

Research on the Development of Chinese Digital Economy

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Abstract. With the rapid development of information technology and the popularity of the Internet, the digital economy has become one of the important driving forces for China's economic development. The development of the digital economy promotes the transformation and upgrading of traditional industries and driving the high-quality development of China's economy. At the same time, the opportunities and challenges brought by the digital economy are increasingly prominent. The rapid development of the digital economy has exacerbated the digital divide and economic inequality to a certain extent, and also brought issues such as data security and privacy protection. Therefore, in-depth research on the development status and trends of China's digital economy, and proposing policy recommendations and innovative models to promote the development of the digital economy are important. This paper will study the current development status, characteristics, and trends of the digital economy in China, analyze the promotion and impact of the digital economy on the digitalization and innovation of traditional industries in China, and propose policy recommendations to promote the development of the digital economy.

Keywords: Digital Economy; Digitalization of Industries; Digital Innovation.

1. Introduction

The development of the digital economy in China has been an area of great interest in recent years. With the rapid advancement of information technology and the increasing use of the internet, China has become one of the world's leading digital economies. This research paper aims to explore the current state of the digital economy in China, its development trajectory, and the challenges it faces.

The digital economy in China is a relatively new phenomenon, with its roots dating back to the early 1990s when the internet was first introduced in the country. Since then, China has made tremendous progress in building its digital infrastructure and promoting digital innovation, resulting in the rapid growth of its digital economy. Today, China is home to many of the world's largest and most innovative digital companies, including Alibaba, Tencent, and Huawei, among others.

However, the growth of the digital economy in China has not been without challenges. Despite the progress made, there are still significant barriers to its further development. These include issues such as data privacy, cybersecurity, and economic inequality, among others. Addressing these challenges will be critical to ensuring the continued growth and success of the digital economy in China.

This research paper will provide an overview of the current state of the digital economy in China, highlighting its growth trajectory, and major challenges. The paper will also discuss the government's role in promoting the digital economy and the policy measures it has taken to address the challenges faced by the industry. Overall, this paper seeks to contribute to a better understanding of the digital economy in China and the opportunities and challenges it presents for businesses and policymakers alike.

2. Literature Review

2.1 The Meaning of Digital Economy Development

The term digital economy first appeared in "The Digital Economy: Promise and Peril in the Age of Networked Intelligence" by Don Tapscott in 1996, but this work did not provide a clear definition of the digital economy.[1] The definition of the digital economy given by the "G20 Digital Economy Development and Cooperation Initiative" in 2016 is widely recognized: it refers to a series of economic activities that use digital knowledge and information as key production factors, modern

information networks as important carriers, and the effective use of information and communication technology as an important driving force for efficiency improvement and economic structural optimization.[5] The connotation of the digital economy is not fixed, from the "information economy" at the beginning of the 21st century to the Internet economy, and later encompassing the Internet of Things, cloud computing, big data, etc. The digital economy includes digital production, digital transactions, digital services, and digital consumption, involving aspects such as data collection, analysis, utilization, and application, and its theoretical basis mainly includes disciplines such as information economics, network economics, data economics, and Internet economics.

2.2 Literature Review of China's Digital Economy Development Research

According to the *China Digital Economy Development White Paper* released by the China Academy of Information and Communications Technology in 2021, the growth rate of China's digital economy in 2020 was more than 3.2 times that of GDP.[2] Even under the influence of the pandemic, the digital economy still maintained a strong development, with a scale of 3.3 trillion yuan, accounting for 38.6% of GDP, a year-on-year increase of 2.4%. The *2022 White Paper* shows that the digital economy has continued to develop rapidly in 2021, with a year-on-year increase of 16.2% and accounting for 39.8% of GDP.[3] The stable development of the digital economy has alleviated the strong impact of the COVID-19 pandemic on China's real economy. Instead, the pandemic has forced industries to accelerate their digitization. The penetration rates of digital economy in traditional industries, including agriculture, industry, and services, increased by 0.7%, 1.6%, and 2.9%, respectively, compared to the previous year. China's digital economy is still accelerating its development against the trend, moving towards the goal of "accelerating digital development, building a digital China, and creating new advantages".

In the era of the digital economy, the sources of production factors have become more diverse, complex, and advanced, and the efficiency of factor allocation and utilization has also continuously improved. The new core production factor in the mature stage of the digital economy is data, and the production factors are evolving towards virtualization (Zhang, Hu, and Wang, 2021).[9] Research has shown that natural resources are not a necessary condition for supporting high-quality economic growth. Many resource-poor countries such as Japan and Switzerland also have highly developed economic systems, and they vigorously invest advanced digital technology as valuable production resource factors (Jing and Sun, 2019).[6] Nowadays, data and information can not only be directly input into production as production factors, but can also improve the production efficiency of traditional production factors such as labor, capital, and capitalists (Shi et al., 2019).[8] According to the Solow model, $Y = AF(K, L)$, the development of the national economy is closely related to "A" (factor productivity). The digital economy not only increases the quantity of production factors input into various industries, but also improves the quality of production factors input into various industries, improves the efficiency of production exchanges in various sectors, thereby greatly improving factor utilization efficiency. The connectivity function of the Internet and the effective allocation of big data can bring corresponding marginal benefits, making output grow exponentially (Ding, 2020).[4] At the same time, the digital economy can promote the optimization of production factor structure and drive factor upgrading. Through the support of digital technology, production factors can achieve features such as replication sharing and fast transmission (Li and Liu, 2022).[7] Endogenous growth theory believes that endogenous research and development and innovation are the core elements driving economic growth and technological progress. Creativity, as the essential feature of the digital economy, digital industry innovation can drive the innovation of information and industry chains, and promote the development of other industries. At the same time, technological innovation brought by the digital economy, such as big data, artificial intelligence, cloud computing, and 5G, can carry out all-round digital transformation of various industries (Li and Liu, 2022), making production activities convenient and fast.[7] Digital technologies such as big data platforms and the Internet of Things improve the efficiency of economic operations, reduce enterprise production costs, facilitate information exchange between industries, and promote regional innovation, expanding the

depth and breadth of regional innovation. Currently, the digital economy has evolved from simple technological innovation to the development stage of deep integration with the real economy. The integration of the digital economy and the real economy is deeply expanding into the production field, driving the transformation and integration of traditional industries such as manufacturing, agriculture, and healthcare, upgrading the structure, and promoting the high-quality development of economic entities.

3. China's Current Status and Issues in Digital Economy

3.1 China's Current Status in Digital Economy

In recent years, China's digital economy has developed rapidly and has become an important driving force for the country's economic transformation and upgrading. The scale of the digital economy is growing rapidly. According to the data from China's National Bureau of Statistics, the total size of China's digital economy reached RMB 35.8 trillion in 2019, accounting for approximately one-third of the country's GDP. The Chinese government has vigorously promoted digital transformation, and the level of digitization in various industries has continued to improve. Digital technologies are widely applied in various fields of the social economy, including e-commerce, mobile payments, cloud computing, big data, and artificial intelligence, among others. The development of digital services is rapidly expanding. At the same time, the digital economy has also promoted the transformation and upgrading of traditional industries, nurturing emerging industries such as the sharing economy, online education, intelligent manufacturing, cultural creativity, and others, and having a positive effect on improving China's industrial structure and innovation capacity. Most importantly, the number of Chinese Internet users has exceeded 800 million, with an Internet penetration rate of 57.7%, and mobile Internet has become mainstream, providing strong support for the rapid development of the digital economy. Overall, China has made remarkable achievements in the field of digital economy development.

3.2 Issues in the Development of China's Digital Economy

While China's digital economy has made great progress, it also faces some challenges, including:

(1) Digital security and data privacy issues. With the deepening level of digitization, digital security and data privacy issues have increasingly gained attention. Some enterprises and individuals engage in illegal or irregular behavior during the data collection, storage, and use processes, posing risks to user information security.

(2) Digital divide issues. In China, there are differences in the level of digital economic development between urban and rural areas and among different regions, which has become one of the bottlenecks that restrict the development of the digital economy.

(3) Uneven resource allocation. Due to the rapid development of the digital economy, some resource allocations are not balanced. For example, some traditional industry enterprises have weak adaptability to the digital economy, and digital economy enterprises exhibit monopolistic behaviors in competition, among other problems.

(4) Imperfect laws, regulations, and standards. As the digital economy develops, relevant laws, regulations, and standards need to be improved. For example, in data privacy protection, network security, and other areas, stronger regulation and legislation are needed.

(5) Talent shortage issues. The digital economy requires a large number of professional talents, but talent shortages have also become a factor that restricts its development. Particularly in high-end and technical talent fields, the supply-demand gap is quite severe.

Overall, the challenges and issues that China's digital economy faces are diverse, requiring joint efforts from the government, enterprises, and society to strengthen regulation, improve systems, increase investment, and promote the healthy and sustainable development of the digital economy.

4. Recommendations for the Future Development of China's Digital Economy

4.1 Accelerate the Digital Transformation of Traditional Industries

Promoting the digital transformation of traditional industries in China has become an important task for the current development of China's digital economy. Digital transformation refers to the use of advanced digital technologies to upgrade and transform traditional industries, realizing digitization, intelligence, and integration in all aspects of production, management, sales, etc. The key is to promote the widespread application of digital technology in traditional industries and encourage enterprises to undergo digital transformation. At the same time, efforts should be made to cultivate and introduce digital technology talents, and promote standardization and normalization of digital transformation. Governments and enterprises need to work together to strengthen cooperation and promote the smooth progress of digital transformation.

4.2 Promote the Digital Upgrading of Industries.

Promoting the digital upgrading of industries is important for industry upgrading and transformation. Through the application of digital technology, enterprises can improve production efficiency, reduce costs, improve product quality, and achieve industrial upgrading. Meanwhile, the rapid development of the digital economy has driven the rise of many emerging industries, such as e-commerce, internet finance, intelligent manufacturing, and artificial intelligence. These emerging industries not only meet the growing demands of people, but also drive the upgrading and transformation of traditional industries. Furthermore, the development of the digital economy has accelerated the integration and innovation between different industries. For example, the application of digital technology in the medical and health field has promoted the integration of the medical and health industry with the internet, artificial intelligence and other industries, forming emerging industries such as digital health and health management. Finally, the development of the digital economy has also promoted the upgrading of industrial ecology. For instance, e-commerce platforms provide a communication platform for consumers and suppliers, and big data analysis provides more accurate operational decisions for enterprises, which helps to promote the upgrading and optimization of the industrial ecology.

4.3 Exploring China's Innovative Models for the Digital Economy

(1) Digital transformation: Multiple industries have adopted digital transformation, such as the manufacturing industry using the industrial internet to achieve intelligent manufacturing, and the agricultural industry using IoT technology to achieve precision agriculture.

(2) Platform economy: Multiple industries have adopted the platform economy model, such as the sharing economy, online education, and online medical care. By connecting the supply and demand sides through internet platforms, they realize resource sharing and value creation.

(3) Digital innovation: Multiple enterprises have adopted digital innovation models, such as big data and artificial intelligence technology innovation, applied in the fields of finance, retail, logistics, transportation, etc., to improve operational efficiency and user experience.

5. Conclusion

The rapid development of China's digital economy has become one of the important engines driving the development of the national economy, and has formed a certain scale and strength. In the future, the digital economy will continue to develop rapidly, and digitization, networking, intelligence, and service will be the main trends. Meanwhile, the government has given great support and attention to the development of the digital economy, such as releasing policy documents such as "Made in China 2025" and the "Internet Plus Action Plan", to encourage and promote the development of the digital economy. However, we cannot ignore the problems and challenges in the development of the digital economy, such as the digital divide, data security, shortage of digital talents, etc. At the same

time, the development of the digital economy also needs to face challenges such as international competition, technological changes, and policy adjustments. Therefore, in the future development, we need to constantly innovate new models, such as the sharing economy, smart cities, big data applications, etc., which provide new ideas and opportunities for the development of the digital economy.

In short, the future development prospects of China's digital economy are broad, and the digital economy will drive industrial upgrading and economic transformation, injecting new vitality into the development of the economy and society. At the same time, the development of the digital economy will also bring more opportunities and challenges, requiring joint efforts from the government, enterprises, and all sectors of society.

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