

Research on the Core Role and Path of Innovative Financial Mode in New Quality Productive Forces Development

Longze Zhang^{1,a,*}

¹*Institute of Beijing Normal University - Hong Kong Baptist University United International College, Zhuhai, Guangdong Province, 519087, China*
a. t330018091@mail.uic.edu.cn

**corresponding author*

Abstract: New quality productive forces (NQPF) focus on progress and innovation. The position of innovative financial mode is crucial in the development of NQPF. This paper focuses on the relationship between NQPF and innovative financial modes led by science and technology (SAT) finance and digital finance (DF). It discusses why and how innovative financial modes can play a strong part in developing NQPF. The comprehensive analysis results of this paper show that SAT finance invests financial resources into enterprises, and takes enterprises as the core carrier to achieve the rapid development of NQPF, which is embodied in the capital chain, talented people chain, and other chains. DF has strong universality, intelligence, and low costs, which can profoundly reshape industrial ecology and optimize resource allocation. Meanwhile, DF focuses on research and development, achievement transformation, and market promotion, and creates a whole process service mechanism of DF to help the development of NQPF. Finally, this paper discusses two problems of innovative financial mode, which are policy problems and talented people problems. To solve the policy problem, countries should establish a unified finance policy and reduce unnecessary sanctions. To solve the talented people problem, local governments should introduce preferential policies and actively explore and cultivate talents.

Keywords: Science and Technology Finance, Digital Finance, New Quality Productive Forces.

1. Introduction

As global economic development enters a new stage, two innovative financial modes, mainly science and technology (SAT) finance and Digital (DF), have shown their key role in promoting new quality productive forces. New quality productive forces (NQPF) take excellent quality and innovation as their basic connotation. Its development can improve production efficiency and innovation ability, even more than that, it can promote economic transformation and upgrading through changing industrial structure, which could achieve growth in global economic integration, international trade, and investment [1-3]. SAT finance invests financial resources into innovation, then promotes achievement transformation and industry upgrading through the leverage of funds [4]. SAT finance not only provides financial support for innovation to promote NQPF development but also promotes the optimization and upgrading of economic structure by supporting high-tech enterprises to realize NQPF development [4]. At the 13th China (Guangzhou) International Financial Transactions Expo,

several achievements and products that represent NQPF were displayed. The "Financial Exhibition" became an "SAT Show", and "SAT Finance Enabling Empower NQPF" became a key issue [5].

As a new and effective virtual tool service, DF can aggregate industrial ecological power by building competitive products and distinctive enterprise services, thus promoting NQPF formation [6, 7]. As of May 2023, the scale of China's digital financial market has come up to 41.7 trillion CNY, taking up 15.6% of the global digital financial market, which is first in the global ranking [8]. DF has promoted the transformation and upgrading of industry and spawned new business modes and industrial ecology. This transformation of industrial ecology not only provides rich application scenarios and business modes for NQPF development but also improves production efficiency and quality [9]. The Central Financial Work Conference held in Beijing at the end of October 2023 pointed out that China should put an effort into five financial articles, including "Science and Technology Finance; Green Finance; Inclusive Finance; Pension Finance; DF". The CPC Central Committee and The State Council have also proposed the guiding ideology for building a strong financial country, developing DF, and promoting NQPF development. Based on this, it is of great significance to find the promoting effect of SAT finance and DF on NQPF development, clarify the path of boosting NQPF development, and analyze the factors restricting the impact of innovative finance modes on the development of new quality productivity, to understand the relationship between innovative finance modes and NQPF.

2. The Connotation of NQPF

The NQPF is advanced productivity with high technology, high efficiency, and high quality, which takes an effect on innovation and conforms to the new development concept. It is marked by a substantial increase in productivity, characterized by innovation. The main point of NQPF is quality, and the key element is advanced productivity [10]. Its new has three characteristics, which are new driving force, new business mode, and new industrial structure [9]. It takes innovation as NQPF's leading force, promotes progress, gives birth to new industries, and breaks foreign sanctions and blockades on China's SAT; It focuses on the user, enabling enterprises to launch more high-quality, personalized services. Through feedback from users, old product innovation, and new product development are constantly carried out to improve enterprises' research efficiency and ensure the competitiveness of enterprises; It takes information technology as an innovative production factor, promotes digitization, automation, and intelligent management of enterprise production, and greatly improves production efficiency and production quality [9]. With the arrival of new technology, the way of traditional industries production has been innovated. It changed the industrial structure and marked NQPF's development.

3. Science and Technology Finance Support NQPF Development

SAT finance is the organic coupling of financial development and innovation. It focuses on investing financial resources into the innovation of enterprises and promotes achievement transformation and industrial upgrading through the leverage of funds, which is a force to promote economic growth mode transformation. The core subject of NQPF development is SAT enterprises, and the core element is innovation that could generate new industries, modes, and momentum [11]. Enterprises have become the key variable of economic development at the present stage, and are the core carrier to realize the rapid progress of NQPF. Meanwhile, innovation is the new driving force to cultivate and develop NQPF. The CFWC held in Beijing in October 2023 pointed out that China should put an effort into the five big financial articles, of which "SAT Finance" was the top of the "Five big articles", so SAT finance has shown its importance. Therefore, it is particularly important to discuss the effect

of SAT finance on NQPF development and its action path in detail to promote the healthy progress of SAT finance and NQPF.

3.1. The Position of Science and Technology Finance in NQPF Development

3.1.1. Fund Support for Science and Technology

The research and development of products or technologies in the NQPF should be supported by a strong capital chain. Large-scale scientific research, technology testing, and product development of high-tech enterprises need to invest a large number of human resources, equipment, and materials in related activities. The salary and welfare of high-level talents, and the error cost caused by uncertainty in the research and development process all need considerable funds as support [11]. SAT finance can provide sufficient financial support for enterprises and expand the scale of funds. According to the data of 2023, more than one-fifth of Anhui's new loans are invested in technology enterprises, and the loan balance is close to 600 billion CNY, which is 7.7% of the total loans, ranking second in the delta of Yangtze River [12]. Loans of strategic emerging industries increased by 48% in the whole year, with a total scale exceeding 680 billion CNY, driving the output value of strategic emerging industries to account for 42.9% of the designated industries, and insurance provided a total of 1.2 trillion CNY of insurance protection for 19,000 enterprises in the province [12]. The data from China's central bank also show that by the end of June 2023, the balance of medium and long-term loans of the high-tech manufacturing industry reached 2.5 trillion CNY, with an annual growth rate of 41.5%, and a growth rate of more than 30% for three consecutive years [13]. The loan balance of small and medium-sized enterprises in SAT reached 2.36 trillion CNY, with an annual growth rate of 25.1% and a growth rate of more than 25% for three consecutive years [13]. The loan balance of "special and new" enterprises in China reached 2.72 trillion CNY, with an annual growth rate of 20.4%, and a growth rate of more than 20% for three consecutive years [13]. The continuous expansion of the SAT financial market has provided strong financial support for enterprises, greatly promoted the development and marketing process of new technologies and products, accelerated the transformation and application of achievements, and helped the growth of NQPF.

3.1.2. Promote Industrial Structure Optimization and Upgrading

China President Xi stressed, that it is imperative to promptly apply the results of scientific research and innovation to specific industries and industrial chains. China should transform and upgrade traditional industries, foster and strengthen emerging industries, plan to develop future industries and improve the modern industrial system. SAT finance plays a vital part in promoting industrial structure optimization and upgrading. SAT finance, promotes the birth of innovative products, which can be put into use to improve the production technology of enterprises and greatly improve the efficiency of research, thus forming a good economic cycle of "SAT - industry - finance" and becoming self-sufficient. Various achievements and products representing NQPF emerged in an endless flow, such as unmanned aircraft, 3D printers, AI intelligent massage robots, AI engraving, milling mechanical and electrical spindles, and VR balance cars. There is one thing in common behind these products, which symbolize new quality productivity one by one - their success in research and development cannot be separated from the role of SAT finance [5]. SAT finance has promoted entire industry transformation and upgrading, made traditional enterprises more modern and intelligent, and helped the birth and development of new enterprises, and promoted the birth of more products. Therefore, SAT finance promotes industrial structure optimization and upgrading. Furthermore, the upgraded and emerging industry together helps the research of innovative products. This is how NQPF develops, which in turn brings more economy to enterprises, forming a virtuous circle of "SAT - industry - finance".

3.2. Path for Science and Technology Finance to Help NQPF Development

In view of the fact that the core subject of NQPF is enterprises, promoting NQPF should focus on factors that restrict the survival and development of enterprises. One is the financial element. Innovative SMEs and brand-new enterprises face the dual dilemma of difficult and expensive financing, and traditional financial institutions regard lending to them as high-risk behavior. Therefore, the high-risk characteristics of technology enterprises cannot be separated from the support of equity funds. Centering on the capital ecosystem, the "investment bank + commercial bank" model of investment and loan linkage is explored to boost the NQPF [11]. For example, through the service of the whole process of "solicitation, investment and management withdrawal" of investment institutions, commercial banks can not only realize the joint government guide fund but also expand high-quality venture capital funds with professional investment capabilities in vertical subdivisions. The mode of "debt and equity" as the driving force serves enterprises to help NQPF [11]. Fund institutions should guide the rational flow of resources and optimize the investment structure and industrial layout. Furthermore, it is imperative to strengthen the screening mechanism of the project and improve the investment research capacity and investment efficiency. Fund institutions should continue to focus on the layout of regional key industries, strengthen cooperation with industrial chain leaders, set up special funds with industrial capital of leading enterprises, realize the integration of industrial capital, form a virtuous cycle of "SAT - industry - finance", and help NQPF [5]. For example, China Construction Bank Shenzhen Branch launched the "technology e-loan" for SME enterprises. The platform has served more than 3,400 upstream enterprises, with a cumulative loan investment of more than 67 billion CNY. Serving 800 downstream dealers, with a cumulative invoicing volume of 35.7 billion CNY; On the customer side, 20,087 loans were applied, and the cumulative investment amount reached 1.032 billion CNY [14]. The second is the talent element. NQPF formation is inseparable from the collaborative innovation, achievement transformation, and industry incubation mechanism of "scientists + entrepreneurs + investors". Financial institutions should focus on the financial needs of universities and high-level talents in the innovation ecosystem of major platforms. In achievement transformation, if the connection between achievement transformation and industrial upgrading, and the connection between human capital and equity income are both realized, then financial services can naturally shift from high-level talents to high-quality enterprises [11]. SAT financial institutions should break through the comfort zone, expand the cognitive radius, and become "more tech-savvy financial people".

4. DF Enable NQPF Development and the Way

DF, as a combination product of technology and finance, is promoting technological revolutionary breakthroughs and accelerating NQPF formation. DF takes technology as the cornerstone and the combination of DF and real economy as the application mode. Various technologies, for example, AI, and big data analysis are widely used. It is a new financial mode for financing, payment, and investment based on a new generation of digital technologies, with strong universality, intelligence, and low cost [15].

4.1. DF Enables NQPF Development

4.1.1.Reduce Transaction Costs

Under the traditional financial model, the bottleneck restricting the development of productivity is often high transaction costs. The rise of DF, through the introduction of advanced financial technology, means, such as mobile payment, blockchain, and cloud computing, has greatly reduced the threshold and cost of financial services, making financial services more popular and convenient,

and achieving cost reduction and efficiency. The reduction of transaction costs has promoted the extension of the industrial chain upstream and downstream strengthened the deep cooperation and collaborative development between enterprises and then promoted the progress of the entire industrial ecology to a more efficient, intelligent, and green direction. Industrial ecology optimization and upgrading are important embodiments of NQPF development. Therefore, by reducing transaction costs, DF gives soil for NQPF cultivation and development and ultimately helps the optimization and upgrading of the entire ecology to achieve NQPF development.

The wide use of mobile payment technology in DF enables consumers and enterprises to complete payment and settlement at any time and anywhere, reducing transaction costs and improving the efficiency and convenience of transactions. In 2022, digital wallets in China accounted for 81% of e-commerce transactions and 56% of point-of-sale transactions, much higher than the 50% and 35% of the world's second-ranked India [8]. This inclusive nature of DF enables financial services to reach a wider range of people, including remote areas and small micro businesses that are difficult to reach with traditional financial services. Such inclusiveness not only helps to narrow the social-economic gap but also helps to stimulate market vitality and creativity, and provides a broad market space for NQPF development. Another example is the introduction of blockchain technology in DF, which makes financial transactions more transparent, safe, and traceable, reduces the risk of fraud and default, further reduces transaction costs, and provides strong technical support for NQPF development. AI and big data make financial decision-making more accurate and personalized. DF uses big data, AI, and other technical means to drive innovation, screen and evaluate innovative projects, reduce the risk cost of innovation, improve the efficiency and success rate of innovation, and provide the driving force for NQPF development.

4.1.2. Optimizing Resource Configuration

As a combination of high-tech technology and finance, DF can be able to fulfill its advantages through resource allocation. DF has technical means, for example, AI, cloud computing, and big data, which can rationally allocate financial resources and efficiently use them without wasting them in a more accurate way. By collecting and analyzing a large amount of information through big data platforms, DF can provide financial institutions with more comprehensive and accurate customer information and market forecasts. When traditional finance understands market information and potential customers, it usually relies on past cases and experience to judge, which is time-consuming and laborious, resulting in limited precision and efficiency of resource allocation. By using big data technology, DF can collect and analyze all kinds of data in a real-time and comprehensive manner, including customer transaction records, social media dynamics, and industry trends [9]. According to the screening of big data, financial institutions can find more high-quality customers with their own, and then more accurately invest financial resources in potential or high-quality enterprises, and ultimately help NQPF's rapid development of enterprises.

4.2. The Way for DF to Enable NQPF Development

There exists a symbiotic relationship between DF and NQPF. NQPF development has brought new opportunities to the financial market, and financial institutions constantly adjust and innovate their own business modes and products to meet the requirements of NQPF development. The way DF enables NQPF development can be realized by building a service mechanism for the whole process of DF around research and development, achievement transformation, and market promotion [9]. In addition, given that the digital financial ecosystem is the core mode of the NQPF ecological chain. Advanced technologies, for example, big data, cloud computing, and blockchain can be used to effectively integrate key elements such as financial resources, market demand, and industrial

information, build an integration mechanism of the DF ecological chain, and realize the optimal allocation and efficient utilization of financial resources to enable NQPF development [8]. The integration of the DF ecological chain can be achieved through the three paths of DF ecosystem construction, DF cooperation, and collaborative cooperation between DF and innovative entities. The integration of the ecological chain accelerates technological innovation and achievement transformation, promotes knowledge sharing and resource integration among different industries, forms a more complete industrial ecological chain, and completes resource sharing and complementary advantages, so as to achieve NQPF development. This requires not only the cooperation and exchange of financial institutions, technology companies, government agencies, and other parties but also the establishment of a fair and transparent market mechanism, the strengthening of consumer protection, and the enhancement of public financial literacy to make sure the development and wide application of DF [8].

5. Existing Problems in Promoting NQPF Development Through Innovative Financial Modes

The innovative financial modes represented by technological finance and DF make an effort to help NQPF. However, the innovative financial modes also face a great many problems, which seriously affect NQPF development and cannot be ignored.

A study by Li pointed out that there are policy and regulatory problems in global economic circulation [15]. At the national level, basic policies are inconsistent across the globe. Europe has a strict regulatory policy, and the policies of countries within the EU are basically consistent. The United States adopts a decentralized legislative model, and at the federal level, relevant laws and regulations are formulated separately for specific industries. China has established the principle of top-down and bottom-up legislation, and relevant policies have been relaxed to gradually tightened. These policies and laws show the incoordination of policies and regulations of countries around the world, and the sanctions and blockade policies of countries also reduce the exchange of knowledge, resulting in the reduction of economic exchanges between countries. One of the core factors of NQPF development is the development of the economy, and the obstruction of economic globalization leads to the blockage of NQPF development.

Li's research also pointed out that there are talent people problems in the development and use of innovative products [15]. Innovative finance involves the cross-application of complex financial engineering, big data analysis, and other fields, which requires deep professional knowledge and cross-field comprehensive ability. At present, the supply of talent with comprehensive quality in this area is relatively insufficient in the market, which has become a restricting factor for the development of innovative finance. With the innovative industry's rapid development, the demand for talents with innovative awareness and practical experience is also increasing. NQPF development requires innovative financial modes as a boost, and the development of an innovative financial industry requires continuous innovation, the introduction of new technologies, and new ideas, so there is an urgent need for innovative talents to accelerate industry sustainable development.

6. Conclusion

NQPF development cannot be separated from the irrigation of innovative financial water. As a key to promoting the development of the economy in the new era, the healthy development of innovative finance is of great significance to NQPF development. SAT finance invests resources into the innovation of enterprises and takes enterprises as the core carrier to realize NQPF development, which is specifically manifested in the construction of capital chains, talent chains, and other security chains. DF has strong universality, intelligence, and low-cost nature, which can profoundly reshape the

industrial ecology and optimize resource allocation. Furthermore, DF focuses on research, achievement transformation, and market promotion, and creates a whole process service mechanism of DF to help NQPF development.

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