

Study on the Path of Integration and Development of Digital Economy and Real Economy

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Abstract: The progression of the digital economy (DE), serving as a novel method and catalyst for superior economic growth in the fresh development phase, holds immense relevance in strengthening China's tangible economy, escalating international competitiveness, and formulating a new developmental layout. To actualize the fresh developmental notion and model, enhancing the profound amalgamation of the digital and real economy is key. This plays a vital role in fostering the supply-side structural transformation, evolving the economic developmental methods, and accomplishing superior economic growth. Utilizing the endogenous growth theory structure, we unfold the mechanism of data elements driving the quick growth of the DE and inspect the vast scope for merging China's digital and real economy. On this premise, this article aligns it with China's innovation-fueled development tactic, and proposes strategies and recommendations for steering the deep integration of the digital and tangible economy. These proposals emphasize the top-level blueprint, data governance, data security, classification and amalgamation, and human capital.

Keywords: Digital economy (DE), real economy, economic development, high-quality development, integrated development.

1. Introduction

Recently, it is consistently emphasized the necessity of expanding and fortifying the digital economy (DE), implementing new development concepts, fostering deep integration of the internet, big data, artificial intelligence, and the tangible economy, and constructing a contemporary economic system. The digital transformation is an inherent need for its high-quality advancement in Chinese economy. The DE has emerged as the third socioeconomic form following agricultural and industrial economies. Boosting the digital transformation of industries and establishing a DE are vital components of the Fourteenth Five-Year Plan.

The real economy, as the focal point of national economic growth and wealth creation, has consistently played a critical role in China's enduring economic development and high-quality economic growth. General Secretary Xi Jinping already emphasized in 2016 that the real economy is the cornerstone of China's economic development and the basis for winning the initiative in the international economic competition. He stated that China's economy was built on a foundation of the real economy, which will continue to play a central role in the future. The stable progress of the real economy is not only essential for the sustained growth of our economy but also serves as a pillar of national strength.

At present, the "big but not strong" nature of China's real economy has resulted in an unstable foundation for economic development. This, on the one hand, is not conducive to China's economy's sustainable growth, and on the other hand, hampers the establishment of an advantageous position in international competition. This has become a constraint in China's economic transformation process from "big to strong." To address China's real economic development issues, it is crucial to resolve the "three major imbalances" in China's economic operations. Ultimately, this lies in the optimization and adjustment of China's economic structure.

2. Literature Review

The DE has gradually taken center stage in addressing the challenges of real economic development. Considering the aforementioned development dilemmas, contemporary scholars' research on the role of the DE in fostering the real economy can be summarized in two primary aspects:

Firstly, the fusion of digital technology and finance substantially enhances the construction of the financial system and encourages balanced growth between the virtual and real economies. Some researchers argue that the progression of digital finance facilitates the function of financial services for the real economy, eases the constraints of corporate financing, and alleviates the difficulties faced by real enterprises in obtaining financing. Wang Yannan and collaborators have established a fixed-effects model utilizing urban panel data, confirming that digital finance fosters innovation and development in real economy sectors by promoting research and development in small and medium-sized enterprises. [1]

Secondly, the infiltration of digital technology into real enterprises effectively stimulates the optimal growth of industry, thereby contributing to a balance of supply and demand in the real economy. [2] Owing to the innovation of artificial intelligence technology and the expansion of application scenarios, product supply and demand within the market have undergone reshaping and improvement, which is crucial to the growth of the real economy. Furthermore, the advancement of big data founded on data flows has significantly encouraged the optimization and integration of technology, capital, and talent. Additionally, the internet influences business operations, organizational structures, and competitive behavior. Consequently, the adoption of internet technology has driven innovation and development within the manufacturing industry, which ultimately promotes the optimization of economic structure and resource allocation, contributing to the enhancement of the real economy.

3. Theoretical Mechanisms

The DE is an essential accelerator of China's new economic development framework and a crucial part of the national economy. Its role in boosting China's economy has received broad recognition. The progression of the DE is particularly prominent in the domains of industrial digitization. The growth of industrial digitization and digital industrialization is intrinsically connected to the construction of the real economy's progression and continuance. It also forms the inherent propellant for the development of the real economy in this new era. [3]

Simultaneously, the DE, a new economic model primarily encompassing the internet, artificial intelligence, cloud computing, and big data, is characterized by high cooperation, low costs, and high permeability. This model facilitates the elimination of information asymmetry between enterprises and consumers, decreasing company transaction costs and enhancing product supply and demand matching.

Through the economy of scale and scope, the DE plays a pivotal role in enhancing enterprise technology, reducing production costs, rationalizing industrial structures, and ameliorating the imbalance of the economic structure. Such factors indirectly influence the development of the real economy.

Hence, from the DE's connotation and characteristics, this paper investigates both the direct and indirect dimensions of the DE's impact on the real economy.

3.1. Direct mechanism of action

The immediate influence of the DE on the real economy is intrinsic to the DE's core definition. Current academia generally perceive digital industrialization to be the foundational aspect of the DE, while industrial digitization is viewed as its growth extension and a unifying part of the DE. This understanding also encompasses both digital governance and digital value creation. [4]

As the impact of the DE on the real economy is predominantly manifested in digital industrialization and industrial digitization, this paper uses these aspects as a basis to combine the digital economic development carrier and the digital development environment. Consequently, we scrutinize the direct role of the DE on the real economy.

Primarily, digital industrialization comprises information and communication, electronic manufacturing, software information services, and the internet, among other industries. Driven by data and reliant on innovative breakthroughs of new digital technologies, it serves as a fresh avenue for the progression of China's Information Technology industry. Enterprises based on big data, artificial intelligence, cloud computing, and other innovations continue to arise, offering opportunities for the construction of a new modern industrial system, which favors the real economy's transition towards high-end industries.

Secondly, industrial digitization facilitates the optimization and restructuring of traditional production factors by integrating data elements with traditional industries, it boosts the multiplier effect in real industries, thus serving as a fresh propelling factor for the real economy's development.

Further, the development of the DE is driven by new infrastructures symbolized by the construction of 5G, data centers, and the industrial internet. The advancement of these new infrastructures promotes the revision and construction of information and telecommunication industries, laying the

groundwork for the innovation and development of the real economy.

Importantly, the digital development environment - epitomized by digital governance and digital innovation - efficiently facilitates the collaborative construction of sectors, and social participating bodies via the building of a new type of digital governance system. Therefore, by promoting the enhancement of production factors and productivity through digital technological innovation, conditions are created for the DE to foster the real economy.

In conclusion, the technological innovation and industrial upgrading has strongly propelled the advancement of the real economy, laying a solid foundation for China to establish a new pattern of economic development.

3.2. Indirect mechanisms

Issues with the development of China's real economy primarily arise from imbalances in the structure of economic supply and demand. To rectify this, a healthy alignment and flow between the supply and demand sides are fundamental. Starting from the impact pathway of the DE on the real economy's supply and demand structure through the "production-circulation-sale" stages and studying the influence of the DE on the rationalization of the industrial structure, this paper explores the indirect impact mechanism of the DE on the real economy.

In terms of the supply and demand structure at the production stage, the DE's high-tech prominence enables real enterprises to significantly alter their production costs, efficiency, and variety, when applying novel information technologies such as the internet and big data analysis. Firstly, the integration of digital technology in real enterprises promotes economies of scale, reduces production costs, elevates efficiency, optimizes factor configurations, and diminishes mismatching. Secondly, the DE facilitates business expansion and diversification, improving product demand supply mismatches.

Regarding the circulation stage of supply and demand structure, the DE elevates product circulation efficiency and promotes industrial chain extension, primarily via internet construction and IoT. It betters product circulation between enterprises and markets and accelerates intra-enterprise factor circulation, breaking traditional enterprises' closed value system, and opening up the value chain for the real industry.

When viewing the sales stage of supply and demand structure, DE applications, notably the internet and big data, lower information asymmetry between enterprises and consumers. These findings suggest the utilization of the internet transcends traditional spatial barriers of sales and advances consumer understanding resulting in better product development. Digital technology applications effectively establish a supply-and-demand analysis mode relying more on big data and less on price mechanism-based analyses, contributing to the improved matching of supply and demand.

4. Conclusions and Insights

In summary, we can conclude that the DE has a positive impact on optimizing the supply and demand structure of the real industry. The development of the DE, on the one hand, is conducive to promoting the improvement of the quantity and quality of product supply, and solving the problem of the mismatch between the low-end supply and the medium- and high-end demand; on the other hand, it is conducive to promoting the diversification of the product, making up for

the lack of the current product range, meeting the needs of consumers, and ultimately promoting the matching of product supply and demand, and realizing the rationalization of industrial structure. At the same time, with the application of digital technology, it promotes the transformation and upgrading of the real industry value chain, facilitates the integration and exchange between industries, and is conducive to optimizing industrial structure. Therefore, the promotion of "production-circulation-sales" enterprises by the DE has optimized the industrial structure of real economy, opened up new development channels, and solved the problem of "supply-demand imbalance" in domestic general circulation. The problem of "supply and demand imbalance" in domestic general cycle is solved.

Based on the analysis of the DE's mechanism of action, it directly promotes the upgrading of the real industry through digital industrialization, industrial digitization, and other new endogenous driving forces, enhances the level of the real economy; it also promotes the rationalization of industrial structure construction and optimizes the structure of real economy supply and demand through the penetration of real enterprises, indirectly promoting the development of the real economy. Based on the study of the relationship between the development of China's DE and the development of the real economy, this paper puts forward the following policy recommendations

First, the construction of digital industrialisation and industrial digitisation should be vigorously promoted. The development of digital industrialisation and industrial digitisation is directly related to the high-end development process of China's real industries, and is an important way to enhance China's international competitiveness and establish an international and domestic double cycle. On the production side, we should strengthen the digital transformation of the industry, enhance international and inter-regional cooperation, introduce advanced digital production technology, improve the production efficiency and quality of products, and meet the market demand; on the circulation side, we should use digital technology to break the communication barriers between industries, promote the integration of industries; on the sales side, we should vigorously promote the construction

of digital platforms, and guide regions to set up relevant big data analysis centres, and provide consumers with the most suitable information and value chain for their products. On the sales side, the construction of digital platforms is vigorously promoted, and regions are guided to set up relevant big data analysis centres to provide data support for the docking between consumers and the market, and to improve the matching of supply and demand of products. At the same time, by improving the DE infrastructure and supporting policies, we will provide support for the DE in terms of hardware and create conditions for the progress in terms of policy.

Secondly, attention is focused on the differentiation of the market environment for the implementation of the DE. In regions and industries with a lower degree of marketization and where the price mechanism is difficult to play a full role, such as railways, postal services, and other public utilities, the DE can effectively replace the price mechanism to regulate the structure of supply and demand, make up for the shortcomings of industry development, and enhance the efficiency of industrial development. Therefore, the government should encourage the penetration of the DE into these regions and industries, smooth and improve the information feedback and transmission channels of the DE.

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