

# Research on the Path of Upgrading of Digital Economy Enabling Manufacturing Industry in Jiangsu Province

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**Abstract.** In recent years, the digital economy has become an important driving force to promote the sound and fast growth of Chinese economy. The development of the digital economy and manufacturing industry in Jiangsu Province is facing new situations and new tasks. Manufacturing industry is the main battlefield of the digital economy, and the direction of upgrading the manufacturing industry enabled by the digital economy is becoming increasingly clear. Through the low-end transformation of the manufacturing industry, the reshaping of the demand side and the formation of high-end manufacturing, the digital economy can solve the key issues in the upgrading of the manufacturing industry in Jiangsu Province and promote the upgrading of the industrial economy. We will accelerate the pace of global industrialization.

## 1. Introduction

The digital economy, represented by a new generation of information technology, has promoted the restructuring and integration of the global value chain and brought new opportunities to the upgrading of China's manufacturing industry. In March 2017, the digital economy was first written in the "Government Work Report", after which the report of the 19th National Congress of the Communist Party of China mentioned "accelerating the development of advanced manufacturing, promoting the deep integration of the Internet, big data, artificial intelligence and the real economy", and "the booming development of emerging industries such as the digital economy industry". After that, the 14th Five-Year Plan pointed out that it is unswervingly building a strong manufacturing country, a strong quality country, a strong network country, and a strong digital country, and promoting the optimization and upgrading of the whole industrial chain. China will develop the digital economy, promote digital industrialization and industrial digitization, and accelerate the deep integration of the digital economy. During the 14th Five-Year Plan period, Jiangsu's development is facing new situations and new tasks, and it is urgent to promote the upgrading of industrial economy and accelerate the pace of whole-area industrialization. Among them, the "invigorating" and "empowering" of the data economy will become the "booster" for the upgrading of the manufacturing industry in Jiangsu Province. Therefore, exploring the path of digital economy enabling manufacturing industry upgrading in Jiangsu Province has become an important topic urgently needed for economic and social research in our city.

Based on the relevant theoretical research on digital economy and manufacturing upgrading, this paper

conducts relevant research on the path of manufacturing upgrading enabled by digital economy in Jiangsu Province. The specific research contents are as follows: First, this paper analyzes the achievements and bottlenecks of digital economy development and manufacturing development in Jiangsu Province. Secondly, this paper puts forward the path of manufacturing upgrading enabled by digital economy in Jiangsu Province and relevant industrial policy suggestions from three aspects: low-end transformation of manufacturing industry, demand-side remodeling and high-end manufacturing formation. Thirdly, this paper proposes a scientific and effective policy system of upgrading of digital economy enabling manufacturing industry in Jiangsu Province, in order to provide decision-making reference.

## 2. Literature review

Different from traditional economy, digital economy regards digital knowledge and information as important production factors, and promotes the deep integration and rapid development of digital technology and real economy through digital industrialization and industrial digitalization[1, 2]. Digital economy is gradually shifting from consumer-oriented to producer-oriented, and a very important reason is that in the process of industrial upgrading, digital economy is needed to empower enterprises[3, 4]. The existing researches on the effect of digital economy empowerment on industrial upgrading mainly focus on the theoretical level of development ideas, strategic significance, technical level and industrial format. Digital economy empowers high-quality industrial development and implements policy subsidies for industrial digital transformation, which will promote industrial upgrading[5-7]. The spread of COVID-19

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highlights the unique advantages of digital economy and accelerates industrial digital transformation, which is a key starting point for rational adjustment of industrial structure and development of real economy [8].

Related research on the effect of digital economy on the upgrading of manufacturing mainly includes the connotation, influencing factors, measurement methods, action mechanisms, and paths from different research dimensions. Many research results have proved that digital economy can promote industrial upgrading and optimize the structure of traditional manufacturing industry[9-14]. Liao and Yang (2021) used the dynamic panel GMM model to measure the specific influence of digital economy on the upgrading level of manufacturing, and identified its realization path by using the intermediary effect model[9]. Based on the data of 30 provinces in China from 2013 to 2018, Su et al. (2021) confirmed the hypothesis that digital economy development and technological innovation have a positive promoting effect on industrial structure upgrading, and also proved that heterogeneous technological innovation plays a crucial role in the intermediary role of digital economy in promoting industrial upgrading[10]. Meng (2023) believes that through the actual development situation, upgrading requirements, optimize the top-level design, break through the core technology, improve digital infrastructure, cultivate digital talents, expand open cooperation and other paths can achieve the upgrading of digital economy enabling manufacturing[11]. Li (2023) believes that digital economy empowerment can realize the upgrading of manufacturing by strengthening the development of key core technologies, industrial integration, strengthening the talent training system, and new manufacturing with the integration of products and services[12].

To sum up, there are few relevant researches on Jiangsu Province, which are not applicable to the current domestic and international environment and the new situation and tasks facing Jiangsu Province. The possible innovation of this paper is to build a path of digital economy enabling manufacturing upgrading in Jiangsu Province in the post-COVID-19 environment.

### **3. Analysis of current situation of digital economy enabling manufacturing upgrading in Jiangsu Province**

#### **3.1. Development of low-end manufacturing industry**

Due to the continuous impact of various factors such as international trade and financial market turbulence and the ongoing epidemic since 2020, small and medium-sized manufacturing enterprises in Jiangsu Province are facing new challenges and opportunities. Although Jiangsu Province is located in the eastern coastal area where the manufacturing industry is relatively developed, its manufacturing industry is still trapped in the production link of low added value and low technology content for a long time. However, after the manufacturing industry shifted to a high-quality development mode, some

structural problems began to appear. The manufacturing industry in Jiangsu Province has long been subject to the problems of employment policy and industrial structure, showing a labor-intensive industrial structure, insufficient investment in research and development capital, lack of technological innovation, and the overall technical level is relatively backward. Therefore, how to solve this problem has attracted much attention.

#### **3.2. Development of demand side of manufacturing industry**

The COVID-19 epidemic has led to a rupture in the supply side and supply chain in China, which has brought great resource consumption and waste in the entire production link. In the production end of manufacturing enterprises, many enterprises cannot resume work and production normally due to untimely rework. On the demand side of the manufacturing enterprise, the products produced by enterprises cannot meet the changing customer needs. The demand side of manufacturing enterprises is generally subject to the impact of the epidemic and the strategic planning of the manufacturing industry upgrading in developed countries, which may shrink, and the export index also shrinks with the recovery of the global industrial supply system. Therefore, enterprises need to accelerate the digital economy to enable the upgrading of manufacturing and reshape the demand side of manufacturing.

#### **3.3. Development of high-end manufacturing industry**

In recent years, Jiangsu Province has vigorously developed the digital economy represented by big data, cloud computing, artificial intelligence, e-commerce, etc., and accelerated the digitalization and intelligence in the fields of transportation, logistics, culture, tourism, medical care, etc., and the industrial digitalization has achieved initial results and has great potential. Jiangsu Province has vigorously promoted the interactive integration of digital economy and real economy, and built a number of digital economy platform carriers such as Xugong cross-border e-commerce platform, Huawei Data Industrial Park, Xugong Hanyun Industrial Internet platform, artificial intelligence town, and Mantis network vertical platform. In addition, a number of key strategic platforms and enterprises such as Amazon, Alibaba, Jingdong, Inspur and Zhongke Shuguang have been introduced. At present, Jiangsu Province has cultivated crazy dogs, Xugong Information, Dragon Works and other industry leading enterprises.

The construction machinery industry in Jiangsu Province is relatively developed, and it is one of the cities with the largest number of construction machinery manufacturers, the largest comprehensive scale, the widest variety coverage and the highest industrial concentration in China. At present, Jiangsu has more than 300 construction machinery enterprises above designated size, and the operating income accounts for more than 20% of the total sales income of the national construction machinery industry, with more than 100,000 employees.

With XCMG Group as the core, high-end manufacturing industry in Jiangsu Province brings together nearly 400 construction machinery enterprises above designated size, such as Caterpillar, Tiandi Heavy Industry, Zoomlion and Meichi Axle, and has a nationwide famous construction machinery industrial cluster, forming a relatively complete industrial chain from research and development, manufacturing, sales and service. In addition, compared with other manufacturing enterprises, high-end manufacturing enterprises in Jiangsu Province still have gaps in brand building, after-sales service, market channels and other marketing, especially in terms of popularity and influence.

## **4.The path of digital economy enabling manufacturing upgrading in Jiangsu Province**

### **4.1. Digital economy and low-end transformation of manufacturing industry**

For the traditional low-end manufacturing industry, its production process involves a wide range, and the products are varied and complex, but most of them are artificial production mode. The management of the production link is mainly to arrange different work contents in different regions, so there will be the problem of inconvenient communication between various departments. In the context of the digital economy, low-end manufacturing enterprises need to upgrade and change the production mode, constantly improve and optimize production equipment, and promote the production mode to change in the direction of professional standardization.

The transformation and upgrading of low-end manufacturing enterprises requires the construction of data infrastructure equipment. Integrate the digital economy into the production process, use more personalized, flexible and diversified production methods, pay attention to the actual needs of users, customize it to meet the different consumption needs of different users, shift towards a more specialized direction, and improve the overall operating level of low-end manufacturing enterprises. Build a “software+hardware” development mode of production management, and improve the production efficiency and production quality of low-end manufacturing industry through automated flow. In addition, advanced management technology and product production process can also be introduced to strengthen the digital construction investment and digital equipment of manufacturing production.

### **4.2. Digital economy and demand-side reshaping of manufacturing industry**

The demand side remodeling of manufacturing enterprises needs to be based on the common needs of data, information, networking and intelligence of the manufacturing industry, and form system solutions for different characteristics of different manufacturing industries. Even if the demand side of manufacturing

enterprises shrinks, manufacturing enterprises can promote the sustainable development of manufacturing enterprises through new consumer demand developed through digital technology and the digital economy.

In the context of the development of the digital economy, high-tech talents are not only a key core part of the transformation and upgrading of manufacturing production methods, but also an important part of effectively improving the overall strength of enterprises. Professional high-tech talents can better meet the development needs of the country and society, so as to achieve the strategic goal of long-term development of enterprises. In addition, enterprises also need to constantly adjust and improve the overall structure of scientific and technological talents, and actively carry out personnel training activities to promote the development of enterprises to adapt to the development of The Times. Enterprises should try to encourage employees to actively participate in learning and training related to the digital economy, and constantly enrich and improve themselves.

### **4.3.Digital economy and manufacturing High-end manufacturing industry**

High-end manufacturing has higher value, more precise and complex processes, and is more dependent on innovation. With the digital open innovation platform, the digital economy can enable consumers to deeply participate in the research and development and design of a product, so that enterprise innovation is truly and effectively facing consumer demand innovation. At the same time, by building a digital collaborative innovation research and development platform, high-end manufacturing can realize that the upstream and downstream of the value chain can participate in the same innovation project, breaking the restrictions of regions, industries, enterprises, etc.

In the context of double cycle, with the support of the Jiangsu provincial government, it can focus on the domestic market, focus on building a self-led domestic value chain, and then expand to overseas markets. Relying on digital technology and digital economy to optimize the industrial structure of Jiangsu Province, improve the organization mode among industries, optimize the industrial chain of high-end manufacturing, and promote the domestic industrial cycle. Under the guidance of international and domestic dual-cycle policies, China should attach importance to the domestic market, effectively combine the construction of enterprise digital economy with the value chain and industrial chain of enterprises, expand the channels for enterprise development.

Driven by large-scale construction machinery industry cluster, the government of Jiangsu Province should actively guide local industries. On the one hand, with the existing manufacturing industry cluster, attract and cultivate more information technology and Internet enterprises, to achieve the digital economy + manufacturing industry cluster. On the other hand, more and more advanced manufacturing clusters will be cultivated, led by high-tech industries and strategic

emerging industries, and the development of emerging high-end manufacturing industries such as new energy, intelligent manufacturing, health industry and biomedicine will be vigorously promoted.

## 5. Conclusion

The COVID-19 epidemic has caused a serious impact on the development of the manufacturing industry in Jiangsu Province from 2020 to 2022. Facing the new situation, the manufacturing industry in Jiangsu Province urgently needs to join the ranks of digital transformation and upgrading. This paper believes that the digital economy empowerment of Jiangsu Province can accelerate the transformation and upgrading of the manufacturing industry in Jiangsu Province through the low-end transformation of the manufacturing industry, the reconstruction of the demand side and the formation of high-end manufacturing, in order to contribute its own strength to the establishment of China's "manufacturing power".

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