

Research on the mechanism of deep empowerment of digital economy to real economy

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Abstract: Promoting high-quality economic development constitutes the fundamental objective of comprehensively constructing a modern socialist nation. Given the intricate international landscape and the formidable challenges posed by domestic reform, development, and stability, fostering the digital economy has emerged as a pivotal force in establishing a fresh competitive advantage for our country while reshaping global competition patterns. The digital economy has facilitated advancements within the real economy and played an instrumental role in propelling its growth. This paper adopts the digital economy as its focal point, based on an analysis of our country's current state of operation and development within the real economy. By combining this analysis with a logical examination of how deeply empowering the digital economy can enhance the real economy, we delve into exploring potential pathways for developing profound empowerment between these two sectors. Furthermore, we identify key breakthroughs that can enable deep empowerment from the digital to real economies to fully unleash their driving capabilities—providing valuable insights to promote high-quality development within the real economy.

Keywords: The digital economy; The real economy; High-quality economic development

1. Introduction

The 20th National Congress of the Communist Party of China (CPC) represents a significant turning point in China's modern history. It proposes a comprehensive strategy for the great rejuvenation of the Chinese nation, which involves promoting Chinese-style modernization as the central task of China's new journey in the new era. This visionary plan emphasizes the importance of the real economy as an indispensable part of the modern industrial system and the material foundation of a modern power. In today's rapidly evolving world, science and technology are advancing at an unprecedented pace, leading to profound transformations in modern industries. As a result, the concept and boundaries of the real economy are also experiencing continuous expansion and redefinition. To adapt to these changes, it is crucial for us to innovate our thinking and develop new measures for the high-quality development of the real economy. This calls for a synchronized and coordinated approach to promoting the integration of traditional industries with modern technology, fostering the growth of emerging industries, and upgrading the industrial structure. Furthermore, it necessitates the cultivation of a sound business environment that encourages entrepreneurship, innovation, and investment in the real economy. This strategy will stimulate new economic expansion and strengthen a more aggressive, competitive economy, better equipped for 21st century challenges. In essence, the 20th National Congress of the CPC steered China's path towards prioritizing the real economy. To fuel national rejuvenation, we must leverage this vision, adapt to evolving industry landscapes, and strive for ceaseless innovation.

Don Tapscott coined the term "digital economy" in his book, *The Digital Economy: Promise and Peril of the Networked Intelligence Age*. Tapscott pointed out that the digital economy establishes the connection between people through technology and eliminates the role of intermediary in the traditional economy, while the Internet provides a new platform for producers and consumers^[1]. Jaakola (1991) believes that the economy of digital technology will directly affect the industrial development. In 1998, 1999, and 2000, the U.S. Department of Commerce issued reports on the Emerging Digital Economy (I, II, and III). With the iterative update of information technology, researchers have changed from the narrow connotation of digital economy, that is, "digital economy is essentially the ICT industry", to the broad connotation. The three reports focus on the extensive application of Internet technology in the economy and society, emphasizing the supporting role of information technology production industries and e-commerce in the digital economy. O'Mahony and Vecchi (2005) proposed that the productivity of

relevant sectors applying digital technologies improved compared with other sectors not related to the digital industry. Nathan and Rosso (2012) and Knickrehm et al. (2016) indicated that digital economy is the part of economic output increase caused by the input of digital technology and the application of information and communication technology. Ariel Zarachi (2018) proposed that the digital economy would further intensify market monopoly through his research on the customs clearance algorithm of digital platforms.

After China's agricultural economy after the original agricultural production and the industrial economy formed after the industrial revolution, digital economy has gradually become the main economic form in our country. At the 2016 G20 Hangzhou Summit, China introduced the G20 Digital Economy Development and Cooperation Initiative, with "digital knowledge and information as key inputs, modern info networks as carriers, and information and communication technology as an enabler." The China Academy of Information and Communications Technology (2017) distinguishes the digital economy from the industrial economy, defining it as a new stage of economic development that is different from the agricultural economy and the industrial economy, and divides the digital economy into four parts: digital industrialization, industrial digitalization, digital governance and data value. Pei Changhong, Ni Jiangfei (2018) and others emphasized that digital economy can not be separated from economic life by improving production efficiency through digital technology^[2]. Yang Zhen (2022) pointed out that the progress of the digital economy has prompted more and more people to integrate into the digital society, and the data generated in economic activities has become a key element of the digital economy. Producers use big data to accurately grasp consumer preferences and obtain maximum economic profits, and consumers also use big data to quickly find goods that meet their preferences to reduce time costs and search costs. Data's status in production factors has risen, and gradually become a new energy for economic operation^[3].

The emergence of the digital economy, a product of the integration and continuous development of digital technology and digital elements within economic activities, has been one of the most significant economic trends in the 21st century. This new economic structure, which is gaining traction and strength with the active support and promotion of traditional industries, has demonstrated significant potential for innovation, high penetration, and wide coverage. The digital economy stands to be a game-changer for human production modes, the social fabric of production relations, and the overall economic and social structure. Its impact extends far beyond the traditional boundaries of traditional industries, transforming the entire economic landscape we know today^[4].

During the 18th National Congress of the Communist Party of China (CPC), it was underlined that in order to effectively tackle the increasingly pressing social and economic challenges, we need to further unlock the power of the digital revolution by embracing the innovative potential of informatization, digitalization, and intelligence. This strategic vision is aligned with the vision of enhancing the well-being of the Chinese people by pooling resources and implementing effective strategies that promote social and economic development through the leveraging of digital technologies. The promotion of "integrating information and industrialization" facilitates the coordination between information development and industrialization, expedites the transformation of economic development mode, and advances the optimization and upgrading of industrial structure^[5]. Wu Hequan took "digital economy is real economy" as the entry point, and emphasized that the quality and efficiency of real economy can be improved through digitalization, which is by no means simply reducing the proportion of traditional industrial economy^[6]. Zhou Ye'an believed that the digital economy was not a simple virtual economy, but was essentially the inevitable result of technological progress^[7]. Yang Xinming pointed out that the deep transformation of the traditional economy is based on the "Internet +" as a means to conduct relevant analysis on the curve overtaking of the digital economy from the micro, meso and macro perspectives, and drew the conclusion that the digital economy is an inevitable trend of economic development^[8].

Many domestic scholars have studied the digital economy empowering the real economy from multiple perspectives. Jing Wenjun et al. (2019) clearly pointed out the micro mechanism of digital economy on economic growth, and further proposed three paths for the Internet to promote high-quality economic development from a macro perspective, analyzing the mechanism and logic of the integration of digital economy and real economy^[9]. Based on the economic operation under the impact of the epidemic in 2020, that is, the global economy has shrunk sharply, but China's digital economy has shown adverse growth, and then makes an outlook on the economic development situation in 2021. As digital technology penetrates into all aspects of the economy and society, Digital economy enables the dividend of real economy to be further released, providing impetus for domestic economic recovery^[10]. Based on the economic status quo of Henan Province, Wang Na (2022) pointed out that digital economy helps the transformation and upgrading of traditional enterprises with low development efficiency through better

allocation of resources and comprehensive remodeling of traditional industrial and supply chains, and proposed an effective path for digital economy to empower the real economy^[11].

2. Agency Theory

2.1. Theoretical logic of digital economy enabling real economy

The direct impact of digital economy on the real economy is mainly reflected in the following aspects: (1) digital industry improves the infrastructure foundation for the real economy. Digital industry is an important part of new digital information technology, including various emerging forms of business, among which intelligent infrastructure is the key to the digital transformation of the real economy. We will promote the development of digital industry clusters and deeply empower the real economy with digital economy, so that digital industry clusters will become a key engine driving industrial upgrading and enhancing international competitiveness. (2) The digital economy has been increasingly important in promoting the digital transformation of the real economy in recent years, as various fields are currently undergoing varying degrees of digital transformation. Digital technologies, such as artificial intelligence, big data, and the Internet of Things, continue to be employed and integrated into all aspects of the real economy. This not only has significant implications for China's economy, but also represents a significant evolution in the world economy as a whole. In particular, the industrial sector now represents the primary focus of the digital economy, and it possesses an incredible amount of potential and vitality for the digital economy to further empower the real economy. (3) Digital economy optimizes industrial productivity of real economy. The ongoing advancement in digital technology and data resources have made it possible for businesses in the real economy to significantly increase their production efficiency and reduce costs while simultaneously improving their customer experience. Data information plays a higher and higher role in economic activities, gradually surpassing labor and capital to become the key factors of production. (4) Digital economy has an innovation effect on the real economy. Digital economy generates additional value to traditional products through innovation, promotes the integrated development of various forms of business, and promotes the transformation and upgrading of the real economy, so as to reap more value returns.

The indirect impact of digital economy on the real economy is mainly reflected in the following aspects: (1) digital economy produces economies of scale. With the rapid development of the Internet and big data technology, the market boundary is gradually broken, and the digital economy promotes industrial agglomeration, which then brings external and internal economies of scale. (2) Digital economy produces economies of scope. Through digital information technology, digital enterprises deeply analyze consumer preferences and produce niche goods to meet the personalized needs of tail consumers, in order to facilitate the optimization and upgrading of consumption structure, unleash further consumption potential, and enable deep empowerment of the real economy by the digital economy.

The impact of the real economy on the digital economy is significant, and is mainly reflected in the following areas: (1) The growth and progress of the digital economy in the developed countries predominantly depends on the strength of their real economy, as it is the cornerstone and the primary driver of the digital economy. The real economy is the foundation and core of the industrial system. Only by developing digital economy based on the real economy can we firmly promote the innovation-driven development of digital economy, fully unleash its potential, and effectively grab the opportunity of going global to improve the high-quality development of China's economy^[12]. (2) The real economy creates demand for the digital economy. From the perspective of endogenous supply of digital elements, the large-scale demand of the real economy continuously provides effective supply of data elements for the application scenarios of digital technology relying on the real economy. Based on the level of economic and social demand, many traditional real economies are constrained by resources and environment, which has a strong demand for digital technology to break through the bottleneck of traditional production methods^[13]. (3) The real economy builds a digital ecological platform for the digital economy. The real economy provides a basic development platform for the digital economy and is the "supply station" of the digital economy^[14].

2.2. Transmission mechanism of deep empowerment of digital economy to real economy

The logical main line of the deep empowerment of digital economy to the real economy is the internal adaptation of digital economy and the real economy, the internal axis is economic development as the center, and the macro guarantee is the government control. As shown in Figure 1.

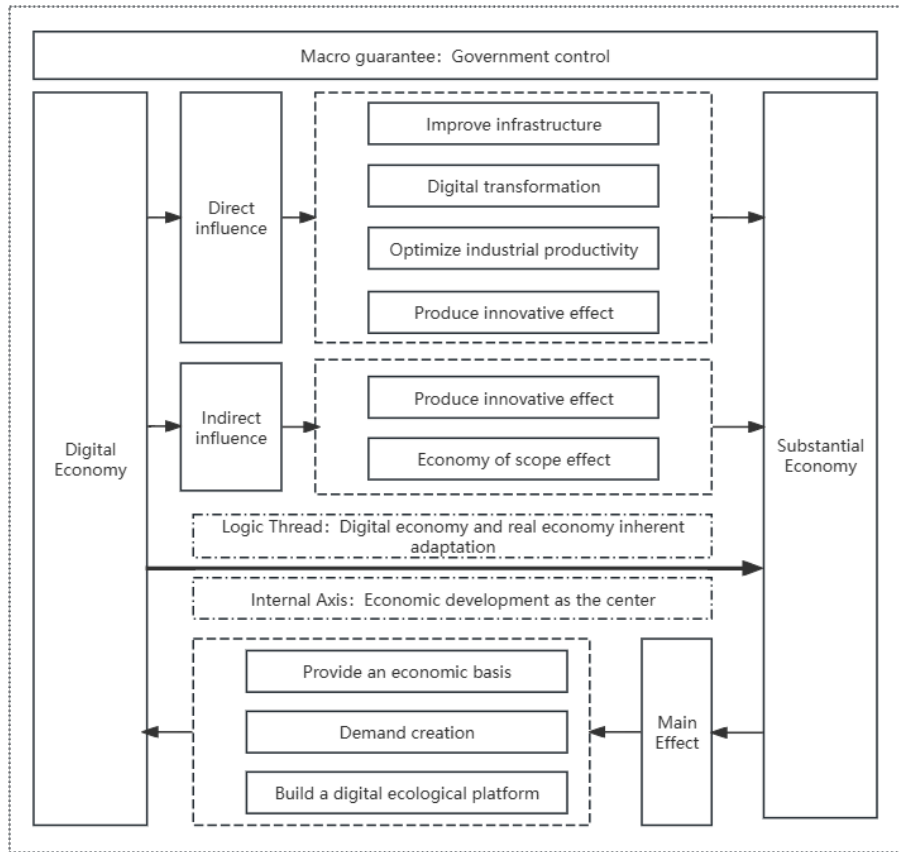


Figure 1: The basic logic diagram of the deep empowerment of digital economy to real economy

3. The third chapter is empirical analysis

3.1. Model construction and index selection

By adopting the two-way fixed effect model, the overall effect of enabling the real economy in each province on the development level of the real economy is empirically tested. The specific formula is as follows:

$$Real_{i,t} = \beta_0 + \beta_1 Dige_{i,t} + \sum_m^M \alpha_m X_{i,t} + \mu_i + \varepsilon_{i,t}$$

i stands for city, t stands for time. $Real_{i,t}$ and $Dige_{i,t}$ respectively represent the development level of real economy and digital economy of city i in period t . $X_{i,t}$ represents the control variable of province i in period t , including five variables, which respectively represent the intensity of financial support, the level of urbanization, the level of human capital, the degree of opening up to the outside world, and the intensity of traffic. β_0 represents the intercept term of the population mean; β_1 and α_m ($m=1, 2, 3, 4, 5$) indicate the parameters to be estimated. μ_i represents the fixed effect of the region that does not change with time, and $\varepsilon_{i,t}$ represents the random disturbance term. In order to be as robust as possible, the bidirectional fixed model of individual and time is used for testing.

3.2. Index calculation

3.2.1. The explained variable Real economy

In terms of the explanatory variables of "real economy", we defined "real economy" as the part of the economic system excluding the real estate and financial industry with reference to the consistent definition of domestic and foreign scholars. The regional real economy will subtract the regional gross

domestic product (GDP) from the output value of the regional financial and real estate industries. According to the definition of the real economy by various scholars, the logarithm of the GNP of each region excluding the output value of the real estate industry and the financial industry is taken to represent the development level of the real economy of each province.

3.2.2. Explanatory variable digital economy Dige

In the digital age, data is the cornerstone of economic development. With the increasingly extensive and deepening influence of digital economy on economic activities in China, a large number of scholars have also launched various researches on digital economy. Aiming at the measurement of the level of digital economy, this paper combines the systematization and scientificity of the measurement system, the representativeness and availability of measurement data, and describes the development level of China's urban digital economy from four dimensions: digital infrastructure, digital industrialization, industrial digitalization and digital innovation ability.

3.2.3. Control variable

Financial support (Gov). The increase of government scale will lead to the increase of government intervention in the market, thus affecting the development of regional real economy. The ratio of the general public budget expenditure of each province to its GDP is selected as the proxy variable to measure the size of government.

Urbanization level (Urb). The process of urbanization is the process of population gathering to cities. Densely populated cities tend to have better development of financial and real estate industries, which has an impact on the development of the real economy. It is expressed as the proportion of urban population to total population.

Human capital level (Hum). The better the development of regional colleges and universities, the more professionals they can theoretically provide, the more favorable it will be for the development of local real economy. The logarithm of the number of students enrolled in colleges and universities in each region is selected to measure.

The degree of openness to the outside world. The higher the level of opening to the outside world, enterprises can introduce more foreign resources and technologies, broaden the channels of financing, promote the improvement of the production and operation level of local enterprises, and accumulate more favorable conditions for the development of the real economy. The proportion of total import and export to GDP is selected as the proxy index.

Traffic intensity (Tra). Whether a region's transportation is developed and convenient can reflect the infrastructure construction of the region to a certain extent, and then explain the development of the real economy. The proxy index which takes the total freight volume of each province as logarithm.

3.2.4. Data source

The sample data are mainly from the official website of the National Bureau of Statistics, the China Academy of Information and Communications Technology, research reports and published data related to industry and informatization, statistical yearbooks of various provinces over the years, China Digital Economy Development Reports over the years, China Statistical Yearbook, China Information Yearbook, and China Information Industry Yearbook.

3.2.5. Data processing

On the basis of weighing the comprehensiveness of the index system and the availability of data, 2012-2022 is selected as the research sample interval, and the samples are 30 provinces, and the data are processed as follows: First, interpolation method or analogy method is adopted to supplement the missing data; Second, on the basis of the original indicators, the proportion of some indicators is calculated. Through data collection and processing, the panel data of 30 provinces from 2012 to 2022 are finally obtained.

3.3. Benchmark regression results

3.3.1. Descriptive statistics and correlation analysis

When analyzing the descriptive statistics of variables, the software Stata17.0 is mainly used for processing, which can obtain the descriptive statistics of the real economy development level, digital economy level and various influencing indicators of 30 provinces in China from 2012 to 2022.

Table 1: Descriptive statistics

	N	mean	sd	min	max
lnReal	330	9.762	0.878	7.448	11.51
Dige	330	0.127	0.0976	0.0249	0.475
Gov	330	0.253	0.103	0.119	0.627
Urb	330	0.608	0.117	0.388	0.893
Hum	330	0.0213	0.00559	0.00996	0.0389
Open	330	0.242	0.267	0.00162	1.253
lnTra	330	2.453	0.0737	2.261	2.558

Table 1 shows the descriptive statistical results of the variables in the empirical model: mean value, standard deviation, minimum value, maximum value and sample size. The study sample in this paper contains the balance panel data from 2012 to 2022, with a total of 330 observations after deleting the missing values. During the sample period, the average of the real economy development level of each province after taking logarithm is 9.762, the average of the digital economy development level of each province is 0.127, the average of the financial support of each province is 0.253, the average of the urbanization level of each province is 0.608, and the average of the human capital level of each province is 0.0213. The average opening degree of each province is 0.242, and the average traffic intensity of each province is 2.453.

In order to verify whether there is a correlation between the set variable indicators and the development level of the real economy, the correlation analysis of variables is carried out. As can be seen from Table 2, with lnReal coefficient 1.000 as the standard, the correlation coefficient of explanatory variable Dige is 0.689 and close to 1.000. Therefore, through correlation coefficient matrix analysis, It can be concluded that there is a strong correlation between the development level of digital economy and the development level of the real economy, and it can be used as an explanatory variable for economic significance analysis and statistical research. As shown in Table 2.

Table 2: Correlation analysis

	lnReal	Dige	Gov	Urb	Hum	Open	lnTra
lnReal	1						
Dige	0.689***	1					
Gov	-0.829***	-0.542***	1				
Urb	0.280***	0.623***	-0.356***	1			
Hum	0.202***	0.191***	-0.376***	0.551***	1		
Open	0.326***	0.610***	-0.395***	0.715***	0.130**	1	
lnTra	0.788***	0.275***	-0.660***	-0.096*	-0.0270	-0.00900	1

3.3.2. Baseline regression analysis

Based on the balanced panel data and the research purpose, this paper designed the econometric model is the panel model, and the data is the balanced panel data. According to the steps of the empirical analysis of the panel model, the selection of random effect model and fixed effect model is involved, and the Hausman test is usually used for screening. Since the Hausmann test is used to exclude the possibility of using random effects, the results of the Hausman test for both types of models (Prob>chi2=0.000) show that the results of the fixed-effects model are more significant than those of the random effects model. Then the LR test (likelihood ratio test) is performed to select the fixed-effect model or the mixed model. The results show that the null hypothesis is rejected at the significance level of 1%, that is, the fixed effect model is superfluous, indicating that the fixed effect model is superior.

4. Conclusions

China's domestic and international circumstances are intricate and constantly evolving, characterized by a high degree of economic and social complexity. In this rapidly changing environment, the task of promoting reform, economic growth, and social stability is undeniably formidable. The future economic development and social stability of China are largely contingent upon the political and social milieu in which they unfold. In the New Era, the Chinese government has been steadfastly committed to advancing reform, development, and stability. The 18th CPC National Congress initially proposed a shift in focus towards enhancing the quality and efficiency of economic development—a new developmental paradigm that has since assumed strategic primacy for China's economic progress. Given prevailing domestic as well as international economic conditions and transformations, with an aim to propel China's economic

advancement while ensuring societal equilibrium, the 19th CPC National Congress conducted a comprehensive analysis of China's economic transformation alongside changes in its primary contradiction. This analysis led to an acknowledgment that China has transitioned from a phase marked by rapid growth to one characterized by high-quality development—an indication that its developmental model now prioritizes not only augmenting GDP but also improving overall economic quality and efficiency. Emphasizing once again at the 20th CPC National Congress was achieving high-quality development as an inherent requirement for realizing China-style modernization—a crucial mission underpinning socialist modernization across all domains.

Consequently, fostering high-quality economic development has emerged as a pivotal strategic decision within this overarching context. However, the current global landscape is witnessing an unprecedented series of profound and far-reaching transformations across centuries in terms of their scale, complexity, and impact. Moreover, the ongoing pandemic that followed the 2020 epidemic has further complicated the global situation while impeding a robust recovery of the world economy. Additionally, anti-globalization trends have emerged alongside frequent local conflicts, ushering in a new era of turbulent transformation. In light of China's pursuit to build comprehensive socialist modernization on its new journey ahead, numerous deep-seated contradictions and challenges are anticipated to arise including those between economic development and environmental preservation, between economic growth and people's well-being, as well as between economic progress and national security concerns. Amidst this evolving and increasingly demanding economic development environment, it becomes imperative to sustain pressure on aspects such as technological innovation, enhanced service quality provision, and overall improvement in order to ensure sustainable and stable economic growth. Attaining high-quality economic development necessitates prioritizing reasonable growth through qualitative enhancements which represent an advanced form of economic progress. This entails integrating various elements like technological innovation advancements with improvements in service quality standards along with overall enhancement efforts aimed at continuously improving production efficiency levels while ensuring product quality reliability; ultimately leading to holistic economic advancement. Confronted by profound changes within the realm of economic development environment itself calls for comprehensive cultivation of novel developmental advantages coupled with infusion of fresh developmental momentum. To ensure continuous improvement in production efficiency, product quality, and reliability for overall economic growth, it is imperative to integrate various aspects such as technological innovation, service quality enhancement, and quality promotion. The digital economy emerges as the principal economic form following the agricultural and industrial economies by combining digital technology with economic activities. It possesses distinctive advantages in driving changes in production modes, reshaping social production relations, and transforming economic and social structures while facilitating the establishment of new strengths in high-quality economic development. Consequently, the digital economy has evolved into a crucial component of the global economy that acts as a significant driver for both economic growth and social progress. Within the broader scope of technological revolution and industrial transformation, its development plays a pivotal role in constructing novel national competitive advantages and reshaping the global competitive landscape. Moreover, it exerts a positive influence on the real economy by offering fresh growth opportunities, supporting sectors within the real economy's development domain while enhancing their efficiency along with optimizing resource allocation. Simultaneously, it provides ample room for expansion within the real economy encompassing market enlargement, industry innovation as well as business model optimization. Therefore, it is necessary to increase investment in the digital economy, continuously promoting the empowerment of the digital economy by the real economy, and exploring new breakthrough paths for the empowerment of the real economy by the digital economy.

According to the above research theoretical analysis framework, corresponding policy recommendations are obtained:

1) Improving infrastructure and accelerating high-quality development of the real economy Infrastructure construction is the necessary material foundation for the development of digital economy, and new infrastructure is the foundation for the development of digital economy. Inter-regional information sharing and resource interworking are implemented to improve resource allocation efficiency. We will promote the construction of a comprehensive digital platform for the real economy, realize cross-regional and cross-departmental interoperability and sharing of data resources, human capital, and technical knowledge, and promote coordinated development among regions. All regions should tap the potential of the digital economy in light of their own economic development conditions, relying on geographical location, industrial structure, resource endowment and policy system.

2) The government should encourage enterprises to adapt to the development trend of the digital

economy era and accelerate the pace of digital transformation. In the process of digital transformation of enterprises, the deep integration of digital technology and traditional production and operation, organization and management mode can create more jobs, especially many jobs matching with high-skill labor. Modern enterprises achieve digital transformation while introducing leading enterprises in the digital industry. The realization of digital transformation in enterprises is the foundation to promote the integration of digital and real. The application of relevant digital technologies by traditional enterprises may effectively solve problems such as supply imbalance. From the perspective of supply side, enterprises can greatly improve the efficiency of production, operation, circulation and management by realizing digitalization, networking and intelligent transformation and upgrading, and improve the supply capacity of existing products, services and technologies. From the demand side, the use of digital technology to maximize the potential of consumer domestic demand, to meet their personalized customized needs, and then digest and absorb the existing excess capacity. Some enterprises face the requirements of digital transformation, there is a phenomenon of "do not want to, dare not, will not". Therefore, it is necessary to build a support mechanism for the digital transformation of private enterprises. We should not only let enterprises realize the necessity of digital transformation, but also cultivate professional talents related to the digital economy, but also introduce corresponding supporting policies.

3) Encourage industrial innovation and optimize industrial productivity. Take high-tech industry as the leader to drive technological progress. We will work hard to implement the strategy of innovation-driven development, improve a new type of nationwide system, adhere to a comprehensive and systematic approach, carry out original and pioneering scientific and technological research, strengthen basic research and research in common key technologies that have a bearing on overall development, and promote overall development through breakthroughs in important areas and key links. We will promote the construction of cutting-edge disciplines and cross-cutting research platforms, focusing on technology integration and group breakthroughs in key areas. Through the integrated application of technology to promote productivity change, improve the total factor productivity of enterprises.

References

- [1] Don Tapscott, *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*, New York: McGraw-Hill, 1996, pp.12-60.
- [2] Pei, C.H., Ni, J.F., Li, Y. (2018) *Political economy analysis of digital economy*. *Economics Of Finance and Trade*, 39(09):5-22.
- [3] Yang, Z., Chen, J., Li, J.Z. (2022) *Global value chains in the Digital Economy: Trends, Risks and Responses*. *Economist*, (02):64-73.
- [4] Chao, X.J. (2022) *The deep integration of the digital economy and the real economy will enable high-quality economic development in the new situation*. *Finance and Trade Research*, 33(12):1-8.
- [5] Yu, L., Pan, X.X. (2012) *A review of research on the integration of information and Industrialization*. *Value Engineering*, 31(14):148-150.
- [6] Wu, H. Q. (2016) *The digital economy is the real economy*. *Southern entrepreneur*, (12):18.
- [7] Zhou, Y. A. (2019) *The digital economy should be seen as the new real economy*. *Group Speech*, 412(07):4-7.
- [8] Yang, X.M. (2017) *Digital economy: Economic logic of deep transformation of traditional economy*. *Journal of Shenzhen University (Humanities and Social Sciences Edition)*, 34(04):101-104.
- [9] Jing, W.J., Sun, B.W. (2019) *Digital economy promotes high-quality economic development: a theoretical framework*. *Economist*, 242(02):66-73.
- [10] *Research Group of Digital Economy Situation Analysis, Saidi Think Tank. (2021) Digital economy: The empowering effect on the real economy will be further released*. *Cyber Security and IT Application*, 59(03):4-6.
- [11] Wang, N. (2022) *Research on the path and policy of accelerating the digital economy to empower the real economy in Henan Province*. *Farm Economic Management*, 319(10):34-36.
- [12] Zhu, L.S. (2021). *Research on the impact of digital economy on real economy*. Unpublished master's thesis, Liaoning University, Shen Yang, Liao Ning.
- [13] Zheng, Q.J., Cao, J.S. (2023) *The basic logic and path choice of integration of digital economy and real economy*. *Jiangsu Social Sciences*, (01):95-102.
- [14] Li, D.D. (2023). *Research on the impact of digital economy on Real economy -- based on spatial econometric model*. Unpublished master's thesis, Shanxi University of Finance and Economics, Tai Yuan, Shan Xi.