

RESEARCH ON THE DYNAMIC MECHANISM AND POLICY OF INDEPENDENT INNOVATION OF CHINESE MANUFACTURING ENTERPRISES

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ABSTRACT

Independent innovation is essential to the competitiveness and sustainable development of manufacturing enterprises. Based on the research review of independent innovation in manufacturing at home and abroad, this paper analyzes the industrial basis, policy conditions and innovation driving factors for the implementation of independent innovation by manufacturing enterprises, and clarifies the development conditions, ways and motivation mechanism of independent innovation development. It is expected to provide a theoretical reference for improving the independent innovation capability and level of manufacturing enterprises.

Keywords: Manufacturing enterprises, Innovation, Motivation mechanism, Policy suggestion

1 Introduction

Innovation is the first driving force for development (Huang, et al., 2021). As China moves from high-speed development to high-quality development, manufacturing enterprises with independent innovation as the mainstay have become the backbone of China's economic development (Yu and Hu, 2021). A large number of theoretical studies have confirmed that independent innovation can significantly enhance the competitiveness of enterprises (Zhao, et al., 2021; Cheng and Tang, 2021). Regarding the practice and exploration of independent innovation, a high-tech enterprise in Ningbo, Zhejiang Province, SJ Intelligent Company always puts independent innovation and technology research and development in the first place, pays attention to the cultivation of core technology, adheres to the path of technological innovation and specialization. It is close to the international advanced level, and its production and sales are in the forefront of the industry in China. Hefei, Anhui Province, adheres to the core position of innovation, accelerates the construction of an innovation system of "four chains integration" of

innovation chain, industrial chain, talent chain, and capital chain, promotes industrial fission with innovation fusion, and drives economic qualitative change with industrial fission, and economic development continues to leapfrog and surpass. With the development of China's artificial intelligence, blockchain, 5G, quantum communication and other technologies, technological innovation will also become an enabler to promote the high-quality development of China's economy and help the digital transformation of the industry in the future (Liu, et al., 2021).

However, China's economy is currently undergoing a slowdown in growth and transformation and upgrading, and the competitive advantage of my country's manufacturing industry is gradually losing (Guo and Tian, 2021). How to gather efforts to build manufacturing advantages and accelerate the transformation of Chinese manufacturing enterprises from "world foundries" to "world innovation factories". Independent innovation has become an important driving force for manufacturing enterprises to gain competitive advantages (Yu and Huang, 2021). Therefore, clarifying the driving factors of independent innovation of enterprises is the focus of attention in the practical and theoretical circles

2 Literature review of foreign research on driving factors of independent innovation

Foreign innovation systems and market systems have tended to improve, and the research and practice on independent innovation of manufacturing enterprises have formed a relatively mature theoretical system and research framework, and have achieved rich research results. Foreign related research mainly focuses on the analysis of driving factors of independent innovation in manufacturing enterprises, and the related research on independent innovation and corporate performance.

2.1 Analysis of the driving force of independent innovation of enterprises.

David, et al. (2005) studied the relationship between corporate innovation and its six potential determinants based on data from 71 companies in Singapore. The results show that there is a positive relationship between organizational innovation and independent innovation-driven decentralized structure. Moez, et al.(2014) analyzed the determinants of innovation in four southern Mediterranean countries (Egypt, Jordan, Syria, and Turkey), and found that their common feature is that knowledge creation and learning play an important role in innovation driving and innovation hindrance. Claudio, et al. (2017) pointed out that government R&D subsidies provide necessary and timely financial support. Financial support such as interest subsidies and listing subsidies can reduce the financing costs of enterprises, effectively alleviate the pressure and risks of innovation funds, and improve the innovation initiative of enterprises. And then promote the improvement of the level of independent innovation of enterprises. Davis

and Bendickson (2018) explored the antecedent variables of innovation based on the perspective of resources, and found that dynamic capabilities partially support the innovation of small and large companies. Strategic planning is valuable for small business innovation, while organizational structure is important for large business innovation. positive effects.

2.2 Research on the relationship between independent innovation and corporate competitiveness

Cohn (2013) constructed a comprehensive enterprise innovation management framework (v-CIM) and a targeted competitiveness assessment tool (i-TCA), that is, business leaders use the framework and related tools correctly to enable innovation managers to determine the priorities of competitive development, adopt appropriate innovation strategies to achieve corporate goals, and help create and maintain a consistent innovation culture and business goals. Adrian and F. (2015) explored the link between innovation and competitiveness based on econometric methods, and considered the performance differences in innovation and competitiveness of different countries, and found that policies that stimulate innovation by increasing the intensity of R&D funding are comparable to other countries. In contrast, increasing the EU's average R&D expenditure to 3% of GDP can significantly improve the competitiveness of European economies. Hermundsdottir and Aspelund(2021) reviewed 100 literatures on the relationship between sustainable innovation and competitiveness to investigate whether and under what circumstances there is a positive correlation between sustainable innovation and corporate competitiveness. The conclusion of the study is that most studies have found a positive correlation between sustainable innovation and competitiveness, that is, sustainable innovation can create a win-win situation for companies. In addition, it is necessary to consider the influence of factors such as the country, market, industry, and company level on the relationship between sustainable innovation and competition.

3 Literature review of domestic on driving factors of independent innovation

The domestic academic and practical researches on independent innovation of enterprises mainly focus on the necessity of independent innovation, the comparison of independent innovation at home and abroad, and the analysis of internal and external driving factors:

3.1 Research on the necessity of independent innovation for manufacturing enterprises

Yang, et al.(2020) believes that the fundamental problem restricting the independent innovation of Chinese enterprises lies in the lack of motivation, especially the small and medium-sized enterprises at the low end of the value chain, who have participated in market competition at low

cost and low prices for a long time, and lack of innovation motivation. Cui. et al.(2021) pointed out that at present, Chinese enterprises are facing transformation and upgrading, and innovation has become an important driving force for Chinese enterprises to gain competitive advantage. Tu and Gong (2021) believes that under the background of the deep adjustment of the global economy, the international division of labor has undergone major changes, and my country's industries are moving toward the middle and high end of the global value chain, and several world-class advanced manufacturing clusters have been cultivated.

3.2 Comparative research on independent innovation of manufacturing enterprises at home and abroad

Zhao and Xu (2002) classified independent innovation into the technological capabilities of enterprises, and believed that the basic trajectory of the development of technological capabilities of enterprises in developing countries should be from imitation ability to creative imitation ability to independent innovation ability. Xu and Wang (2021) pointed out that in developed countries, the innovation system and market system have become more perfect, innovation should be independent innovation, and enterprises should also be the main body of innovation. Huang, et al. (2021) pointed out that most foreign scholars believe that innovation is independent, but the concept of "independent innovation" was born due to my country's national conditions and background.

3.3 Research on the driving factors of independent innovation of manufacturing enterprises

Domestic research on independent innovation is relatively early (Huang, et al., 2021), mainly focus on the promotion of enterprise independent innovation by enterprise human capital, innovation model, entrepreneurship, government policy, technology introduction, etc.. In recent years(Wu and Li,2020; Wang and Yu,2020; He, et al.,2021; Jiang and Feng,2021; Cheng and Tang,2021). Yang, et al. (2020) has analyzed the entrepreneurial spirit as an important internal factor that drives the independent innovation of local enterprises based on the framework of multiple dynamics of independent innovation, and can combine market monopoly power when the company's R&D investment is not high or has not been listed. The regional environment plays a role to drive independent innovation of enterprises; among the external factors that promote the independent innovation of local enterprises, the entry of industry foreign capital and market monopoly have an alternative relationship under certain circumstances. Cui, et al. (2021) analyzed the role of corporate exports in promoting innovation, and pointed out that on the whole, corporate exports can significantly increase corporate innovation input and innovation output, but not every industry export can promote corporate innovation. Yu and Huang (2021)

analyzed the internal mechanism of innovation policy combination on the independent innovation and sustainable development of enterprises from the policy level. The total innovation policy combination has a significant positive effect on the independent innovation of enterprises, perfecting and coordinating various innovation policies and giving play to The innovation policy has important practical and policy significance for the guidance and leverage of enterprises' independent innovation. Zheng, et al. (2021) uses the Growth Enterprise Market to obtain a sample of cross-year start-ups. Power entrepreneurs have a significant driving effect on the willingness of start-ups to innovate. This driving effect is mainly derived from the power of entrepreneurs' organization and prestige power. Chu, et al. (2021) explored the heterogeneous impact of the minimum wage on the innovation of different types of enterprises, and believes that raising the minimum wage will reduce the innovation of non-importing companies, but it will increase the innovation of importing companies.

4 Policy analysis of independent innovation of my country's manufacturing enterprises

First, clarify the dominant position of manufacturing enterprises in the development of independent innovation, continuously improve the important role of manufacturing enterprises in the global industrial chain, and form a technological innovation with enterprises as the main body, market demand-oriented, and in-depth integration of production, education, research and application. For example, in terms of supporting technology research and development, we encourage upstream and downstream companies to jointly build a national industrial innovation research platform and build a technology sharing platform, and encourage multiple subjects to participate in innovative technology research. Secondly, give full play to the government's important role in improving the enterprise's independent innovation service system. Specifically, the government's industrial policy tilts enterprise innovation resources, actively builds innovation resource platforms for enterprises, promotes innovation and entrepreneurship organization reforms, and improves the innovation system. Finally, promote and accelerate the globalization of independent innovation, adhere to the global strategic perspective to promote independent innovation of enterprises, actively integrate into global technological innovation, and improve the country's overall core competitiveness.

5 Conclusion

Manufacturing enterprises are the main force and the most fundamental support for China's economic transformation. The key to consolidating efforts to build manufacturing advantages and building an independent and controllable modern industrial system lies in the drive of enterprise innovation to gather high-quality development momentum. Insist on innovation-driven

and lead the new economic development, the focus needs to be breakthroughs from innovation-driven elements, build an independent innovation ecosystem led by the government, market demand-oriented, and enterprises and scientific research institutions as the main body, and enhance the overall independent innovation capability of my country's manufacturing industry. Create vitality, so as to truly realize the innovation-driven new development of manufacturing enterprises.

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