

Innovation and Improvement Pathways in the Equipment Manufacturing Industry from the Perspective of New Productivity

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Abstract: *This paper investigates the innovation and upgrading pathways for the equipment manufacturing industry from the perspective of new productive forces. The findings indicate that through technological advancement, intelligent manufacturing, green manufacturing, and the development of an innovation ecosystem, the industry can effectively enhance its competitiveness and achieve sustainable development. This study analyzes the prevailing bottlenecks constraining innovation within the equipment manufacturing sector and proposes strategic responses to align with the trajectory of new productive forces, thereby offering both theoretical and practical foundations for the high-quality development of the industry.*

Keywords: New productivity; Equipment manufacturing industry; Innovation path; Intelligent manufacturing; Green manufacturing.

1. INTRODUCTION

As the foundation of industrial development, the equipment manufacturing industry is a core industry for realizing the modernization of the national economy. Against the backdrop of globalization and rapid technological development, the traditional equipment manufacturing industry is facing profound changes in technology and industrial structure. The proposal of new productivity provides new ideas and directions for the development of the equipment manufacturing industry. New productivity not only emphasizes technological innovation but also requires changes in production methods and efficient use of resources. Therefore, the equipment manufacturing industry must continuously pursue technological innovation and upgrade production models to maintain a leading position in global competition. This paper will analyze the main current problems in the equipment manufacturing industry from the perspective of new productivity and propose specific innovation and improvement paths. At present, the proportion of direct financing in my country is very low. Therefore, the increase in direct financing is not only conducive to economic transformation and solving the misallocation of my country's financial resources between direct financing and indirect financing, but also relieves the pressure of insufficient investment caused by loan interest rates, and is more helpful Finance feeds the economy back, curbs the formation of financial bubbles, and promotes long-term economic development. Bond financing, equity financing and bank loans are the three main sources of financing in the global financial market. Direct financing through the bond market has occupied an important position in the financial system. The vigorous development of the global bond market has played an indelible role in promoting global economic growth and the effective allocation of resources. Countries around the world have taken various measures to accelerate the development of the bond market. At this stage, the main financing of various entities in China is bank indirect financing, supplemented by direct financing, and the bond market is developing rapidly. Promoting direct financing methods and clarifying the development path of my country's bond market are important tasks for the reform of the financial system and the maintenance of sustained and stable economic growth.

2. CURRENT SITUATION AND CHALLENGES OF THE EQUIPMENT MANUFACTURING INDUSTRY FROM THE PERSPECTIVE OF NEW PRODUCTIVITY

2.1 Basic Overview of the Equipment Manufacturing Industry

The equipment manufacturing industry refers to the industry that provides technical equipment for various sectors of the national economy and is the most fundamental and strategically significant field in industrial production. With the advancement of industrialization, the development level of the equipment manufacturing industry directly affects a country's economic strength and technological innovation capability. In recent years, with the

rapid progress of science and technology, the technological content and innovation demand of the equipment manufacturing industry have continuously increased, making the manufacturing process more complex and requiring enterprises to have higher innovation and adaptability.

2.2 Impact of New Productivity on the Equipment Manufacturing Industry

New productive forces refer to a new productivity model based on information technology, intelligent manufacturing, and green manufacturing. Compared with traditional productivity, new productive forces place greater emphasis on production efficiency, optimal allocation of resources, and sustainable development. This concept requires the equipment manufacturing industry to not only focus on improving production efficiency but also carry out comprehensive upgrades in technological innovation, production process optimization, and resource utilization. The introduction of new productive forces has made the equipment manufacturing industry face a series of new challenges, such as how to achieve technological breakthroughs, how to optimize production processes, and how to achieve green development.

2.3 Bottlenecks in Innovation and Upgrading of the Equipment Manufacturing Industry

Although the equipment manufacturing industry has achieved certain development in recent years, it still faces many bottlenecks in innovation and upgrading. First, insufficient technological innovation capability remains the main problem restricting the development of the industry. Many enterprises still rely on foreign imports in core technology fields and lack independent R&D capabilities. Second, the level of intelligent manufacturing is low, and the digital transformation of enterprises is progressing slowly. Finally, green manufacturing has not been widely applied, with low energy utilization efficiency and serious environmental pollution problems. The existence of these problems not only limits the industry's competitiveness but also hinders its sustainable development.

3. ANALYSIS OF PATHS FOR INNOVATION AND UPGRADING OF THE EQUIPMENT MANUFACTURING INDUSTRY

3.1 Technological Upgrading and Innovation-Driven Development

Technological innovation is the core driving force for promoting the high-quality development of the equipment manufacturing industry and the key for enterprises to cope with fierce market competition and achieve sustainable development. To improve their own competitiveness, equipment manufacturing enterprises must continuously increase R&D investment in key technologies, especially in independent innovation of core technologies, and must break away from dependence on external technologies. Enterprises can establish technological innovation platforms with universities and research institutes to form an effective industry-university-research integration mechanism, jointly carry out technological research, promote technological breakthroughs, and form independent R&D capabilities for core technologies. At the same time, the government should also provide sufficient support to equipment manufacturing enterprises at the policy level, set up special funds, encourage enterprises to carry out technological innovation and research in cutting-edge fields, and promote the overall technological level of China's equipment manufacturing industry. In addition, the government can help enterprises obtain more resources in the process of technological innovation by formulating industrial innovation policies, create a good environment for enterprise innovation, and further enhance the international competitiveness of the industry.

3.2 Intelligent Manufacturing and Digital Transformation

Intelligent manufacturing has become an inevitable trend for the future development of the equipment manufacturing industry. By integrating new-generation information technologies such as big data, the Internet of Things, artificial intelligence, and cloud computing into the production process, enterprises can achieve production automation, intelligentization, and informatization, significantly improving production efficiency, shortening production cycles, and enhancing product quality. Intelligent manufacturing not only helps enterprises reduce production costs but also optimizes production processes through real-time monitoring and data analysis, enabling enterprises to have stronger market responsiveness. Equipment manufacturing enterprises should accelerate digital transformation, build intelligent workshops and factories, form a data-driven production management system, and comprehensively transform and upgrade from traditional manufacturing to intelligent manufacturing. In addition, the implementation of intelligent manufacturing will also change traditional workflows, enhance the overall

innovation capability and resource utilization efficiency of enterprises, and bring greater long-term competitive advantages to enterprises.

3.3 Green Manufacturing and Sustainable Development

Against the backdrop of increasingly severe global environmental issues, green manufacturing has become an important direction for the future development of the equipment manufacturing industry. Green manufacturing aims to reduce resource consumption and environmental pollution during the production process, achieving coordinated development between enterprises and the environment. Enterprises should introduce more efficient clean production technologies in the production process to reduce emissions of pollutants such as waste gas, wastewater, and solid waste, and improve energy utilization efficiency. By introducing a circular economy model, enterprises can reduce raw material consumption through resource recycling and utilization, minimize dependence on natural resources, and promote the green transformation of the equipment manufacturing industry. In addition, the government should formulate strict environmental protection regulations and provide policy support to encourage enterprises to adopt green manufacturing technologies, promoting the entire industry to move towards sustainable development. Through the application of green manufacturing, enterprises can not only improve their environmental image but also help enhance market competitiveness and achieve longer-term development goals.

4. CONSTRUCTION AND COLLABORATIVE DEVELOPMENT OF INNOVATION ECOSYSTEM

4.1 Construction of Innovation Ecosystem

An innovation ecosystem is a virtuous cycle system that supports technological innovation and industrial development through close cooperation among enterprises, research institutions, the government, and various social parties. For the equipment manufacturing industry, constructing this system is crucial, directly affecting the industry's innovation capability and competitiveness. Enterprises should actively participate in the construction of the innovation ecosystem, conduct in-depth cooperation with universities and research institutions, promote technological innovation and the transformation of scientific research achievements, and enhance core technology R&D capabilities. At the same time, the government should provide a policy environment, financial support, and tax incentives in this process to encourage enterprises to carry out more innovative activities. Through cooperation among all parties, equipment manufacturing enterprises can achieve innovation-driven development and enhance market competitiveness and adaptability.

4.2 Collaborative Innovation in the Industrial Chain

The equipment manufacturing industry has a long industrial chain, covering multiple links including R&D, production, sales, and services. To achieve innovation and improvement, it is necessary to promote collaborative innovation across all links of the industrial chain. Enterprises should strengthen collaboration with upstream and downstream partners to drive technological innovation and optimization of production processes. In this process, resource sharing can not only improve production efficiency but also enhance the technological content and added value of products through cooperation, thereby strengthening market competitiveness. In addition, enterprises should explore cross-industry cooperation to promote cross-border technology integration and create new market opportunities and development potential. Through collaborative innovation, equipment manufacturing enterprises can break down industrial barriers and achieve broader innovative cooperation.

4.3 International Cooperation and Competitiveness Enhancement

In the context of globalization, the innovation and improvement of the equipment manufacturing industry cannot be separated from international cooperation. Enterprises should actively participate in international technological cooperation and market competition, and improve their technical level by introducing advanced technologies and management experience. At the same time, enterprises should attach importance to independent brand building, promote independent technologies and products to enter the international market, and enhance their influence in the global market. Through technological innovation and upgrading, enterprises can increase product added value, expand international market share, and achieve global development. In global market competition, enterprises should continuously strengthen independent innovation, expand international cooperation networks, and enhance international competitiveness.

5. POLICY RECOMMENDATIONS FOR INNOVATION AND IMPROVEMENT IN THE EQUIPMENT MANUFACTURING INDUSTRY

The innovation and improvement of the equipment manufacturing industry not only rely on the efforts of enterprises themselves but also require strong government support and policy guidance. To create a suitable innovation environment, the government should formulate scientific and reasonable industrial policies to help the equipment manufacturing industry make breakthroughs in technological innovation and green development. First, the government should increase financial support for technological R&D in the equipment manufacturing industry, establish special funds or innovation funds, encourage enterprises to increase R&D investment in key technological fields, and promote independent technological innovation. Second, the government should vigorously promote industry-university-research cooperation, facilitate in-depth integration of research institutions, universities, and enterprises, help quickly transform scientific research achievements into productive forces, and improve the overall technological innovation level of the industry. At the same time, relevant incentive mechanisms should be improved to attract more outstanding talents to participate in the innovation of the equipment manufacturing industry. Finally, the government should strengthen supervision over the green development of the equipment manufacturing industry, encourage enterprises to adopt clean production technologies and environmentally friendly materials, implement energy conservation and emission reduction policies, support the application and promotion of sustainable manufacturing technologies, ensure that the industry takes environmental protection into account while achieving economic benefits, and promote the green transformation and sustainable development of the equipment manufacturing industry. Through these policy measures, the equipment manufacturing industry can gain stronger innovation capabilities and push China's equipment manufacturing industry to a higher level.

6. CONCLUSION

From the perspective of new productive forces, the innovative upgrading of the equipment manufacturing industry is not only an inevitable choice to cope with global market competition but also an important path to achieve sustainable development. Through technological upgrading, intelligent manufacturing, green manufacturing, and the construction of an innovative ecosystem, the equipment manufacturing industry can effectively promote industrial transformation and upgrading while improving production efficiency, thereby achieving high-quality development. However, there are still bottlenecks in the current industry, such as insufficient technological innovation capability, limited resources, and low intelligence level, which hinder further improvement. Therefore, enterprises should not only actively address these challenges but also rely on policy support, strengthen cooperation with universities and research institutions, promote breakthroughs in core technologies, improve intelligent production systems, and actively develop green manufacturing to gain an advantageous position in global economic competition. In the future, equipment manufacturing enterprises should optimize production models based on continuous innovation, promote the dual drive of efficient production and environmental development, and contribute more to China's economic modernization process and the stable development of the global industrial chain.

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