

The Status Quo and Countermeasures of Empowering Enterprises' High-quality Development by Science and Technology Financing

Yan Li

Mission College, Santa Clara, CA 95054

yanli0009@outlook.com

Keywords: Science and technology financing; High-quality development of enterprises; Empowering mechanism; Countermeasures and suggestions

Abstract: As China's economy enters a stage of high-quality development, science and technology financing, a critical innovation-driven means, is of great significance to empower the process. This paper conducts a fundamental theoretical analysis of the concepts, theories, and evaluation indicators of empowering high-quality development of enterprises by science and technology financing and then uses data and cases to analyze the status quo, problems, opportunities, and risks of empowering high-quality development of enterprises by science and technology financing in China. After a comprehensive diagnosis, three countermeasures and suggestions were put forward to provide a reference for promoting science and technology financing to serve the real economy, deepen the combination of technology and finance, utilize digital means, and bring inclusive finance into the play.

1. Introduction

Science and technology financing refers to financial activities that focus on technological innovation and promote the transformation of scientific and technological achievements and the development of innovative enterprises through financial instruments and mechanisms [1]. It is an essential pillar in promoting high-quality economic development and a major engine of technological innovation. However, there is still a certain mismatch and lack of coordination between science and technology financing and the high-quality development of enterprises. Therefore, promoting the high-quality development of enterprises and improving the efficiency and effectiveness of science and technology financing are urgent issues to be solved.

Guided by empowerment theory, this article conducts a fundamental theoretical analysis of the empowerment of enterprise quality development through science and technology finance from concepts, theories, and evaluations. Based on data and case studies, it comprehensively diagnoses the current situation, problems, opportunities, and risks of promoting high-quality development of enterprises through science and technology financing in China.

This paper believes that to deepen the integration of technology and finance to empower enterprises with high-quality innovation, it is necessary to improve the financing system based on the law of innovation and build a technology and financial ecosystem with differentiated positioning, integrated links, and diversified services. Then, the digital transformation of the industry regarding production efficiency, service level, and management model should be realized by digital methods. Finally, inclusive finance should be entirely played to support small and micro enterprises to obtain more preferential policies and personalized services regarding transformation, upgrading, market expansion, etc. This article aims to provide references for promoting science and technology financing to serve the real economy.

2. The Basic Theory of Empowering High-quality Development of Enterprises by Science and Technology Financing

2.1 The Concept and Connotation of Empowering High-quality Development of Enterprises by Science and Technology Financing

Empowering the high-quality development of enterprises through science and technology financing is a way to provide all-around support for enterprises by using technological means and financial tools, aiming to promote enterprise innovation, upgrading, and development [2]. Its connotations include the deep integration of technology and finance, the support of the digital economy, and the dual driving forces of market and enterprise demand.

2.2 The Theoretical Basis and Logical Relationship of Empowering High-quality Development of Enterprises by Science and Technology Financing

The theoretical basis for empowering the high-quality development of enterprises through science and technology financing is the deep integration of technology and finance, as well as the support of the digital economy [3]. The deep integration of technology and finance provides innovative financing tools and services, while the digital economy promotes the efficient circulation of funds, information, and logistics. Therefore, science and technology financing support can improve enterprises' competitiveness and production efficiency, promoting high-quality development. So, the logical relationship is that technology and finance promote each other, and the digital economy and science and technology financing support each other, jointly promoting enterprises' high-quality development.

2.3 The Evaluation Index System and Method for Empowering High-quality Development of Enterprises by Science and Technology Financing

The evaluation index system for empowering the high-quality development of enterprises by science and technology financing includes financial, market, social benefit, and environmental indicators [4]. Financial indicators mainly focus on corporate profitability and cash flow; market indicators focus on corporate market share, sales, etc.; social benefit indicators focus on corporate social responsibility and image; and environmental indicators focus on corporate environmental protection and sustainable development. In addition, evaluation methods include the single index method, analytic hierarchy process, comprehensive evaluation method, etc., and the appropriate evaluation method can be selected according to the actual situation of the enterprise.

3. The Status Quo and Problems of Empowering High-quality Development of Enterprises by Science and Technology Financing

3.1 The Overall Situation and Characteristics of Empowering High-quality Development of Enterprises by Science and Technology Financing

Empowering the high-quality development of enterprises through science and technology financing has become an essential means of enterprise development. Its overall situation and characteristics are mainly as follows. First, the deep integration of technology and finance leads to the gradual increase of innovative financing tools and services. Second, promoting a digital economy helps enterprises obtain more efficient capital, information, and logistics circulation. Thirdly, it is driven by the dual demands of the market and enterprise. Therefore, it has become the consensus of the market and the pursuit of enterprises to empower the high-quality development of enterprises through science and technology financing.

3.2 Main Problems and Challenges Existing in Empowering High-quality Development of Enterprises by Science and Technology Financing

The main problems and challenges faced by empowering the high-quality development of enterprises through science and technology financing include the following aspects. Firstly, risk management and control are insufficient, determining that innovative financing tools and services

are hazardous. Secondly, financial institutions have limited understanding and trust in technology-based enterprises. Then, digital transformation is complex because enterprises need a large amount of investment capital and technical support. Finally, financing small and micro enterprises is challenging, requiring more support from policies and favored services. The specific process is shown in Figure 1.

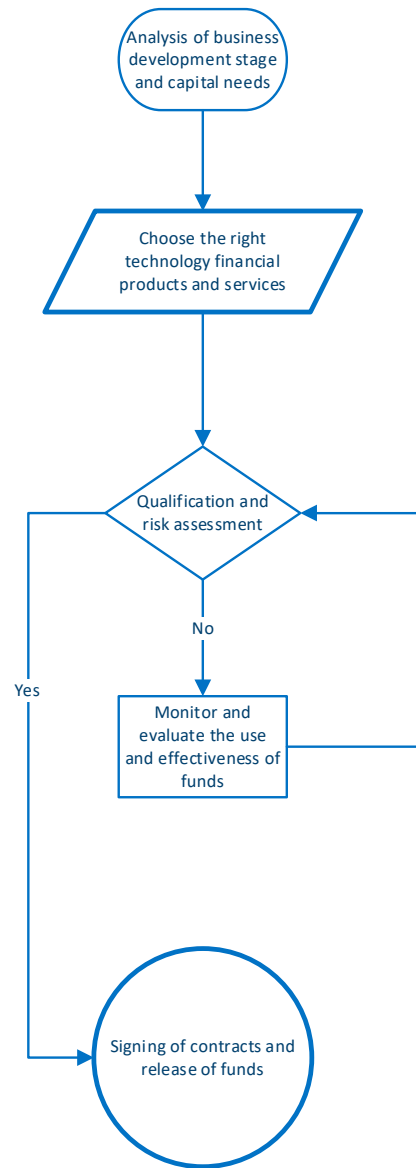


Figure 1 The fund review process for small and micro enterprises empowered by technology

3.3 Opportunities and Risks Faced by Empowering High-quality Development of Enterprises by Science and technology financing

Opportunities for empowering the high-quality development of enterprises through science and technology financing include the following aspects. First, the rapid development of the digital economy provides more financing opportunities and market space for enterprises. Second, the favorable policy environment and the government’s support for science and technology financing are gradually increasing. The third is the promotion of financial innovation, which leads to the emergence of new financing tools and services. The risks faced by empowering the high-quality development of enterprises through science and technology financing are stated next. The first is market risks, including competitive pressure, demand changes, etc.; the second is technological risks, including technological innovation, technological fluctuations, etc.; the third is financial risks, including credit risks, liquidity risks, etc. [5].

4. Countermeasures and Suggestions for Empowering High-quality Development of Enterprises by Science and Technology Financing

4.1 Deepen the Integration of Technology and Finance, and Improve the Diversified, Differentiated, and Integrated Financing System for Innovative Enterprises

To promote the high-quality development of innovative enterprises, it is necessary to deepen the integration of technology and finance to build a sound financing system [6]. On the one hand, by actively promoting financial technology innovation, financing tools and services suitable for technology-based enterprises, including equity financing, bond financing, innovative insurance, etc., can be developed. On the other hand, strengthening the diversified and differentiated financing of technology-based enterprises to explore financing channels and methods in different fields and models reduces enterprises' financing costs and risks and improves financing efficiency and quality. In the meantime, it is also necessary to realize the integration of the financing system, integrating various financing channels and services, creating an efficient, convenient, safe financial and ecological environment, and providing solid financial support for the development of enterprises.

Based on the above problems and needs, the following six specific measures are proposed:

- (1) Promote financial technology innovation; research and development financing tools and services suitable for technology-based enterprises, including intelligent risk control, digital finance, etc.
- (2) Build a venture capital platform to attract more venture capital institutions and professional investors to participate and provide equity financing channels for innovative enterprises.
- (3) Issue innovative bonds to provide more convenient and flexible financing methods for technology-based enterprises that reduce financing costs.
- (4) Promote inclusive finance and provide differentiated and diversified financial services for small and micro enterprises, promoting their high-quality development.
- (5) Strengthen financial supervision, protect the rights and interests of enterprises and investors, and strengthen financial risk prevention and control.
- (6) Promote cross-field integration, strengthen the collaborative innovation of technology and finance, and expand new financing channels and methods.

As an essential support for the high-quality development of enterprises, the development of science and technology financing requires the joint efforts of the government, financial institutions, innovative enterprises, and other parties to promote. In the future, it is necessary to continuously deepen the integrated development of technology and finance, promote digitalization, intelligence, and openness, and help technology-based enterprises achieve higher quality and more sustainable development.

4.2 Use Digital Means to Improve the Digital Transformation of Traditional Industries Regarding Production Efficiency, Service level, and Management Mode

With the continuous development of information technology, digital transformation has become an inevitable choice for traditional enterprises to achieve high-quality development. Using digital means can improve their production efficiency, service level, and management mode and then promote the transformation and upgrading of enterprises toward the direction of intellectualization, networking, and Datamation. This paper will discuss the significance, problems, and countermeasures of digital transformation and propose a specific digital transformation solution.

The significance of digital transformation is to promote the high-quality development of enterprises and improve their market competitiveness. On the one hand, digital transformation can effectively improve enterprises' production efficiency and product quality, improve service levels and customer experience, and reduce the costs and risks of enterprises. On the other hand, digital transformation can optimize the enterprise's organizational structure and management model, improve decision-making efficiency and flexibility, and strengthen the connection and cooperation between the enterprise and the supply chain, customers, and markets.

The problems faced by digital transformation mainly include technical difficulties, organizational changes, and the need for more talent. First of all, digital transformation needs to rely

on the support of information technology, which requires enterprises to invest a lot of technology and funds in research and development, and construction. Secondly, digital transformation requires profound changes and adjustments to the organizational structure, processes, and culture since new management methods and concepts must be introduced. Thirdly, digital transformation requires the support of many talents; enterprises need a talent team with digital literacy and innovation capabilities. The digital transformation design is shown in Figure 2.

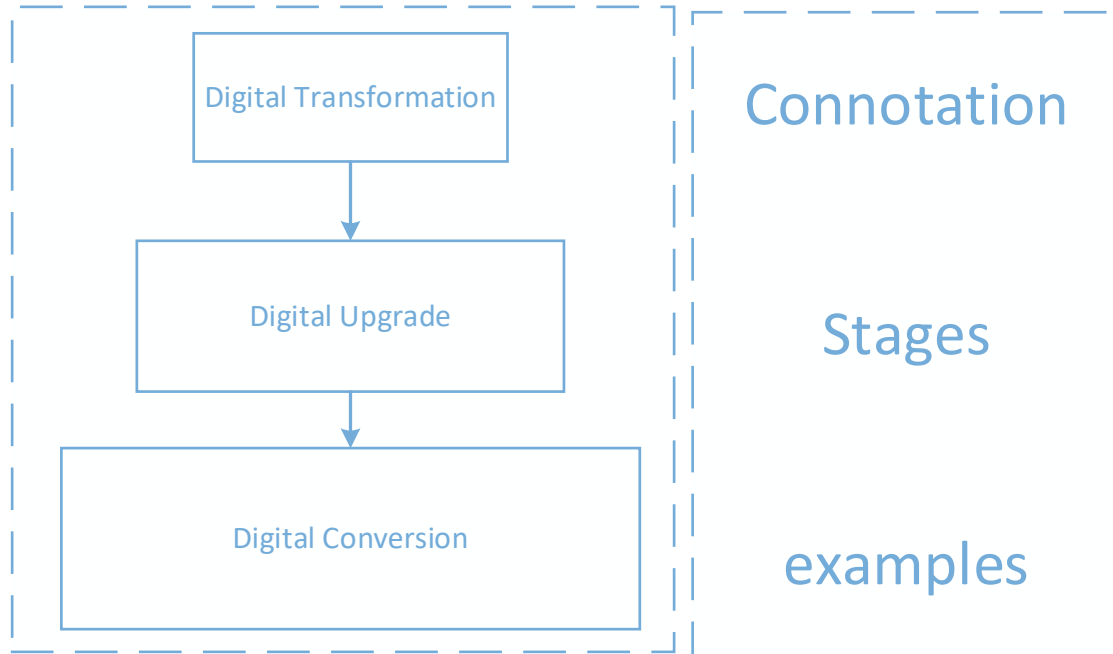


Figure 2 Digital Transformation Solution Design

To solve the problem of digital transformation, enterprises can take the following measures:

- (1) Clarify the goals and strategic direction of digital transformation; select appropriate digital technologies and application scenarios according to the actual situation of the enterprise and market demand.
- (2) Improve the organizational structure and process design of digital transformation; establish a particular work organization to coordinate the work of promoting digital transformation.
- (3) Strengthen the training and introduction of digital talents; establish a digital technology research and development center and a digital talent training center to improve employees' digital literacy and innovation capabilities.
- (4) Promote digital products and service models; use the Internet of Things, cloud computing, and other technical means to realize the automation and informatization of the production process to improve production efficiency and product quality.
- (5) Create a digital marketing and customer service platform; use big data analysis and other technical means to optimize marketing and customer service processes to improve customer satisfaction and loyalty. Digital marketing and customer service platforms can be realized by building corporate websites, social media marketing, and mobile applications. Through big data analysis, enterprises can better understand customer needs, preferences, and behaviors to conduct marketing and services in a more precise and personalized way. In the meantime, enterprises can establish a customer service platform to provide a variety of service methods, such as online consultation, intelligent customer service, community mutual assistance, etc., to improve customer satisfaction and loyalty.
- (6) Strengthen digital security and risk management to ensure the sustainability and stability of digital transformation. In the digital transformation, paying attention to risk issues such as information security and data privacy protection is necessary. Enterprises need to strengthen protective measures regarding network security and data security. Adopt a multi-level security system to detect and deal with security incidents promptly, thereby ensuring the sustainability

and stability of digital transformation. In addition, enterprises should also formulate a comprehensive risk management plan to effectively avoid and deal with various risks through risk assessment, risk monitoring, and risk control to ensure the smooth progress of digital transformation.

In conclusion, digital transformation is an important way for the high-quality development of enterprises, which can improve their innovation ability, production efficiency, and market competitiveness. Enterprises need to strengthen the work of science and technology financing empowerment, digital transformation, talent introduction, etc., and actively respond to the challenges and risks faced by digital transformation to ensure the successful implementation of digital transformation.

4.3 Give Full Play to the Role of Inclusive Finance to Support Small and Micro Enterprises to Obtain More Preferential Policies and Services regarding Transformation and Upgrading, Market Expansion, etc.

Inclusive finance refers to affordable, accessible, and sustainable financial services for small, medium, and micro enterprises and individuals and is essential in promoting economic growth and social development. To strengthen the role of financial inclusion, the following measures can be taken:

- (1) Promote the deep integration of financial technology and inclusive finance, and improve the efficiency and convenience of small and micro-enterprise financing through digital means.
- (2) Increase policy support, formulate and introduce more preferential policies for small and micro enterprises, such as tax reduction and exemption, subsidy interest, etc., and at the same time strengthen the financial support of financial institutions.
- (3) Give full play to the role of financial innovation tools such as financial guarantees and credit insurance, and provide more risk protection and credit guarantees for small and micro enterprises.
- (4) Introduce social and private capital, actively build a diversified inclusive financial system, and improve financing channels for small and micro enterprises.
- (5) Formulate special service standards and guidelines to standardize the service behavior of financial institutions and strengthen training and guidance for small and micro enterprises.
- (6) Establish an inclusive financial public information platform to provide financial information, risk assessment, and other services, thereby improving small and micro enterprises' financial literacy and risk awareness.

The above measures can provide more support and services for small and micro enterprises, accelerate their transformation and upgrading, and expand the market, promoting inclusive finance to serve the real economy better.

For example, in formulating specialized services, the government can provide special loans or guarantee services for small and micro enterprises to support them in achieving better transformation, upgrading, and market expansion results. This specialized service can be realized by establishing partnerships, such as cooperating with local governments, financial institutions, and innovative enterprises, to formulate loan and guarantee policies for small and micro enterprises, provide more flexible financing solutions and more credit guarantees, and help small and micro enterprises better realize science and technology financial empowerment and promote their high-quality development. At the same time, training and consulting activities can also be implemented to improve their awareness of science and technology financing and the ability to deal with risks and improve the opportunities and effects of obtaining specialized services.

5. Conclusion

This paper discusses the theoretical basis, status quo, problems, and countermeasures of empowering the high-quality development of enterprises by science and technology financing and proposes specific measures such as deepening the integration of technology and finance, using digital means, and giving full play to the role of inclusive finance. These measures aim to improve

corporate financing efficiency, digital transformation, market expansion, risk management, and customer service optimization. Through the implementation of these measures, it is expected to promote the high-quality development of enterprises and enhance their competitiveness to achieve sustainable development.

References

- [1] Y. Pan, "Research on financing preference and performance of sci-tech finance for sci-tech SMEs," in 2019 4th International Conference on Financial Innovation and Economic Development (ICFIED 2019), 2019, pp. 380-384.
- [2] P. Gomber, J. Koch and M. Siering, "Digital Finance and FinTech: current research and future research directions," *Journal of Business Economics*, vol. 87, pp. 537-580, 2017.
- [3] Da Fonseca R S, Veloso A P. The practice and future of financing science, technology, and innovation[J]. *Форсайт*, 2018, 12(2 (eng)): 6-22.
- [4] T. Loughran and B. McDonald, "Textual analysis in accounting and finance: A survey," *Journal of Accounting Research*, vol. 54, pp. 1187-1230, 2016.
- [5] C. Gao, P. Song, Y. Wen, and D. Yang, "Effect of Science and technology financing Policy on Urban Green Development in China," *Frontiers in Environmental Science*, vol. 10, p. 918422, 2022.
- [6] L. Tian and G. Kling, "Financial inclusion and financial technology: finance for everyone?" *The European Journal of Finance*, vol. 28, pp. 1-2, 2022.