INTERNATIONAL JOURNAL OF MANAGEMENT AND EDUCATION IN HUMAN DEVELOPMENT

International J. of Management & Education in Human Development

ISSN: 2775 - 7765
web link: http://www.ijmehd.com

The Importance of Technological Innovation in Manufacturing Industry

Hongmei Xie

Guangdong Business and Technology University
San Sebastian College-Recoletos, Philippines

Received: 19/06/202 Accepted: 31/07/2023 Published: 19/09/2023

Representative e-Mail:1123640044@qq.com

ABSTRACT

Manufacturing companies have fast product updates and fierce market competition. If the company's own technological innovation ability is weak, it is not conducive to the subsequent improvement of the company's competitiveness. In the complex and ever-changing international situation, simply introducing technology cannot solve the current problems of technological barriers and industrial bottlenecks, and even leads to being "choked". Only by valuing investment in scientific and technological innovation and enhancing independent scientific and technological innovation capabilities can we effectively improve the level of scientific and technological innovation and industrial competitive advantages. The value realized by enterprises can often be evaluated from the perspective of financial performance. Therefore, we can study the relationship between the research and innovation capabilities of the manufacturing industry and enterprise performance. This will help cultivate and form important strategic innovation forces in China's manufacturing industry. In the process of enterprise management, the relationship between technological innovation capability and financial performance is studied, and reasonable planning is made on how to carry out technological innovation activities, the time and amount of investment in technological innovation, in order to provide reference basis for enhancing one's own competitiveness. For investors, while evaluating a company's technological innovation capability, they should also pay attention to the regular changes brought about by technological innovation investment, and make correct judgments about the company's situation; For the government, understanding and studying the relationship between technological innovation capability and financial performance can provide policy support and assistance for IT enterprises' technological research and development, correctly guide IT enterprises to carry out technological research and development activities, and formulate relevant incentive policies, providing a reference basis for driving the development of the manufacturing industry.

Keywords: *Technological Innovation, Manufacturing Industry*

I. INTRODUCTION

Technological innovation is a decisive force in improving national comprehensive strength and international competitiveness, and major countries in the world have elevated their technological innovation strategy to a national strategy. The 14th Five Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Long-Range Goals for 2035 have been officially released. "Among the main goals of social development proposed in the 14th Five Year Plan, the Report on the Work of the Government sets the GDP growth target at more than 6%. According to the requirements of the 14th Five Year Plan that the average annual growth of the whole society's R&D investment is more than 7%, which means that the growth of R&D investment is not less than the GDP growth.

As an important basic industry of the national economy, the development level of manufacturing determines the comprehensive competitiveness of the entire industrial chain. How to improve the level of technological innovation in the manufacturing industry has always been a concern for us. In recent years, the scale of China's manufacturing industry has steadily increased. In 2021, the added value of the manufacturing industry accounted for 27.4% of GDP, an increase of 1.2 percentage points year-on-year, accounting for nearly one-third of the global manufacturing industry. However, the current problems of low added value of manufactured products, limited ownership of independent brands, and low product quality in China are quite obvious. In the global manufacturing industry, there is a situation of being large but not strong, comprehensive but not excellent, and insufficient innovation ability.

Science and technology are the primary productive forces. The ability to innovate in science and technology plays an important role in promoting the development of productivity. Only through continuous technological innovation can enterprises adapt to new opportunities in the new era, and only through technological innovation can

enterprises undergo sudden changes. Therefore, strengthening key core technology research, improving independent innovation capabilities, and optimizing the innovation development environment are the paths to enhance the competitiveness of the manufacturing industry.

II. METHODOLOGY

This project adopts literature review, mathematical statistics, empirical analysis methods and procedures for research. According to scholars both domestically and internationally, the best way to evaluate technological innovation capabilities is through qualitative and quantitative analysis. Based on this principle, data collection and analysis methods are necessary. Therefore, this project intends to use the following methods throughout the entire research process for research.

By collecting relevant theoretical literature on the impact and utility of technological innovation on the development of the manufacturing industry, literature analysis is conducted on the perspectives of technological innovation on enterprises and industries. Using mathematical statistics to analyze the annual report data, this paper analyzes the status quo of the manufacturing industry's scientific and technological innovation capability indicators. Using correlation research methods, this paper examines the relationship between the intensity of R&D investment, the number of patent applications and the enterprise performance of the manufacturing industry, and demonstrates the role of scientific and technological innovation capability in the manufacturing industry.

III. DISCUSSION

With the increasingly widespread application of technological innovation in the manufacturing industry, the core of manufacturing lies in innovation, including artificial intelligence, big data, machine learning, the Internet of Things, and so on. These new technologies can help decision-making, improve production efficiency, optimize manufacturing processes, reduce costs, and provide higher quality products by analyzing data.

Further empowering the manufacturing industry with technological innovation, and collaborating on core technology research, innovation system improvement, and innovation ecosystem construction, can play a better role for manufacturing enterprises and industries.

(1) Establish a manufacturing technology innovation service system, coordinate the spatial development planning model of the technology service industry, and fully leverage the value-added role of service industry technology innovation.

(2) Promote high-quality development of the manufacturing industry and economic transformation and upgrading. Studying the role of technology service industry clusters in manufacturing innovation can enhance China's manufacturing industry's technological innovation capability, technological factor support, product technology content, industrial added value, and global value chain division of labor position, make up for the shortcomings of manufacturing innovation, effectively respond to developed countries' technological decoupling and supply chain adjustment layout, reduce dependence on traditional production factors and constraints on low-end production factors, and weaken the adverse challenges brought by the pressure of rising factor costs, Improve the technological level and comprehensive competitiveness of manufacturing enterprises. Technological innovation is the primary driving force for economic transformation and upgrading. Therefore, it is conducive to achieving high-quality development and transformation and upgrading of China's manufacturing industry, accelerating the transformation of old and new driving forces, and promoting economic development towards the mid to high end.

(3) Build a collaborative innovation model and create a good innovation ecological environment. The technology service industry can effectively communicate and match supply and demand information between innovation suppliers and innovation demanders, promote enterprises to build R&D strategic alliances and innovation cooperation platforms, create regional innovation service systems, and promote collaborative innovation and cross-border cooperation among enterprises, universities, research institutions, governments, financial institutions, and the public. The technology service industry can stimulate the innovation vitality of multiple entities, obtain complementary and heterogeneous innovation results, promote the manufacturing industry from closed innovation to open innovation, and from single innovation to collaborative innovation, forming a large-scale and collaborative network innovation framework and system across industries, fields, spaces, and departments, which is more conducive to building a smooth flow, harmonious coexistence, and efficient allocation of innovation elements An open industrial innovation ecosystem with synergistic effects.

(4) Accelerate the development of the technology factor market. The technology service industry is an important industry that enlivens the technology market and technological elements. By studying the important driving role of technology service industry agglomeration in manufacturing technology innovation, we can accelerate the cultivation and development of technology transfer institutions, improve the professional service capabilities of technology transfer, enhance technology transformation capabilities, improve the technical talent training system, accelerate the development of technology factor markets, make up for the shortcomings of other production factors, promote the reform of the technology system, and better construct a sound market-oriented allocation system and mechanism for factors.

From the perspective of the factors influencing the high-quality development of manufacturing enterprises, the impact of high-quality development is jointly influenced by internal factor supply quality and external environmental factors. The quality of internal factor supply mainly depends on technological innovation and human capital, which are

stable and promoting factors; The external environmental factors mainly rely on government subsidies and opening up to the outside world, but there are both promoting and inhibiting effects on the high-quality development of manufacturing enterprises, and the overall effectiveness has not been determined. At present, the distribution of high-quality development levels among manufacturing enterprises is uneven, and the overall advantages are insufficient. Only a small number of enterprises have significantly higher scores and are in a leading position.

From the perspective of the entire industry, human capital and technological innovation, among the internal influencing factors, are the core driving forces for the high-quality development of manufacturing enterprises, injecting inexhaustible power into "high-quality improvement". In contrast, external environmental factors have a relatively weak effect on the high-quality development of enterprises, exhibiting both positive and negative effects; From the perspective of industry specific technological level analysis, high-tech manufacturing enterprises mainly rely on human capital and technological innovation to improve their development quality. Low and medium-sized manufacturing enterprises need more external factors to promote their development quality, and the impact of foreign investment support is obvious. Fundamentally speaking, only by continuously strengthening the quality of internal factor supply and not overly relying on the empowerment of the external environment can high-quality development be achieved.

From the perspective of heterogeneity, there is a single threshold relationship between human capital and high-quality development of enterprises, as well as a dual threshold relationship between regional economic development level and regional trade openness. The impact of high government subsidy intensity on the high-quality development of enterprises is first suppressed and then promoted, while low government subsidy intensity is always suppressed.

Overall, technological innovation has brought certain benefits to the high-quality development of manufacturing enterprises, but the influencing factors that affect the high-quality development of manufacturing enterprises have complex directions of action, and the degree of action of each factor varies in different time stages, regions, and technological levels of business formats. Therefore, promoting high-quality development is still a profound transformation related to the overall economic and social situation, which is necessary and urgent.

IV. CONCLUSIONS

Advanced manufacturing, as the foundation of the national economy, has become an important engine for promoting national economic development. In the context of globalization and informatization, promoting technological innovation, the transformation and industrialization of research and development achievements is of great significance for enhancing the core competitiveness of the national manufacturing industry and promoting the rapid development of advanced manufacturing. Therefore, we need to further strengthen policy support, improve the innovation ecosystem, cultivate more innovative talents, promote technological innovation and industrial upgrading, and promote high-quality economic development.

REFERENCES

Deng Xiangmei (2020). Research on the Construction of Evaluation Index System for Technological Innovation Capability. Shanxi Agricultural Economy (01), 15-16 Doi: 10.16675/j.cnki.cn14-1065/f.2020.01.007

Gu Junjian (2019). Research on the High Quality Development Effects of China's Manufacturing Industry Based on Element Collaboration (Doctoral Dissertation, Wuhan University of Technology)

Jiang Yan (2022). Research on the Evaluation and Development Path of Technological Innovation Efficiency in Advanced Manufacturing Industry (Master's Thesis, Nanjing University of Posts and Telecommunications)

Li Congxin&Feng Xiaojing (2023). Research on the Impact of Scientific and Technological Innovation on Digital transformation of Manufacturing Industry -- Based on the Spatial Dubin Model. Journal of Jilin Industrial and Commercial University (01), 5-14

Ma Jun (2020). Research on the Upgrading Strategic Path of Equipment Manufacturing Enterprises Driven by Technological Innovation (Doctoral Dissertation, Shenyang University of Technology)

Mohsin M, Taghizadeh-Hesary F, Iqbal N, et al. The role of technological progress and renewable energy deployment in green economic growth[J]. Renewable Energy, 2022, 190: 777-787.

Mohsin M, Taghizadeh-Hesary F, Iqbal N, et al. The role of technological progress and renewable energy deployment in green economic growth[J]. Renewable Energy, 2022, 190: 777-787.

Qian Long and Cai Shukai (2023). Technology Service Industry Agglomeration and Manufacturing Enterprise Technology Innovation. Research Management (04), 67-76

Usman M, Radulescu M. Examining the role of nuclear and renewable energy in reducing carbon footprint: does the role of technological innovation really create some difference[J]. Science of The Total Environment, 2022, 841: 156662.

Zhou Mengyang (2022). Measurement and influencing factors of the high-quality development level of Chinese manufacturing enterprises (Master's thesis, Zhongyuan University of Technology)