelligent contracts and real-time settlement technology ensure that funds arrive quickly, which greatly simplifies the traditional financing process [9]. The non-tampering of blockchain ensures the authenticity and integrity of data, while its transparency and traceability enhance the security of transactions. Blockchain technology reduces intermediary links, optimizes risk management, and enables financial institutions to provide loans to SMEs at lower cost and interest rate, thus effectively solving the financing problem of SMEs.

In the future, blockchain technology will help SMEs achieve better development through cross-border financing facilitation, supply chain financial innovation, regulatory technology integration, digital currency popularization, and balance between privacy protection and compliance. Specifically, blockchain can simplify the cross-border payment process, integrate supply chain information to achieve transparent management, provide a traceable environment for regulators to improve efficiency, and reduce transaction costs through digital currency. At the same time, in order to meet the requirements of privacy protection regulations, advanced encryption technology will be explored to ensure data security. The integration of blockchain with artificial intelligence, Internet of Things and big data will further enhance the capabilities of risk assessment, asset management and business insight, and create more opportunities for SMEs financing.

## 3. Challenges faced by financial technology in SMEs financing

### 3.1. Lagging regulatory policies

Financial technology provides a convenient channel for SMEs financing, but it also faces many

challenges. Among them, the lag of regulatory policies is particularly prominent. At present, the regulatory policy challenges faced by financial technology in the financing field of SMEs are mainly manifested in two aspects: first, the regulatory gap, innovative products and services of financial technology are constantly emerging, and the existing regulatory system has not been fully covered, which leads to some financial activities outside the supervision and increases the financing risk of SMEs; Second, the policy does not adapt, and the existing regulatory policies do not match the development speed of financial technology, which is difficult to meet the diversified financing needs of SMEs, which restricts the positive role of financial technology in the financing field of SMEs to some extent. Therefore, accelerating the improvement of regulatory policies, eliminating regulatory blind spots and improving policy adaptability have become the key to promoting financial technology to better serve SMEs financing.

### 3.2. Data security and privacy protection

In the process of financial technology helping SMEs to raise funds, the importance of data security and privacy protection has become increasingly prominent. Financial technology can process and analyze a large amount of data more efficiently through digital means, which has played a positive role in SMEs financing approval process, risk assessment and credit decision-making [10]. However, it also brings challenges of data security and privacy protection.

In the process of cooperation between financial institutions and technology companies, although the concerns about data security and privacy protection risks have declined, it is still one of the main difficulties encountered in cooperation. According to the survey results of "2023 Chief Insight Report of Financial Technology Enterprises in China", although the proportion of this concern has decreased compared with last year, 77% of the enterprises surveyed still regard it as the main difficulty, which shows that data security and privacy protection are issues that need to be continuously concerned and solved in the field of financial technology (see Table 1). It can be seen that although this proportion has dropped from 82% in 2022 to 77% in 2023, it is still a relatively high figure, indicating that data security and privacy protection are still issues that need to be focused on in the field of financial technology.

Table 1: Proportion of data security and privacy protection risks in 2022-2023

| Year | proportion |
|---|---|
| 2022 | 82% |
| 2023 | 77% |

With the implementation of the Personal Information Protection Law and the Data Security Law and other relevant laws and regulations, the financial technology industry has more clear norms and requirements in data security and privacy protection. These laws and regulations provide guidance and support for the financial technology industry to use data in compliance and improve the level of data security management, and help alleviate the industry's concerns about data security and privacy protection. However, the financial technology industry still faces challenges in data governance. For example, how to ensure the security of data in the process of collection, use, storage and transmission, how to prevent data leakage and abuse, and how to realize the effective integration and application of data while protecting personal privacy are all problems that need to be solved in the current financial technology industry. In addition, the financial technology industry also needs to pay attention to issues such as data quality and insufficient data fusion application ability, which are closely related to data security and privacy protection.

### 3.3. Technology maturity and popularity

The maturity of technology directly affects the stability and reliability of financial technology services. Some financial technology solutions may still be in the experimental or development stage, which may lead to service interruption or data security problems, thus affecting SMEs' trust and dependence on these services. For example, it is mentioned in the financial science and technology development plan (2022-2025) that China's financial science and technology development is facing many challenges, and technology applications are blooming and key core technologies need to be broken.

The popularity of technology determines the coverage and accessibility of financial technology services. If the popularity of financial technology services is not high, only a few SMEs can enjoy the benefits brought by these services, which will aggravate the financing inequality among SMEs. The People's Bank of China emphasized the importance of speeding up the digital transformation of financial institutions in the Development Plan of Financial Technology (2022-2025), which shows that the popularity of financial technology is gradually increasing, but it still needs further promotion and application.

Table 2 and Figure 1 show the total investment and financing in the field of financial technology in China from 2010 to 2023. In 2018, the investment reached the peak of 195.333 billion yuan, indicating the strong growth of the financial technology industry; By 2021, the total investment will drop significantly to 135.591 billion yuan, which may indicate that the market is slowing down or saturated; In 2022, the investment will be further reduced to 73.939 billion yuan; In the first half of 2023, the investment plummeted to 5.693 billion yuan, which was caused by various economic factors; However, the investment rebounded to 118.126 billion yuan in the second half of 2023, indicating the recovery of the industry. On the whole, the data reflects the fluctuation of the investment environment of China's financial technology industry, and the financing amount has changed significantly from year to year.

Table 2: Relevant statistical data of total investment and financing of financial technology in China from 2010 to 2023

| Year | Total investment and financing (100 million yuan) | Number of investment and financing events | remarks |
|---|---|---|---|
| 2018 | 1953.33 | - | 2018 is the year with the highest investment and financing amount. |
| 2021 | 1355.91 | 356 | The concept of metauniverse exploded, and investment and financing events increased. |
| 2022 | 739.39 | 200 | The heat of the meta-universe has declined, and the investment and financing events and amounts have declined. |
| 2023 | 56.93 | 18 | Data as of March 3, 2023 |
| 2023 | 1181.26 | 907 | Data for the first three quarters of 2023 |

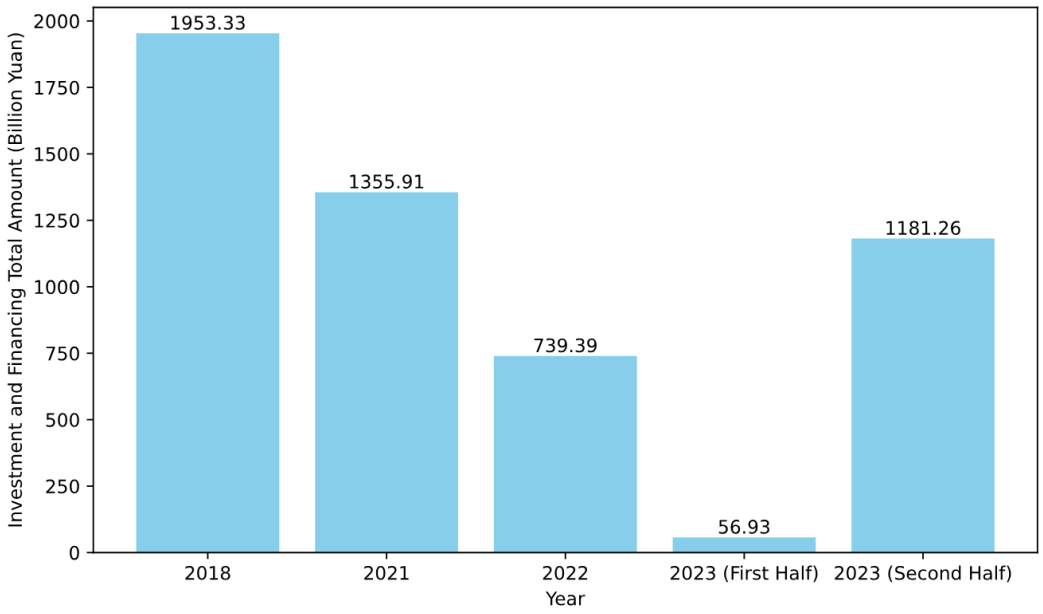


Figure 1: Bar chart of total investment and financing of financial technology in China from 2010 to 2023

The development of financial technology also faces other challenges, such as the hidden dangers of financial security brought by regulatory arbitrage and mixed operation, the reduction of market operation and capital supply efficiency caused by information asymmetry, and the distortion of the ecological pattern in the financial technology industry caused by insufficient development imbalance. These challenges need to be solved by strengthening supervision, improving data management and improving the level of industry construction. The challenges faced by financial technology in SME financing need to be overcome through technical innovation, perfect supervision and industry cooperation, so as to realize the maturity and popularization of financial technology services and better serve the financing needs of SMEs.

### 3.4. The integration of financial technology and traditional finance

Although financial technology provides innovative solutions and tools to improve financing efficiency and accessibility, there are still many obstacles to its integration with traditional financial institutions. First of all, in the mode of cooperation, the two sides need to find a win-win way that can not only give full play to the technological advantages of financial technology companies, but also make use of the extensive network and rich experience of traditional financial institutions. However, due to their differences in corporate culture, business processes and risk preferences, it is not easy to build an effective cooperation framework. Secondly, the distribution of benefits is also a key problem in the process of integration. Financial technology companies and traditional financial institutions must make clear their respective value contributions when cooperating, and distribute the income fairly accordingly. This requires both parties not only to have a transparent communication mechanism, but also to establish a reasonable evaluation system to quantify their respective inputs and outputs. In addition, with the deepening of cooperation, issues such as how to protect intellectual property rights, ensure data security and customer privacy have become increasingly prominent, which have put forward higher requirements for the integration of both parties.

## 4. Countermeasures, suggestions and future prospects

Countermeasures and suggestions include establishing a comprehensive regulatory framework that keeps pace with the development of financial technology, adapting to market changes by updating policies in a timely manner, and implementing inclusive supervision to encourage innovation while safeguarding market stability and consumer rights. Strengthening data security and privacy protection is also crucial, requiring the implementation of strict systems and the use of encryption and anonymization technologies to ensure data safety. Additionally, efforts should focus on improving the technical maturity and accessibility of financial technology by increasing investment in research and development and conducting educational initiatives to raise awareness. Furthermore, promoting the integration of financial technology with traditional finance, encouraging collaboration and resource sharing, and fostering the development of an open and interconnected financial ecosystem are essential steps.

With the technological progress and market opening, financial technology will show greater potential in SME financing. Its development trends include using artificial intelligence and machine learning to realize intelligent and personalized financing services, promoting the globalization of financial markets so as to facilitate SMEs to enter the international capital market, and promoting the integration of finance and various industries to form a comprehensive financial ecosystem, providing extensive support for SMEs, thus becoming a key force to solve financing problems and promote sustainable innovation and healthy development.

## 5. Conclusion

Financial technology has shown remarkable potential and advantages in SMEs financing. By improving information symmetry and transparency, and using big data, cloud computing, blockchain and other technologies, the financing efficiency has been effectively improved, the financing cost has been reduced, the financing process has been simplified, and diversified financing options such as P2P peer-to-peer lending, Internet factoring, financial leasing and equity crowdfunding have been provided. However, the application of financial technology also faces many challenges, including the lag of regulatory policies, data security and privacy protection, the limitation of technology maturity and popularity, and the difficulty of integration with traditional finance. These challenges not only affect the effect of financial technology in SME financing, but also pose a potential threat to the steady development of SMEs. Therefore, in order to promote the deep integration of financial technology and SMEs financing, we must speed up the improvement of regulatory policies, strengthen data security and privacy protection, enhance the technical maturity and popularity of financial technology, and promote the effective integration of financial technology and traditional finance. With the technological progress and market opening, it is expected that financial technology will show greater potential in SMEs financing and become a key force to solve financing problems and promote sustainable innovation and healthy development.

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