ISSN 2616-5902 Vol. 7, Issue 7: 203-207, DOI: 10.25236/AJBM.2025.070727

Research on the Digital Economy to Promote High-Quality Development of Equipment Manufacturing Industry in Jilin Province and Its Path

Fentian Li

The Tourism College of Changchun University, Changchun, Jilin, 130607, China
2812001856@qq.com

Abstract: *The digital economy based on "big data, industrial Internet, artificial intelligence, Internet of Things, and cloud computing" has become a key factor in global competitiveness growth. Equipment manufacturing is an important part of the industry and an important manifestation of the country's comprehensive strength. Through mechanisms such as technological innovation, resource allocation optimization, and industrial chain collaboration, the digital economy helps Jilin Province's equipment manufacturing industry improve production efficiency, reduce costs, and enhance innovation capabilities. This paper studies found that Jilin Province's equipment manufacturing industry has problems such as weak foundation, shortage of talents, and insufficient digital awareness of enterprises in digital transformation. Based on the above problems, the relevant literature on the competitiveness of the equipment manufacturing industry and the digital economy are mainly sorted out and summarized, and then the digital economy and equipment manufacturing industry are briefly summarized. Then, the internal and external factors of the digital transformation of Jilin Province's equipment manufacturing industry are analyzed, and finally the practical path research is given.*

Keywords: *Jilin Province; Equipment Manufacturing; Digital Economy; Enterprise Digitalization*

1. Introduction

General Secretary national leadership pointed out: "Equipment manufacturing is the backbone of a country's manufacturing industry." Developing equipment manufacturing industry is a long-term and critical task that concerns the country's comprehensive national strength, development quality and industrial foundation. It involves a wide range of fields, many industries, and a long industrial chain. The Outline of the Twelve Planning also clearly proposes to focus on strategic emerging industries such as high-end equipment manufacturing as the key development direction. It can be seen that during the 14th Five-Year Plan period, my country's economy must take the path of high-quality development, among which high-quality development of the equipment manufacturing industry is particularly important [1]. In recent years, the scale of equipment manufacturing industry has gradually expanded, supporting the economic development of Jilin Province.

In recent years, in the face of changes in the country's internal and external environment, following the requirements of high-quality development, and in accordance with the relevant decisions and deployments of the Central Committee and the Provincial Party Committee, Jilin Province has gradually promoted all work of economic and social development. Today, Jilin Province is getting rid of the shortcomings of the relatively single industrial structure of the old industrial base, seizing the new opportunities of the new round of scientific and technological revolution and industrial structure adjustment, and gradually moving closer to the industrial development pattern of diversified support and multiple industries [2]. In order to accelerate the all-round revitalization of Jilin Province, Jilin Province optimizes its industrial layout on the premise of promoting the development of the "Three Five-Year Development Strategy", Changjitu Strategy, and the "three major sectors" of China, East and West China, and strives to build Changchun into a "Northeast Asia Regional Central City" and make the "Changchun Economic Circle" bigger and stronger. One of the major tasks of Jilin Province is to promote the revitalization and development of old industrial bases in Northeast China, promote the expansion and strengthening of the real economy, accelerate the speed of transformation and upgrading, promote innovative development, and promote the all-round revitalization of Jilin Province with the achievements of high-quality development.

ISSN 2616-5902 Vol. 7, Issue 7: 203-207, DOI: 10.25236/AJBM.2025.070727

2. Related theoretical research

2.1 Digital Economy

Although the concept of the digital economy was proposed as early as 1996, its definition has been discussed for many years and no consensus has been reached. Digital information technology is changing with each passing day, which promotes the conceptual boundaries of the digital economy to be continuously expanded and deepened [3].Moreover, since scholars have different focus, they also have their own emphasis on the definition of concepts. In the early days, scholars mainly understood the digital economy as the category of the information and communication technology industry. However, with the gradual maturity and wide application of cutting-edge digital technologies such as artificial intelligence and blockchain, the digital economy and the real economy are increasingly closely linked. This integration makes the connotation of the digital economy no longer limited to the digital industry, but gradually expands to various areas of social production. The digital economy has had a profound impact on industrial transformation and upgrading [4].

2.2 Equipment Manufacturing Industry

The equipment manufacturing industry provides equipment support for simple production, re-expansion and re-production of the economic sector, and is a key industry in the industrial field.The equipment manufacturing industry involves a wide range of categories and includes many fields, mainly including metal products, general equipment manufacturing, special equipment manufacturing, transportation equipment manufacturing, electrical machinery and equipment manufacturing, communication equipment manufacturing, instrument manufacturing and equipment repair industry [5].The degree of development of the equipment manufacturing industry determines the technical level of the independent economic industrial system and the overall strength of the production supporting facilities. The more advanced the technical equipment and facilities provided by the equipment manufacturing industry, the stronger the country's industrial strength and the more developed the industrial economy.In recent years, intelligent equipment has emerged. Industrial robots and fully automatic production lines are introduced in the production link. The management link adopts intelligent, all-round and full-process safety monitoring. The production workshop has built a digital interactive platform to achieve barrier-free communication between enterprises and zero-time difference. Data transmission is timely and accurate, and all production work is completed efficiently, while ensuring product quality and value.Therefore, we must[6] pay attention to the reform and innovation of the equipment manufacturing industry and continuously promote industrial progress.

In recent years, in the face of changes in the country's internal and external environment, following the requirements of high-quality development, and in accordance with the relevant decisions and deployments of the central and provincial party committees [7], Jilin Province has gradually promoted all work of economic and social development, firmly adhered to the supply-side structural reform route, guided by the construction of digital Jilin, and promoted digital industrialization, industrial digitalization, etc.On the road of high-quality development[8], Jilin's old industrial base is being renovated and updated.Today, Jilin Province is getting rid of the shortcomings of the relatively single industrial structure of the old industrial base, seizing the new opportunities of the new round of scientific and technological revolution and industrial structure adjustment, and gradually moving closer to the industrial development pattern of diversified support and multiple industries.In order to accelerate the all-round revitalization of Jilin Province, Jilin Province optimizes its industrial layout on the premise of promoting the development of the "Three Five-Year Development Strategy", Changjitu Strategy, and the "three major sectors" of China, East and West China, and strives to build Changchun into a "Northeast Asia Regional Central City" and make the "Changchun Economic Circle" bigger and stronger[9].

3. Constraints on the digital transformation of equipment manufacturing industry in Jilin Province

3.1 External factors

3.1.1 Digital economy development

The development of digital economy and related technologies is an important external driving force for the digital transformation of the equipment manufacturing industry. With the increasing improvement of digital economy-related infrastructure and the continuous development of digital technologies such as

ISSN 2616-5902 Vol. 7, Issue 7: 203-207, DOI: 10.25236/AJBM.2025.070727

cloud computing, blockchain, and big data, the scale of my country's digital economy is growing rapidly. As an important part of the real economy, the equipment manufacturing industry plays an important supporting role in my country's economic development. The development of the digital economy has had a profound impact on the equipment manufacturing industry. The digital transformation empowerment of the equipment manufacturing industry is the only way for its survival and development.

3.1.2 Changes in customer needs

In the context of the digital economy, the continuous emergence of new technologies and new business models has caused changes on the demand side, and customer demand is also shifting towards intelligence and digitalization. To a certain extent, this forces enterprises to use digitalization to empower themselves and carry out digital transformation and upgrading. Changes in consumer demand have forced the equipment manufacturing industry to transform and upgrade. Driven by changes in demand, the equipment manufacturing industry uses digital transformation to empower itself is an inevitable choice for it to meet customer needs and improve its comprehensive competitive strength.

3.1.3 Government support

In 2018, my country also proposed the "Digital China" strategy, aiming to promote the high-quality development of the digital economy, accelerate the construction of a digital China, provide policy support and institutional guarantees for the high-quality development of the digital economy, and promote the rapid development and application of the digital economy. The "Outline of the 14th Five-Year Plan" and the "Outline of the 14th Five-Year Plan and the 2035 Vision Goals" released in 2021 are themed "Accelerating digital development and building a digital China" and put forward the grand goal of digital transformation, further providing policy guarantees for empowering enterprises' digital transformation.

3.2 Internal factors

3.2.1 Improve core competitiveness

The equipment manufacturing industry can reduce labor costs and production costs through intelligent manufacturing, automated production lines and equipment, and improve production efficiency. The service and maintenance costs of equipment manufacturing products are also relatively high. Through digital transformation empowerment, online inspection and maintenance of equipment can be realized. While reducing costs, the reliability and stability of equipment are improved, and thus the competitiveness of enterprises can be improved.

3.2.2 Improve product innovation

First of all, digital transformation can help companies collect, analyze and utilize large amounts of data more accurately, so as to better understand market demand, discover new market opportunities and product innovation points, and improve their innovation capabilities. Secondly, in product design, digital transformation can help enterprises realize product virtualization design and simulation. Through the application of digital related technologies, the time from product research and development to sales can be shortened, R&D costs can be reduced, speed up the speed of market, and achieve the effect of quickly and efficiently meeting customer needs. Finally, digital transformation can help enterprises achieve open innovation and collaborative innovation.

3.2.3 Improve customer satisfaction

Digital transformation can help enterprises achieve service upgrades and value-added services, and through digital platforms and social media, they can interact and communicate with customers, provide more personalized services and value-added services, further enhance customer satisfaction and loyalty, and achieve sustainable development.

4. The Implementation Path of Digital Transformation in Jilin Province's Equipment Manufacturing Industry

4.1 Intelligent manufacturing drives the transformation of the manufacturing industry

Intelligent manufacturing refers to the use of digital technologies such as "Internet plus" to optimize product production processes. It is an advanced manufacturing model integrating digital technology and manufacturing industry, and also an important way to achieve high-quality development of manufacturing industry. Intelligent manufacturing is the development direction of automation, which

ISSN 2616-5902 Vol. 7, Issue 7: 203-207, DOI: 10.25236/AJBM.2025.070727

combines software systems and hardware devices with smart factories to achieve the integration and intelligence of the entire production process, replacing traditional labor modes, reducing manufacturing costs, improving product quality, and shortening manufacturing cycles. The development of intelligent manufacturing needs to be based on the industrial Internet to realize the dynamic interconnection between enterprises, optimize the resource allocation among enterprises, and achieve the goal of precise cooperation among enterprises. The new generation of information technology and intelligent manufacturing technology are the core technologies of the new industrial revolution, which accelerate the application of technologies and equipment such as human-machine intelligent interaction and additive manufacturing in the production and manufacturing process. Therefore, in order to achieve intelligent manufacturing, it is necessary to promote the integrated development of new generation information technology and intelligent equipment, and to use key technologies to develop and design intelligent equipment for key areas of manufacturing, providing software systems and hardware equipment for achieving intelligent manufacturing.

4.2 Networked collaboration promotes the optimization of manufacturing industry structure

Networked collaborative manufacturing is an advanced manufacturing model that has emerged under the rapid development of the digital economy, driven by both demand and technology. The development of the Internet has significantly increased the speed of information exchange, reduced transaction costs and coordination costs, expanded and deepened the division of labor in the market, and enriched the forms of collaborative and flexible enterprise organizations. We could establish an industrial cooperation platform with the Internet as the link, so that enterprises in different regions and industries can cooperate quickly, meet market demands, break down production processes, and complete production tasks quickly and efficiently at a lower cost. Moreover, enterprises can obtain professional and efficient input of non core business processes through social division of labor, reduce resource occupation, and concentrate their advantages on the development of core technologies and new products, thereby improving the operational efficiency of the enterprise. By building an industrial collaboration platform to promote intelligent and scientific development of industrial collaboration, different enterprises can leverage their own advantages, improve product quality, and reduce costs caused by information asymmetry.

4.3 Personalized customization helps optimize manufacturing products

In the era of industrial economy, the production mode of manufacturing is large-scale and standardized assembly line production, where consumers passively accept goods and ignore consumers with specific needs for goods, thereby reducing costs and occupying more markets. With the development of the digital economy, the market energy generated by niche markets that were previously overlooked by producers is sufficient to compete with mainstream markets. The value of personalized user groups is gradually increasing, and mass customization production is becoming mainstream. By using Internet technology to realize information exchange with users, enterprises can provide customized products and services for consumers and achieve reverse customization, thus winning economies of scope and scale. With the development of the digital economy, the sales model of the manufacturing industry has undergone significant changes, breaking down the information barriers between enterprises and consumers. Enterprises can dig deeper into customers' needs, integrate and optimize data resources by using Internet technology, update changes in customers' demand preferences in real time, develop accurate marketing strategies, and feed back customer demand information to the company's innovation and R&D process to support enterprise innovation. The rise and application of digital technology enable enterprises to capture personalized user needs at a lower cost, achieve reverse customization, improve supply efficiency, and enhance core competitiveness.

4.4 Digital services promote efficiency improvement in manufacturing industry

To achieve the goal of digital service transformation and upgrading in the manufacturing industry, enterprises should be guided by consumer demand, use digital technology to accurately locate the consumption behavior of segmented market customers, and adjust their products and technologies based on feedback from service customers. Service elements should be integrated into the entire production process of the enterprise, continuously improving the quality of enterprise services and customer stickiness, thus forming a closed-loop system and enhancing the sustainable development capability of the enterprise. Digital services have created new value for traditional manufacturing, and the rapid development of digital technology has given rise to many e-commerce platforms. Manufacturing can use this platform to conduct online sales, breaking the traditional sales model from manufacturers to

ISSN 2616-5902 Vol. 7, Issue 7: 203-207, DOI: 10.25236/AJBM.2025.070727

distributors and then to customers, and achieving direct value transmission. At the same time, digital services can enable enterprises to innovate products based on customer perspectives, meet constantly changing consumer demands, use digital technology and intelligent devices to achieve full process control on the supply side, and thus form a complete network structure composed of stakeholders such as upstream and downstream. Digital services have significantly improved the efficiency of the manufacturing industry and promoted its high-quality development.

5. Conclusion

Currently, the digital economy is flourishing, changing the global economic development model and driving a new round of industrial transformation and technological revolution. China attaches great importance to the rise of the digital economy and has continuously introduced new policies and measures to promote the deep integration and development of the digital economy and the real economy; Actively promoting digital concepts and developing digital technologies to assist in the digital transformation and upgrading of various industries. This article mainly summarizes some theories and analyzes the internal and external factors of digital transformation in Jilin Province's equipment manufacturing industry. Finally, it presents a study on the actual path of digital transformation in the equipment manufacturing industry, summarizes the problems existing in the digital transformation of Jilin Province's equipment manufacturing industry, and provides some practical countermeasures.

Acknowledgement

Research Project on the 14th Five Year Plan of Jilin E-commerce Society: Digital Economy Promotes High Quality Development of Equipment Manufacturing Industry in Jilin Province and Its Path Research (2023JLDS016)

References

[1] Yi Xianrong, Chen Yingying, and Yu Shuang. Research on Several Major Theoretical Issues in the Digital Economy: A General Analysis Based on Modern Economics [J]. Economist, 2019, (07):23-31.
[2] Chen Xiaohong, Li Yangyang, Song Lijie, etc. Theoretical System and Research Prospects of Digital Economy [J]. Management World, 2022, 38 (02): 208-224
[3] Lin Zhaomu. The connotation and essence of high-quality economic development in China [J]. Western Development, 2018, 111-113
[4] Li Jinchang, Shi Longmei, Xu Aiting. Exploration of the Evaluation Index System for High Quality Development [J]. Statistical Research, 2019, 36 (01): 4-14
[5] Yang Haochang, Ding Yu, Li Lianshui, He Yixin. Dynamic Evaluation and Comparison of High Quality Development Level in Manufacturing Industry [J]. Statistics and Decision making, 2021, 37 (15): 78-81
[6] Meng Maoyuan, Zhang Guangsheng. Analysis of the Impact of Rising Labor Costs on High Quality Development of Manufacturing Enterprises [J]. Economic Issues Exploration, 2021 (02): 145-155
[7] Zhou Rong. Thoughts on the transformation and upgrading of Fuzhou's manufacturing industry driven by the digital economy [J]. Journal of Fujian University of Engineering, 2019, 17 (03): 297-301,
[8] Wang Yonglong, Yu Na, Yao Niao. The Mechanism and Effect of Digital Economy Empowering Quality Change in Manufacturing Industry: Theory and Empirical Analysis Based on Binary Margins [J]. China Circulation Economy, 2020, 34 (12): 60-71
[9] Liu Xinxin. Research on the Impact of Digital Economy on the High Quality Development of China's Manufacturing Industry [J]. Economic System Reform, 2021, (5): 92-98