

Digital Economy Enabling China's High-Quality Economic Development: Impact Paths, Opportunities and Challenges

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Abstract. This paper concentrates on the topic of the digital economy that is enabling China's pursuit of high-quality economic growth, and provides a systematic review and analysis of the existing literature on the paths of influence, and the opportunities and challenges that may be faced in the process of influence. The academic community has conducted numerous studies on the correlation and mechanism of the two. However, a systematic literature review is lacking to sort out and summarize the relevant studies. This gap may hinder future research development in this field. The paper's findings demonstrate that the digital economy promotes economic development of high-quality from three perspectives: macro, medium, and micro. It concludes that the economy that is digital presents significant opportunities for poverty alleviation, sustainable development, entity integration, and enterprise management. However, it may also face challenges such as regional heterogeneity, lagging statistical methods, instability, and unsustainability. This systematic review will be useful for future scholars in the field to identify existing literature and research areas, and highlight the relative lack of research on the digital economy and China's economic development of high quality during the epidemic era. This suggests possibilities for future scholars to explore in depth.

Keywords: Digital economy; China; High-quality economic development.

1. Introduction

One of China's primary macroeconomic goals is achieving high-quality economic development, which is also a crucial aspect of the country's comprehensive construction of a modern socialist society. The digital economy is a significant driving force behind the economy's high-quality development, and it is experiencing stable and rapid growth in the new era of scientific and technological revolution. The Outline of the Fourteenth Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Vision 2035 emphasizes the importance of accelerating the construction of the digital economy. This will drive changes in the mode of production, life, and governance through digital transformation, empower the transformation and upgrading of traditional industries, and grow a new engine of economic development. The plan aligns with the national policy trend, demonstrating the government's commitment to the digital economy. Therefore, the exploration of it is significant for empowering the high-quality development of China's economy.

The term "digital economy" refers to economic activities that leverage modern information networks as vital carriers, digital knowledge and information as critical production factors, and information and communication technology as a catalyst for increasing productivity and optimizing economic structure [1].

Research indicates that China's economy has grown at a high-rate thanks in large part to the early adoption of the digital economy. In addition to growing in size, the digital economy's share of GDP has increased since 2005 (see Figure 1). Technology has the potential to strengthen the digital economy by stimulating innovation in more established sectors and encouraging the fusion of digital and real economies. This can give rise to new industries, facilities, business forms, and modes, bringing disruptive changes to industrial development and boosting the economy to achieve high-quality growth [2].

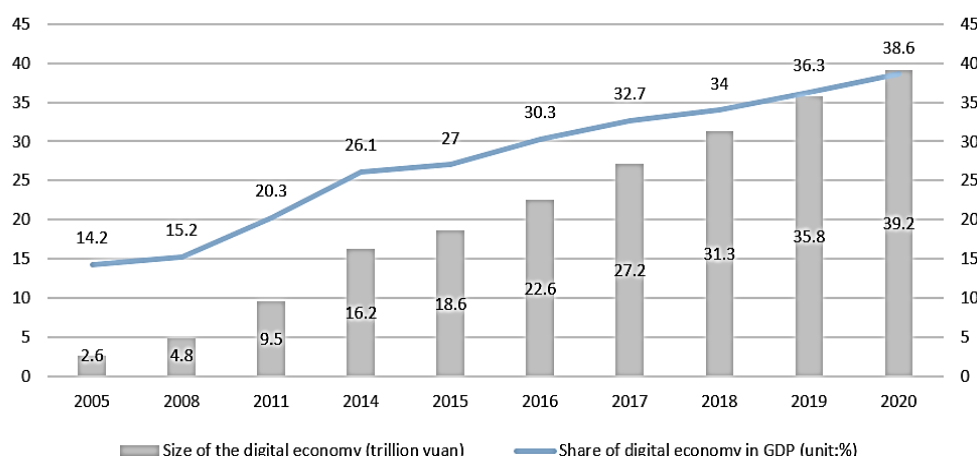


Fig. 1 The scale of digital economy and its proportion of GDP from 2005 to 2020

China is currently in a pivotal stage in its evolution into a modern socialist nation, and a smooth launch depends on the economy's high caliber growth. The development of the digital economy is a decisive factor in achieving this goal, and the two are closely related. While the academic community has conducted numerous studies on the correlation between the two and their role in the mechanism, there is a lack of a systematic review of the literature. Therefore, it is necessary to review and summarize the relevant studies. The paper's literature review is incomplete, which could impede future research in this field. Therefore, it is both practically and theoretically significant to summarize existing studies and propose further research directions.

The format of the paper is as follows: The road of digital economic development to facilitate high-quality economic growth is thoroughly discussed in the second section. The third part focuses on the development of China's digital economy. The fourth part analyzes opportunities and challenges of digital economic development for enabling high-quality economic growth in the future. The final section gives a conclusion.

2. The Development of China's Digital Economy

2.1. Conceptualization

The concept of digital economy was first formally proposed internationally by TAPSCOTT in 1996, and at the same time foresaw the opportunities and risks of economic development in the era of network intelligence. Due to the evolution and trend of digitization and informatization, in the 1960s, the results of the information revolution were initially applied to the economic field, thus forming the concept of information economy. In the information economy, new industries such as chip manufacturing, integrated circuits and fiber optic cables occupy an important position, in contrast to the traditional industries such as heavy industry and energy industry in the industrial economy. This grammar highlights the importance and necessity of science, education and culture. In the following three decades, the rapid development of the Internet and multimedia has made countries put the information highway program on the agenda, and with the characteristics and advantages of the network, it has greatly improved productivity and profitability while saving time and energy. The information revolution has also sparked the development of numerous new technologies, including artificial intelligence, cloud computing, and the Internet of Things. Driven by its high permeability, the economy happens in the digital realm has gradually spread to non-information industries, which not only stays in the field of production, but also promotes the advancement and upgrading of search engines and social media, which has formally entered the golden age of its development [3].

2.2. Development Status

2.2.1 Exploration process

The process of information economy, Internet economy, and digital economy have been examined in international research on the digital economy [4].

2.2.2 China's digital economy industry division

Tian Jinfang et al. cited the National Economy Industry Classification (GB/T 4754-2017) standard in 2022 and used the National Bureau of Statistics' Statistical Classification of the Digital Economy and Its Core Industries (2021) as the benchmark for their industrial classification, considered the consumption structure of sectoral products or services and the economic and technological links between sectors, and grouped the sectors of the national input-output table for the digital economy industries to refine the sectors. Figure 2 shows the evolution of the digital economy and the preliminary classification of China's digital economy industries [5].

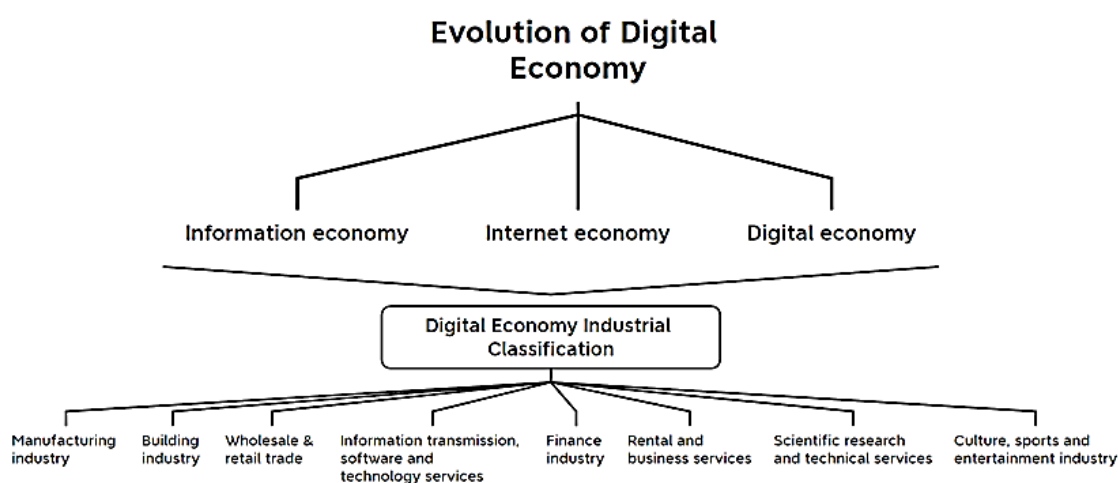


Fig. 2 Evolution of the digital economy and initial categorization [5]

2.2.3 Scale of China's digital economy development

Xu Xianchun and Zhang Meihui's research results in 2020 show that from 2007-2017, the average share of the nominal value added of China's digital economy in the nominal GDP of all years was about 5.15%. The share of value added of digital economy in GDP showed a trend of first decline and then rise in 2007-2017, and the share of value added of China's digital economy in GDP showed a rapid rise after 2012. From this, China's digital economy can be roughly divided into two stages, the exploration and start-up stage before '07, the initial development stage from 2007-2012, and the rapid growth stage from 2012 to the present [5].

3. Research on the Path of High-quality Economic Development Enabled by the Development of the Digital Economy

For the path of digital economic development to enable high-quality economic development, it can be divided into macro, meso and micro levels to explore.

3.1. Macro-level

3.1.1 Significantly improve enterprise total factor productivity

Digital transformation empowers enterprise innovation capability with its technological advantages, optimizes human capital structure with high-quality workforce orientation, and promotes the integrated development of the two industries in order to reduce costs and increase productivity

from the whole chain of production and sales, thus promoting the improvement of total factor productivity [6].

3.1.2 Technology diffusion effect

The digital economy has a deep integration with the real economy, so that all aspects of economic life are covered by the advantages of technological innovation. Digital technology has a wide range of application scenarios and objects, constantly upgrading technology and services, rapid iteration to promote innovation, etc., not only can directly affect the innovation efficiency of the ICT production sector, but also through the diffusion and spillover effects to affect the productivity of the ICT use sector [7].

3.2. Meso-level

3.2.1 Promote industrial digital transformation

The digital economy focusing on the Comprehensive Big Data Pilot Zone effectively enhances the ability of data dissemination and sharing and allows data advantages to serve industrial transformation and upgrading, which plays a significant role in driving the high-quality development of the economy [8].

3.2.2 Promoting industrial optimisation and upgrading

Traditional industrial linkages deepen and expand opportunities with existing industries as digital technology digitizes, networks and intelligently transforms them. The digital technology revolution firstly affects the digital industry directly, and the industries closely related to it are firstly affected by the diffusion, and at the same time, through the high synergy and positive feedback effect to form the highly interactive industrial clusters, and then through the horizontal or vertical industrial linkage, it makes the new technological paradigm to be adopted at a lower cost and with less difficulty. As a result, industrial linkage effects are formed.

The new generation ICT industry benefits from its core technologies of big data, cloud computing and artificial intelligence, which improve productivity, stimulate its own innovation ability, and bring significant spillover effects, laying the foundation for the upgrading path and trend of the industry. At the same time, ICT industry in the process of digital technology diffusion and industrialization application, supply and demand side of the dual feedback so that it is constantly progressing and upgrading, and thus each round of industrial innovation not only relies on the current market advantage, but also will benefit the subsequent industrial development. As a result, a continuous and far-reaching industrial innovation effect is formed.

In addition to continuously innovating and developing on its own, the digital industry uses digital technology to revolutionize conventional industries, encouraging both the old and new to work together to produce synchronous upgrading and transformation. creation of the influence of industrial structure adjustment. As a kind of technology for general purpose, digital technology has the natural advantage of integrating with the real economy due to its wide versatility and high permeability. The economy is becoming more integrated in the digital sphere and is no longer limited to the domain of sexual consumption, thanks to the rapid expansion of the consumer Internet to the industrial Internet, but is gradually expanding to the production, and cross-border integration, production and marketing integration and collaborative innovation have become the new trend of industrial integration, forming the industrial integration effect.

The above effects together make the industry optimization and upgrading, and effectively help the economic high-quality development [7].

3.3. Micro-level

3.3.1 Improvement of labor productivity

The development of the digital economy reduces the production time of capital by increasing the organic composition of capital. The organic composition of capital increases as a result of

technological progress, and the amount of means of production driven by a single laborer increases with it. At the same time, only variable capital can really produce individual value, therefore, the shortening of production time drives the shortening of the turnover time of capital, which can convey the increase of the turnover of variable capital in the same time, thus producing more value. Second, the circulation time of capital is shortened by the digital economy's better path of empowering the market with information to increase the number of turns of variable capital in the same amount of time, thus favoring the production and creation of thousands of individual values. Finally, the digital economy promotes the high quality of financial capital by reducing capital turnover time [9].

3.3.2 Dual effect of economies of scale and scope

Under the influence of information technology and Internet technology, the costs of enterprises have developed a new trend of high fixed costs and low marginal costs. As a result, the average cost of the industry has been gradually reduced, resulting in the emergence of economies of scale, and economies of scale have dramatically increased the output of enterprises. On the other hand, the role of information and digital technology not only with the output, but also make enterprises began to pay attention to economic development will inevitably bring the division of labor and specialization of the problem, the focus shifted to the diversity of products. As long as the digital economy increases the source of profit by relying on the users accumulated in the main business to carry out diversified business at low cost, it can be found that the digital economy is the fusion of two different categories of effects. Economies of scale are the result of a significant increase in production, leading to the emergence of large enterprises; economies of scope can also lead to the emergence of a variety of businesses or products in the industry to meet different needs [10].

3.3.3 Promote high-quality transformation of enterprises

Economies with digital features promotes the high-quality development of enterprises by accelerating the pace of enterprise digital transformation, encouraging enterprises to vigorously carry out technological innovation and business model innovation, advancing the innovation of enterprise management mode, elevating the guarantee of enterprise data property rights to a strategic level and enhancing the efficiency of enterprise factor combination path to promote high-quality development of the economy [11].

4. The Prospects and Obstacles Associated with the Growth of the Digital Economy in Order to Facilitate Superior Economic Development

4.1. Prospects for Development

4.1.1 Reducing the disparity in income between rural and urban areas

Empirical studies and a battery of resilience assessments demonstrate that the growth of the digital economy has the potential to dramatically narrow China's wealth disparity between urban and rural populations. Digital technology not only helps to enhance the human capital level of rural workers, improve their labor quality and professional skills, and thus increase their income. It also contributes to the formation of new situations and new forms of business, such as e-commerce and live broadcasting, which have significant income-generating effects [12].

4.1.2 Integrated development with the real economy

Digitally infused economic development has the potential to enhance the real economy's reach and meaning, broaden its area of development, alter its business model and mode of operation, and efficiently reallocate its basic resources across multiple domains [13].

4.1.3 Contribute to green development

The economy that uses digital technology has significantly benefited the green innovation output of cities, and it will effectively curb the "siphoning effect" of large cities and enhance their "diffusion

effect", so that small and medium-sized cities in urban agglomerations can be strongly driven by radiation and reduce their negative impacts [14].

4.1.4 Change enterprise management

Digital connectivity blurs or changes the boundaries inside and outside the organization. In business activities, user value domination is gradually becoming the new business logic. Meanwhile, with the development of digitization, networking and intelligence, computers, relying on their data-learning ability, gradually replace manual labor in repetitive and simple work, and disseminate information in a more accurate and efficient way. Moreover, the benefits of digital empowerment are significant and highlight the value of intellectual capital, and under the enhancement of the value of intellectual capital, enterprises are more willing to adopt limited partnership and dual equity structure, in which the dual equity structure facilitates cross-border operations and makes it easier for enterprises to obtain the necessary cross-border support [15].

4.2. Potential Challenges

4.2.1 Regional heterogeneity characteristics

There is regional heterogeneity in the impact of the economy that uses digital technology on the high-quality development of the Chinese economy. Among them, it has the greatest impact on the northern and southern coastal areas, and from the perspective of the five dimensions of the new concept, the digital economy is better able to promote innovation, coordination and open development, and its promotion of shared and green development needs to be strengthened [2].

Li Yong et al. 2023 study also pointed out that China's level of high-quality development of the digital economy polarization is more obvious. The study found that Beijing is far ahead in terms of the level of high-quality development of the digital economy, with the average measure showing that Beijing, which is in first place, is 9.5 times larger than Xinjiang.

4.2.2 Digital Economy Statistics Obviously Lagging Behind

Compared with the new types of economic sectors and products that are constantly being derived and rapidly iterated, digital economy statistics show an obvious lag phenomenon as well as problems such as inconsistent statistical standards, insufficient and uncoordinated data, and so on [4].

4.2.3 Stability over persistent shocks

The development of the economy that uses digital technology has significantly reduced the stability and sustainability of China's economic growth. From the supply side, the application of digital technology has intensified competition in the market, and the risks in the digital economy are hidden, widespread, instantaneous and unpredictable, so that disruptive damage will occur if the potential risks in the existing market become reality. From the demand side, consumers in the economy that is based on digital technology tend to ignore the practical value of consumer goods for their own applications, traffic products and short-term goods are very easy to attract attention, which in turn leads to blind, irrational, comparative bad consumption trend [16].

4.2.4 Little impact on national economic quality and human capital

Although the application of big data and other digital tools has produced a significant information diffusion effect and knowledge spillover effect, expanding the scope, breadth and depth of learning, but after the data measurement, the digital economy does not have a significant impact on China's national economy and human capital [16].

4.3. Policy Recommendations

4.3.1 Based on the characteristics of regional heterogeneity

The development of the economy that is based on digital technology should be tailored to local conditions and regional differences should be narrowed. It should be guided by a targeted layout

based on the advantages and characteristics of different regions, so as to maximize and strengthen the spillover effect of the development of the digital economy [2].

Reasonable regulation of regional digital economy policy resources, the central government can tilt digital economy policies and resources to backward regions. Starting with the construction of new digital infrastructure, it will steadily move up from infrastructure to industry and technology, and gradually support the development of digital economy industries [17].

4.3.2 Based on the lagging digital economy statistics

Firstly, the progress of international digital economy measurement research should be tracked in a timely manner, and digital economy accounting methods should be innovated. Secondly, it should strengthen the research on special problems in the field of digital economy statistics and improve the digital economy accounting system. It should also make full use of big data technology and explore new data collection methods [4].

4.3.3 Based on stability over continuity shock

To strengthen the supervision and management of the digital field and cultivate a new culture of digital society, it is important to prioritize stability over continuity shock. This can be achieved through a combination of government and market forces to prevent incumbent enterprises from maliciously setting social barriers and industry thresholds, which can lead to the formation of vicious competition and other negative phenomena. Simultaneously, by enhancing horizontal competition, we can improve the development capacity and supply efficiency of the digital market, while minimizing its impact on the stability of the economic market. Additionally, we should promote a healthy and reasonable digital consumption culture, advocating for rational and measured digital consumption to reduce demand-side volatility [16].

4.3.4 Based on the quality of the national economy and human capital impact tiny

To enhance the integration of the digital economy and the field of education and research, and to utilize the digital economy as a binder and catalyst, three dimensions can be considered. Firstly, offer courses and lectures related to the digital economy, establish new digital disciplines, and improve the existing higher education system based on the quality of the national economy and the impact on human capital. Second, enterprises should be encouraged to enhance the digital literacy of their employees through education and training. Third, subsidies for digital entrepreneurs should be increased, and society should be encouraged to participate in 'mass entrepreneurship, innovation' activities to improve the overall economic quality of Chinese citizens through digital empowerment [16].

5. Conclusion

This paper first provides an overview of the digital economy's development history, as well as its scale, current state, and development in China. It then summarizes the key issues that have been addressed by scholars in the field, including the path study of how digital economic development enables high-quality economic development and the opportunities and challenges that this process presents. In general, research on digital economic development during and after epidemics is generally lacking. In conclusion, this paper offers solutions based on regional heterogeneity, delayed statistics on the digital economy, long-lasting effects, and implications for the national economy and human resources. It advocates for localized development of the digital economy in the future, stronger oversight and management of the digital field, and improved integration between the digital economy and the fields of research and education.

This work aims to address the limitations of previous research by providing additional insights that future researchers might draw from. Investigate first the extent of the development of the digital economy during and after the outbreak. In order to gain a deeper understanding of how the digital economy affects the economy's ability to develop sustainably in the face of economic shocks,

measurement and comparative research are needed for the epidemic and post-epidemic eras. This will help shape the industry's future growth and the realization of the path toward sustainable economic growth.

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