Study on Transformation and Upgrading of Manufacturing Industry in Jiangsu Based on Innovation Driven

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Abstract

With the "made in China 2025" strategy and the policies of European and American countries to revitalize the manufacturing industry, the transformation and upgrading of jiangsu manufacturing industry is imminent. While giving full play to the industrial base, geographical advantage, policy support and other advantages of jiangsu's manufacturing industry, we must be soberly aware of the huge obstacles in the transformation and upgrading of the manufacturing industry, such as the backward system and mechanism, the lack of innovation ability and the serious brain drain. Jiangsu manufacturing industry is an important part of regional economic competitiveness of jiangsu province. In the new era, it should better play its role of bearing new energy, implementing new ideas, improving industrial structure and driving economic growth. The most important way to realize the transformation and upgrading of the manufacturing industry lies in innovation. Increase investment in scientific and technological research and development to improve regional innovation capacity; Focus on key areas and create high-end "intelligent manufacturing"; We will effectively integrate the manufacturing and service industries, and raise the level of information technology in the manufacturing sector.

Keywords

Innovation-driven, Manufacturing, Transformation and upgrading.

1. Introduction

Manufacturing industry is one of the important pillar industries in national economic development, and it is also an important indicator of the development level of national and regional productivity. The 19th CPC national congress clearly pointed out that accelerating the building of a powerful manufacturing country and accelerating the development of advanced manufacturing is an important part of building a modernized economic system and a new development concept implemented in the new era. We should give play to the advantages of industrial clusters, foster world-class advanced manufacturing clusters, and promote China's industries to move up the global value chain. Under the new normal of economy, socialist political economy with Chinese characteristics explains the theory of economic development that liberates, develops and protects productivity, and points out new impetus for the development of productivity. The "innovation-driven strategy" proposed by the 18th national congress of the communist party of China points out that scientific and technological innovation, as the supporting point of the comprehensive strength of the national economy, plays an important role in improving the social productivity and the overall national strength.

Manufacturing industry is the lifeblood of national economy, and its industry characteristics make it the "main battlefield" of scientific and technological innovation. How to realize the industrial transformation and structural upgrading of manufacturing industry under the innovation-driven strategy has become an important issue for the development of the new era[1].

In March 2015, premier li keqiang put forward the "made in China 2025" strategy for the first time in the government work report, which aims to develop China from a manufacturing power into a manufacturing power, adhering to the four integrated development models of innovation-driven, intelligent transformation, strengthening foundation and green development. The key point of the adjustment and reform of manufacturing industry lies in the optimization of industrial structure and industrial transformation. In the current adjustment and transformation of the manufacturing industry at home and abroad, jiangsu's manufacturing industry must grasp the opportunity and follow up the pace, and promote the transformation and upgrading of the manufacturing industry by innovation-driven production mode and industrial structure optimization[2].

Innovation is an important driving force for the transformation and upgrading of the manufacturing industry, which is also an important part of optimizing the industrial structure and transforming the mode of economic development. In-depth study of jiangsu manufacturing industry transformation and upgrading, is helpful to grasp the current situation of the development of regional manufacturing system, from the theoretical problems faced in the development of manufacturing industry, qualitative factors in the process of development, the realization of the transformation and upgrading path analysis of manufacturing, is the political economics of socialism with Chinese characteristics in combination with the important economic problem, thought and reality for the manufacturing industry development and economic growth in jiangsu province to provide theoretical reference[3].

2. Analysis of Current Situation of Jiangsu Manufacturing Industry Development

Since 1978, the manufacturing industry in jiangsu has maintained a rapid development trend, and gradually formed the pattern of diversified development of petrochemical, clothing, food, building materials and other industries led by electronics and electric appliance manufacturing, which has become an important manufacturing base in China and even the world. From the development of jiangsu manufacturing industry since the reform and opening up, it is not difficult to see the positive change of jiangsu manufacturing's development concept. Before 1994, jiangsu took the state-owned economy and township economy as the carrier, and constantly pursued the "quantity" expansion, the industrial category was increasingly sound, and the industrial scale was significantly increased, forming the well-known "southern jiangsu model". From 1995 to 2006, with the help of a high and new technology industrial park, and economic development zone in jiangsu platform form, relying on the small and medium-sized high-tech enterprises, vigorously promote the jiangsu manufacturing "quality", and gradually formed a characterized by listed small and medium-sized high-tech manufacturing enterprises "jiangyin model" and the foreign capital enterprise investment of high and new technology products' kunshan mode "; Since 2007, due to resource constraints, environmental constraints and other factors, jiangsu manufacturing began to pay attention to scientific development. In the current stage, the people's government of jiangsu province has continued to deepen institutional innovation, strengthen government service functions, actively build service platforms, and strive to create an excellent service environment. While paying attention to the economic interests of the manufacturing industry, it has put more emphasis on social benefits. The development of jiangsu's manufacturing industry also steps into a new level of economic

creation, scientific and technological innovation, resource conservation and environmental friendliness[4].

2.1. Develop High-End Manufacturing and Create Innovative Industrial Clusters

Intelligent manufacturing is a distinctive feature of the new industrial era and an inevitable choice to achieve industrial transformation and upgrading and implement the innovation-driven strategy. Jiangsu has always been the province with the largest number of world top 500 manufacturing enterprises after the reform and opening-up, which has introduced strong momentum and vitality to the development of the manufacturing industry. Regional innovation capacity is at the national leading level, and the contribution rate of scientific and technological progress is over 60%. Statistics show that there are more than 300 top 500 enterprises in south jiangsu, most of which are in manufacturing industry. Based on the current advantages, jiangsu aims to form 150 industrial clusters of over 10 billion level, 10 industrial clusters of over 100 billion level and 5 regional characteristic industrial clusters with international influence by the end of the 13th five-year plan. Jiangsu always regards innovation as the main engine of development, vigorously implements the core strategy of innovation-driven development, makes full use of the automobile and pharmaceutical industry bases in the province, gathers high-end elements and develops high-end industries, creates industrial clusters, and strives to form an innovation-led economic system and development mode[5].

2.2. Innovate Financing Channels to Boost Industrial Development

In recent years, the scale of social financing in jiangsu has been growing continuously, fully supporting the development of the manufacturing industry. We will firmly establish and implement the new development concept, guide finance to return to serving the real economy, vigorously improve the management and use of monetary policy tools, and fully implement the special financial support plan to build a "manufacturing powerhouse" in jiangsu province. We will streamline administration and delegate power, delegate powers for review and approval to lower levels, streamline procedures for handling procedures, and implement whole-process services, so as to effectively open up the "last mile" for outbound investment. We will encourage enterprises to participate in international competition, meet the needs of foreign investment, increase the efficiency of their capital use, and increase the effective supply of foreign exchange markets. We should promote the development of the financial ecological environment, maintain the momentum of reform and the vitality of innovation, ensure proper access to financial reform and constantly release the dividends of reform and innovation. At the same time, the pilot project of "two rights" mortgage loan has been further promoted. It has basically achieved the "three full coverage" of confirmation and certification, the establishment of rural property rights transaction information service platform, and the establishment of financial risk compensation fund[6].

2.3. Eliminate Backward Production Capacity and Remove Obstacles to Innovation

Jiangsu has comprehensively promoted supply-side structural reform in its manufacturing transformation and upgrading. We will comprehensively apply standards for economy, environmental protection, energy consumption and differential electricity pricing, and withdraw from low-end and backward production capacity in accordance with laws and regulations. We carried out special operations to reduce the number of chemical enterprises by 263 and to close more than 2,000 chemical enterprises. We will effectively reduce the costs of transactions, labor, logistics, taxes and fees, and financing in the real economy by advancing reform of power generation plans and direct trading in the electricity market. In 2017, jiangsu province's cement production capacity reached 5.1 million tons and flat glass production

capacity 3.3 million weight boxes, fully achieving the provincial target. Deepening supply-side structural reform has given a strong boost to the steady operation of the manufacturing industry and the improvement of its quality and efficiency[7].

3. Experience of Manufacturing Industry in Developed Regions

Guangdong, as a representative of the pearl river delta region, has a distinct stage in its manufacturing development. In the early years of the founding of the People's Republic of China, China implemented the planned economy management system. At that time, the country's strategic focus was on the inland, and guangdong, a coastal border area, invested relatively less in manufacturing and developed relatively slowly. After the reform and opening up, taking advantage of the policy and the proximity to Hong Kong and Macao, guangdong adopted the mode of "three from one supplement" and the mode of "front shop and back factory", and developed the low-tech labor-intensive industries such as textile, clothing, toys and daily necessities, thus accelerating the industrialization process of guangdong. In the 1990s, guangdong became a big home appliance province by vigorously developing home appliance industry. The consumption structure of residents began to change from subsistence type to enjoyment and development type, and the consumer durables industry represented by color TV, refrigerator and air conditioner rapidly grew into the leading industry[8].

In 1998, guangdong put forward the implementation of science, education, and guangdong strategy to promote the strategic adjustment of economic structure and economic growth mode. Among them, electronic information, electrical machinery and petrochemical industry have become the leading industries of economic growth, entering the development stage dominated by high-processing industry. After 2000, guangdong began to develop new pillar industries, such as automobile, petroleum, chemical raw materials and chemical products, metallurgy, medicine, and electronic communication equipment manufacturing. In particular, high-tech industries, such as computer and electronic industries, have become the most important pillar industries supporting the high-speed growth of the national economy. By 2016, the added value of the advanced manufacturing industry above the scale of guangdong had reached 1.57 trillion yuan, increasing by 9.5% year-on-year, which was 2.8% higher than the industrial added value above the scale of the province, accounting for 49.3% of the industrial added value above the scale of the province, and 54.67% of the manufacturing industry above the scale of the province. Since 2012, with the overall economic growth slowing down, guangdong's advanced manufacturing industry has been accelerating, showing a trend of negative growth. With the acceleration of the transformation and upgrading of the manufacturing industry, the proportion of advanced manufacturing industry in guangdong increases year by year, and the effect of the optimization and upgrading of the manufacturing industry is more remarkable[9].

3.1. Promote Intelligent Manufacturing and Strengthen Innovation in Competitive Industries

Guangdong takes the development of intelligent manufacturing as the driving force for the transformation and upgrading of the manufacturing industry, actively creates the pearl river delta national intelligent manufacturing demonstration zone, and organizes the implementation of national and provincial intelligent manufacturing pilot demonstration projects. We will accelerate the construction of a demonstration base for intelligent manufacturing and carry out pilot projects to cultivate smart factories and digital workshops. Cultivating intelligent manufacturing system solutions key public service technology platform, providing accurate intelligent manufacturing production mode solutions, and building intelligent manufacturing production mode demonstration points. Guangdong has provided key support to five industries, including high-end intelligent equipment, new materials, new energy and energy conservation and environmental protection, biomedicine and new-

generation information technology, and supported the introduction of major projects in emerging pillar industries, tackling key technologies, merger and reorganization and transformation of achievements. In recent years, with the rapid development of mobile Internet, guangdong has risen rapidly in the field of smart phones, and the smart phone brands dominated by huawei, OPPO, vivo and zte have risen rapidly in the world.

Seven of China's top 10 smartphone vendors in 2016 were guangdong smartphone brands led by huawei. The development of jiangsu's manufacturing industry has long been dependent on "significant and thick" heavy industry, and the high-tech manufacturing industry represented by "intelligent" is seriously deficient, which will delay the process of manufacturing transformation and upgrading. Therefore, at present, we should actively learn from developed provinces, introduce intelligent manufacturing enterprises and projects, and improve the level of industrial intelligence[10].

3.2. Strengthen Quality Innovation and Build Brand Advantages

Quality is the endogenous power of economic and social development under the new normal. With the disappearance of such advantages as demographic "dividend" and low labor costs, corporate profits are being squeezed, and there is an urgent need for industrial transformation and upgrading. The "made in China 2025" plan clearly proposes that quality must be taken as the lifeline of building a manufacturing power, the quality foundation of products must be strengthened comprehensively, the brand value of enterprises and the overall image of "made in China" should be constantly enhanced, and the development path of quality should be taken. For the manufacturing industry in guangdong, where more than 95% of the enterprises are small and medium-sized enterprises, transformation and upgrading and improvement of enterprise benefits are achieved through internal quality innovation, which is obviously more common. A number of high-quality enterprises, represented by xu fu ji, attach importance to quality, brand and reputation. Statistics show that compared with enterprises without brands, the total factor productivity is 51% higher, the average profit is about 30 million yuan higher, and the profit margin is about 5% higher, which reflects that quality brand building has a very significant effect on enterprise performance. Quality innovation is becoming a shining business card of guangdong manufacturing transformation and upgrading. To fully implement the innovation-driven strategy in jiangsu's manufacturing industry, it is necessary to push manufacturing enterprises to carry out quality innovation, to turn from factor driving to innovation driving, to quality and efficiency, and to draw on the valuable experience of guangdong to become a strong manufacturing province[11].

3.3. Innovate Government Functions and Lead Manufacturing Provinces

Guangdong adheres to the principle of establishing a manufacturing province, thoroughly implements and implements "made in China 2025", proposes several measures to increase the proportion of manufacturing investment in fixed asset investment, accelerate the development of intelligent manufacturing, and cultivate a number of national pilot demonstration projects of intelligent manufacturing. We will build a demonstration province for the integrated development of the country's manufacturing industry and the Internet, and carry out pilot projects for integrated innovation, focusing on "Internet plus advanced manufacturing" professional towns and leading key manufacturing enterprises. Jiangsu manufacturing enterprises are also faced with financing difficulties. The government should actively learn from the successful experience of guangdong, focus on solving the problems of financing difficulties and expensive financing for private enterprises in the manufacturing industry, and focus on supporting the private enterprises in advanced manufacturing and strategic emerging industries to become bigger and stronger. In terms of capital, services and other aspects, we will strongly support enterprises in carrying out technological transformation, strive to build an advanced manufacturing industry system, and build a world advanced manufacturing base

with international competitiveness. Guangdong's active efforts have effectively reduced the cost of real economy enterprises, optimized the development environment of enterprises, provided financial and policy support for the transformation and upgrading of the manufacturing industry, and cleared the obstacle of mechanism and system.

4. Strategies and Suggestions for the Development of Jiangsu's Manufacturing Industry

4.1. Deepen the Reform of State-Owned Enterprises and Innovate the System and Mechanism

The transformation and upgrading of the manufacturing sector must continue to deepen the reform of state-owned enterprises, with institutional and institutional innovation as the driving force, reform of the property rights system as the core, and the establishment of the current enterprise system as the goal to enhance the vitality of the state economy. We should encourage and support the multinational, trans-regional and trans-ownership joint restructuring of state-owned manufacturing enterprises, revitalize the historical stock capital of state-owned enterprises through joint ventures and investments, and give better play to the control and influence of state-owned enterprises, so as to bring the development of jiangsu's manufacturing industry into a virtuous cycle. At the same time, the supervision mechanism of state-owned enterprises should be established timely to ensure the safety of state-owned assets, maintain and increase value, avoid the interference of administrative power on the independent operation of state-owned enterprises, and improve the production and operation efficiency of state-owned enterprises.

We will promote the development of a unified, open and competitive market system, remove the historical remnants of the planned economy, and remove administrative regulations that hinder fair competition among manufacturing enterprises. While relaxing the access to the manufacturing market, we will strengthen the regulation of the market by provincial and municipal governments at all levels, rectify and standardize the market order, guide the healthy development of the market, and ensure fair and orderly competition for enterprises. We will encourage enterprises to explore provincial and overseas markets, expand the sales channels and scope of manufactured goods in manufacturing industries, and increase their market share and popularity.

We will move faster to separate government administration from enterprise management, separate government administration from government affairs, and separate government resources. We will thoroughly implement all provisions of the state on streamlining administration and delegating power to governments, formulate a clear list of rights, and avoid indiscriminate use and abuse of administrative power, thus hindering the normal production of manufacturing enterprises. To simplify the administrative approval process, reduce the cost of enterprises, reduce waiting time, and facilitate the efficient development of enterprises. We will improve the government information disclosure mechanism, extend the government information disclosure to industry sectors and enterprises, promote the open handling system in an all-round way, and always accept the supervision of enterprises and the society.

4.2. Increase Innovation Input and Enhance Competitiveness

To increase investment in research and development and improve the efficiency of technological improvement is the basis of manufacturing transformation and upgrading. We will encourage diversification of innovation input bodies, increase government financial support, increase funding for universities and research institutes, and guide enterprises to set up internal research institutions, so as to bring all kinds of social institutions and resources into the innovation system. At the same time, we should make clear the innovation of the property

rights system, strengthen the protection of intellectual property rights, and safeguard the lawful rights and interests of all, so as to ensure the initiative of the multiple investors in the society.

Strengthen the construction of talent team and strengthen the support of innovative talents. Talent is a top priority for innovation, but the outflow of talent from jiangsu has become increasingly serious in recent years. We should establish a sound personnel training mechanism, strengthen personnel training input by relying on institutions of higher learning and scientific research, establish a complete personnel training system for scientific research, transformation, production, sales and management, and optimize personnel support for enterprise transformation and upgrading. We will strengthen policy support for the introduction of innovative talent and improve the compensation system for innovative talent so that they can be brought in, retained and done well, and give full play to their role in promoting the transformation and upgrading of the manufacturing industry.

Constructing and improving regional innovation system is the realistic way to promote its transformation and upgrading. It is necessary to establish a regional innovation system in jiangsu that can operate effectively, which can not only give full play to the market economic mechanism to realize efficient allocation of resources, but also effectively improve the regional independent innovation ability, and give full play to the inherent vitality of various innovative subjects, but also realize the sharing of various resources. Local governments, guided by the market, give proper play to the leading role of local governments through planning, coordination and services, effectively integrate regional industrial science and technology resources, make rational layout, and establish a batch of advanced and open science and technology infrastructure.

4.3. Timely Undertake Transfer, Innovate and Open Economy

The transfer of high-tech manufacturing industry will help establish a new manufacturing system in jiangsu, absorb advanced technologies and shorten the time of transformation and upgrading. The key objective of the outline of the beijing-tianjin-hebei coordinated development plan is to build a world-class urban cluster centered on the capital. The formulation of the guide for the transfer of beijing-tianjin-hebei industry has accelerated the pace of the transfer of beijing-tianjin-hebei industry. According to the development direction of key industries in the province, we should timely undertake industrial transfer in developed regions and dock with key industries, which is conducive to further expanding and strengthening advantageous industries, rapid growth of emerging industries and rapid formation of industrial clusters.

The "One Belt And One Road" strategy opens a new road for China's economic globalization and provides a way to solve the overcapacity of low-end products in China. It is of great significance to guide the quality improvement and structure upgrading of China's manufacturing products, and provides a favorable external environment for jiangsu's innovative development and opening-up. Under the opportunity of "area", should be actively involved in jiangsu "area" development system, strengthening and provinces, along the lines of communication and cooperation, under the demand oriented structure of manufacturing industry in the province, the product type to reform, play their own advantages, to build their own brands, strengthen production technology innovation, product innovation, through the trade development drives the transformation and upgrading of manufacturing industry.

4.4. Make "Addition" Well and Create New Business Forms

To promote the transformation and upgrading of the manufacturing industry, it is necessary to give full play to the advantageous industrial foundation, expand and strengthen the advantageous industries, combine the domestic and foreign markets with the reality of provincial conditions, cultivate strategic emerging industries, and promote the intensive,

intelligent and high-end development of the provincial manufacturing industry. We will give full play to the solid foundation of our provincial automobile manufacturing, pharmaceutical manufacturing, and optoelectronic equipment manufacturing industries, and focus on cultivating, increasing input, and concentrating resources to build a leading high-end manufacturing industry at home and abroad. We will create an intelligent manufacturing cluster zone, give play to the competition effect, agglomeration and radiation effect, extend the industrial chain, break through key core technologies, cultivate key enterprises and key products, and significantly improve industrial innovation and profitability.

We will effectively improve the informatization level of the manufacturing industry and accelerate the integration of manufacturing and the Internet. Taking the platform of "twin innovation" as the carrier of the integration of manufacturing industry and Internet, it accelerates the efficient integration of resources, innovates the organizational management mode and leads the profound reform of manufacturing mode. We will drive the networked and collaborative transformation of manufacturing practices and accelerate the transformation to a personalized and customized model. We should improve the overall efficiency of the whole industrial chain, build industrial ecology with comprehensive advantages, and promote collaborative innovation of the industrial chain with technological advantages.

The servitization of the manufacturing industry is another important direction for the transformation and upgrading of the manufacturing industry. The integrated solution of "manufacturing + service" extends the manufacturing industry to both ends of the value chain. Extending downstream is to provide better services for retailers, end users and more in line with their needs. Manufacturing enterprises should fully grasp the almost service-oriented development of the manufacturing industry, reconstruct the value chain and business model, and strive to establish brand advantages in the new round of development.

4.5. Promote the Combination of Production and Finance and Strengthen Financial Innovation

The important condition for realizing the transformation and upgrading of manufacturing industry is to increase capital input. The real economy needs huge capital input in various aspects, such as plant and equipment, raw material procurement, production and employment, and technology research and development. Moreover, from the beginning of research and development to the sale of products, the turnover cycle is long, and the dependence and control on capital is more serious. Jiangsu's manufacturing industry has always faced the development dilemma of high capital cost, with the annual industry interest expense exceeding ten billion yuan, accounting for more than 11% of the total profit. Promoting the combination of production and finance and providing convenient and fast financing channels for manufacturing enterprises will not only improve the enterprise's ability to resist risks, enhance its technology research and development capacity, but also help increase its profit revenue and capital accumulation and serve the long-term development of the enterprise.

The combination of production and finance should first allocate financial capital effectively and improve financing services to provide support for the development of manufacturing industry. Traditional financing methods have obvious limitations. High financing cost, low efficiency and long cycle greatly affect the production efficiency of enterprises. The effective allocation of financial capital needs to expand financing channels. On the one hand, the government should actively guide and coordinate and make efforts to enable enterprises to obtain low-cost policy loans and financial support. On the other hand, enterprises should actively finance the financial market and make full use of flexible private capital. Enterprises with high credit rating and good development prospects can issue corporate bonds. Enterprises with high equipment investment ratio can introduce financial leasing.

Fiscal and taxation policy is an important way to reduce the tax burden of enterprises, stimulate the impetus of innovation, expand the scope of additional deduction for r&d expenses, and provide tax support for enterprise r&d and innovation. We will improve financial policies, deepen reform of the financial system, and create a favorable market environment for business seeds. We will increase fiscal support for integrated development, make full use of special financial channels, guide funds to weak links, guide social capital to participate in major projects and technological transformation of enterprises, and innovate risk compensation mechanisms. We will innovate financing methods in various ways and strive to provide a better capital environment for the development of jiangsu's manufacturing industry.

4.6. Energy Conservation and Emission Reduction, and Innovative and Green Development

To solve the resource and environmental problems faced by jiangsu manufacturing industry, the outlet is still being innovated. Manufacturing enterprises should constantly improve the resource utilization efficiency, control of pollutant emission and resource utilization capacity of waste. We will accelerate innovation in key technologies and break through technological constraints in energy conservation, clean energy and circular economy. We will increase the dissemination and application of energy-saving and environmental protection technologies, and carry out technological transformation projects such as improving energy efficiency in manufacturing, cleaner production and comprehensive utilization of resources.

We will give play to the leading role of the government in green development, improve market access and exit mechanisms for industries with high energy consumption and high pollution, and clarify industry access mechanisms, as well as energy conservation and pollutant emissions indicators. While strengthening the penalties for environmental protection, energy consumption and safety enforcement, a sound incentive and restraint mechanism for energy conservation and emission reduction should be established. We will improve the system of resource and environmental property rights, optimize the spatial layout of the manufacturing industry, promote industrial agglomeration, guide manufacturing enterprises to introduce advanced production processes and equipment, improve product quality, reduce energy consumption and pollutant emissions, and achieve transformation and upgrading.

5. Conclusion

In the context of the "made in China 2025" strategy, China should achieve the great transformation to a manufacturing power. In the face of the real problem of slow regional economic growth and insufficient power, it is even more important to speed up the transformation and upgrading of the innovation-driven manufacturing industry and give play to its important role in stabilizing the economic environment and driving economic growth. To comprehensively promote the innovation-driven strategy and realize the transformation and upgrading of jiangsu's manufacturing industry, it is necessary for all subjects to carry out innovation and reform from all aspects, at multiple levels and in a wide range of fields.

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