

Research on the Impact of Manufacturing Industry on Foreign Investment and Innovation Model in Wuhan

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Abstract-Manufacturing industry has always been a very important industry. The development of manufacturing industry has an important impact on foreign investment and innovation mode in Wuhan. This paper mainly studies the impact of manufacturing industry on foreign investment and innovation mode in Wuhan, and puts forward relevant suggestions. We hope that it can provide decision-making reference for relevant departments in China.

Keyword-manufacturing industry, foreign investment, innovation model

I. INTRODUCTION

The history of modern industrial development of Made-in-China is also a glorious rise history of Made-in-Hubei. The first molten steel in China was produced in Hanyang Iron Works, which represented that the manufacture of Hubei was in the leading level in the whole country at that time. Hanyang Iron Works laid an important position in the heavy industry of China as a whole. In 2019, the Wuhan Municipal Committee and the municipal government attach great importance to the reform, adjustment and development of industry, firmly implement the strategy of "industrial prosperity", persist in exploring and practicing the new road of industrialization, and Wuhan's manufacturing industry has entered a benign development track, promoting the rapid development of open innovation capability of Wuhan's manufacturing industry. Wuhan Municipal Government attaches great importance to the development of manufacturing industry, especially to the revitalization of the real economy. At the same time, it regards attracting investment as the No. 1 project of Wuhan. It actively carries out the work of attracting investment and attracting foreign investment, and optimizes and upgrades the innovation mode of manufacturing industry. With the rapid development of manufacturing industry, the related research in this field is also in-depth, which promotes the theoretical research and practice of manufacturing industry, foreign investment and open innovation in Wuhan to a new height, and has an increasingly important impact on the social and economic development of Wuhan.

The innovation of manufacturing industry in Wuhan will become one of the core contents of building an open

independent innovation strategy. The improvement of innovation ability of manufacturing industry has been highly valued by all levels of government and business people in the city. Wuhan will uphold the fine tradition of our large manufacturing province, strive to become a strong manufacturing city, and play an important role in promoting and demonstrating economic development. The transformation and upgrading of manufacturing industry can make an important contribution to the sustained, healthy and rapid development of Hubei's economy. At present, the current low-cost, large-scale manufacturing model in Wuhan should be transformed and upgraded to an innovative manufacturing model, especially gradually to a manufacturing model with independent innovation ability. Therefore, Wuhan has put forward many plans and measures to promote independent innovation in various fields, especially in the manufacturing industry, because the manufacturing industry has the characteristics of high degree of industrial relevance, strong ability to absorb employment, technology capital and talent-intensive. Manufacturing industry can provide technical support for all sectors of Wuhan's economy. It is an important guarantee for industrial upgrading and technological progress in all sectors and a concentrated reflection of the comprehensive strength of the province.

The obvious characteristic of manufacturing industry in Wuhan is that it is "big but not strong", and its independent innovation ability is relatively weak. Especially in the period of international financial crisis, the problem of insufficient independent innovation ability of equipment manufacturing industry in China is more prominent, and it has a great restrictive effect on the competitiveness of industry. In 2006, the State Council issued "Some Opinions of the State Council on Accelerating the Revitalization of Equipment Manufacturing Industry", and then in 2009 formulated the "Planning for the Adjustment and Revitalization of Equipment Manufacturing Industry", in which special emphasis was placed on how to accelerate the adjustment of manufacturing industry structure, improve the ability of independent innovation, enhance the level of autonomy and promote industrial upgrading. In the 21st century, with the development of economy and the continuous improvement of the competitiveness of

industries, in the new pattern of industrial development, Wuhan needs to maintain high-speed economic growth and industrial restructuring, and actively attract foreign investment to promote open-ended mode innovation.

II. LITERATURE REVIEW

In terms of domestic research status, Chinese scholars have done a lot of research in the field of open innovation and its innovation mode in manufacturing industry. Chen Yufen and Chen Jin (2008) believe that open innovation mode is also an innovation realized through the integration of internal and external innovation resources, especially the enterprise's own technology can achieve the goal of commercialization through external channels; Wang Yong (2010) believes that open innovation mode is also an innovation realized through the integration of internal and external innovation resources. In the process of open innovation, the possession of intellectual property rights in manufacturing industry is particularly important. In the process of open innovation, enterprises break the original independent mode of intellectual property rights, and seek the combination of intellectual property rights in innovation. Chen Yantai et al. (2015) analyzed the relationship between organizational open innovation culture support, market orientation and different innovation levels and innovation performance. Department; You Daming, Sun Jie (2016) Open Integrated Innovation is the realistic way to enhance the innovation ability of Chinese enterprises at present. An evaluation system of enterprise open integrated innovation ability is constructed by using ANP method, a comprehensive evaluation model of open integrated innovation is established by using linear weighting function method, and the procedure of monitoring and evaluation is put forward. Open innovation and independent innovation are closely related. Open innovation and independent innovation complement each other. Open innovation can transform external technology into enterprise's own ability through independent innovation, and it will produce more independent intellectual property products. Subsequently, more domestic scholars have conducted in-depth research and analysis in this regard.

In terms of foreign research, the theory of open innovation in manufacturing industry was not put forward in a hurry, but in conformity with economic development and technological progress. It was put forward by Schumpeter, the earliest well-known economist, in his book *Economic Theory* in the early period of his life, "Analyzing economic problems from the point of view of evolutionism", and then put forward the theory of innovation as early as the 1930s. The research of scholars has gradually evolved. Open innovation is the trend of technological innovation in the era of knowledge economy. Henry W. Chesbrough, professor of Harvard Business School, put forward the concept of "open innovation" in May 2003. According to Mildred A. Hastbacka (1999), the practice model of open innovation includes four parts: strategy, resources, process and organization. The latter three are at the bottom of the model, which are the

foundation of strategy and play a supporting role in strategy. The four construct a pyramid model together and put forward the key 7C factors of open innovation; Chesbrough (2003) believes that the open innovation model will be Internal and external path to achieve commercialization; Robert Kirschbaum (2005) through in-depth study of DSM company, he proposed that open innovation activities should be an endogenous company, in the form of innovation culture, to achieve the results of open innovation activities; Gassmann (2012) considered that different innovation modes have important role in promoting industrial innovation. Liehtenthaler (2015) used a questionnaire survey, the main subjects of which were 154 large and medium-sized European enterprises, and analyzed the situation of open innovation from a systematic perspective. Liehtenthaler & Ernst (2016) believed that enterprises of different sizes had an important impact on the application of open innovation, and in order to facilitate the search for innovation, Sung should choose the mode of open innovation. Joo (2017) and others take Korean SMEs as the research object, and find that enterprise network can effectively promote SMEs' open innovation. Compared with large enterprises' open innovation to promote R&D, SMEs pay more attention to utilizing the commercialized way of open innovation.

III. THE SIGNIFICANCE OF DEVELOPING MANUFACTURING INDUSTRY TO ATTRACT FOREIGN INVESTMENT IN WUHAN

It is particularly important to revitalize and attract the real manufacturing industry. In the field of open innovation mode of manufacturing industry, Schumpeter, an American economist, first put forward the innovation theory in his book *Economic Development Theory*. The research on innovation theory is mainly carried out from two aspects: one is from the perspective of technology, and the other is from the Perspective of technology, focusing on the transformation and promotion of technology. The other branch of technological innovation is the research from the perspective of institution, which is the branch of institutional innovation centered on institutional change. Since the 21st century, the innovation process has evolved from a simple linear model to a gradually complex interaction model. The original innovation model can no longer adapt to the enterprise technology competition strategy, information technology and globalization under the knowledge economy. Therefore, the open innovation theory has been put forward. Chesbrough put forward the concept of open innovation, explained the connotation, mode and mechanism of open independent innovation, and constructed an open independent innovation analysis framework to further enrich the research on innovation. In the context of the "one belt and one way" strategy, through the reform and improvement of the system and mechanism, we should create an effective way, mechanism and theory to attract international industrial transfer, and we can create an open mode of creation in the field of solid manufacturing to promote the rapid development of Wuhan's manufacturing industry and actively attract

foreign industrial investment.

Manufacturing enterprises are regarded as the dissipation system of exchanging energy and material with the outside world. Every enterprise does not exist in isolation, but needs to constantly exchange resources, energy and information with the outside world (other enterprises, universities, research institutions, etc.). Then enterprise innovation is also a process of constant change of dissipative structure. In order to maintain balance and continuous development, only enterprises obtain external innovative factors greater than internal dissipative innovative factors, so that enterprises can achieve innovation, innovate advanced ideas, technologies and products, and at the same time enterprises will continue to grow and develop. Therefore, enterprises should change their original closed concept to open concept, develop with open innovation concept, fully exchange external innovation elements, and make them fully integrate with enterprise innovation resources. As the basic industry of national economy and national defense construction, manufacturing industry is the main symbol of national strength and international competitiveness, and has extremely important strategic and practical significance.

Revitalizing the manufacturing industry in Wuhan is a strategic measure to realize the comprehensive, coordinated and sustainable development of the city's economy. Manufacturing industry is the key to build a strong city with innovative economy. To enhance the ability of independent innovation, manufacturing industry should take the lead. Therefore, it is urgent to improve its ability of independent innovation. The original closed innovation idea is increasingly challenged. This requires manufacturing enterprises to use the open innovation mode to build a strong innovation platform, form an innovation network and improve their innovation. If manufacturing enterprises want to continuously obtain a large number of external sources of innovation, they need to carry out open innovation, and effectively integrate with their own internal R&D, and have an open concept of independent innovation. Therefore, it is of great practical significance and practical value to deeply analyze the development of manufacturing industry in Wuhan and its impact on foreign investment and open independent innovation and to put forward corresponding policy recommendations.

IV. MEASURES TO DEVELOP MANUFACTURING INDUSTRY IN WUHAN TO ATTRACT FOREIGN INVESTMENT AND OPTIMIZE INNOVATION MODEL

A. *Wuhan Vigorously Develops Manufacturing Industry and Actively Utilizes Foreign Investment*

We are increasingly aware of the importance of trade system construction in attracting foreign investment. Wuhan needs to optimize the local trade environment so as to absorb foreign investment and capital and increase the economic strength of local governments. The government departments in Wuhan must attach importance to the system construction, break down all kinds of barriers that

hinder the economic development, actively attract foreign investment and financing in science and technology industry, promote the upgrading of industrial structure and promote the development of local economy through the improvement of the system.

B. *Exerting the Promoting Effect of Foreign Manufacturing Industry Investment on Wuhan Institutional Construction*

Since the reform and opening up, China has made great achievements, and has become one of the world's major trading powers. The sources of foreign investment in China are different, and there are differences in regional investment in China. We must find out the reasons for the differences in the system, so as to rationally design the system and promote the construction of the trade system. Wuhan needs to improve the investment environment, make better use of foreign investment, and prevent the damage to the ecological environment caused by foreign pollution. The scientific and technological industry should be chosen reasonably in order to attract foreign investment in the sunrise scientific and technological industry and promote the sound development of China's economy.

C. *Wuhan Needs to Optimize the Innovation Model of Manufacturing Industry and Promote Local Economic Growth*

To strengthen the construction of foreign investment system and optimize the innovative mode of manufacturing industry in Wuhan can attract foreign investment. In policy-making, we need to find better measures to optimize the trade system to attract foreign investment in manufacturing industry, give full play to each other's strengths and advantages, and promote each other, so that the coordinated development of the two can better promote China's economic growth. Wuhan needs to actively formulate effective measures to promote the development of local economy.

D. *Wuhan Needs to Optimize the Institutional Environment to Promote the Development of Manufacturing Industry and Attract Foreign Investment*

Wuhan should actively optimize the institutional environment construction, promote the development of manufacturing industry and attract foreign investment. A good system can absorb foreign investment and capital and increase the growth of local economy. Local governments must attach importance to system construction, break down all kinds of barriers hindering economic development, actively attract foreign investment and financing in science and technology industry through system improvement, promote the upgrading of industrial structure, and promote the development of local economy. We must find out the reasons for the differences in the system, so as to design the system reasonably, promote the construction of investment and trade system, make better use of foreign investment, and prevent the damage to the ecological environment caused by the entry of foreign pollution. We must make reasonable choices and choices of foreign investment

industries in order to attract foreign investment in sunrise industries and promote the healthy development of local economy. In formulating policies, Wuhan needs to find better measures to promote the development of manufacturing industry, while actively attracting foreign investment in manufacturing industry, giving full play to each other's strengths and advantages, so that the coordinated development of the two can better promote the growth of Wuhan's economy.

V. CONCLUSION

Wuhan manufacturing enterprises should make full use of the open innovation theory. Choose the appropriate open innovation mode to promote the innovation and development of manufacturing industry, and realize the effective allocation of resources and the promotion of economic benefits. Manufacturing enterprises should make use of the open innovation mode to improve their innovation ability, pay more attention to the innovation density of enterprises, the investment of innovation funds and the relevance of innovation, and use the open innovation to improve the comprehensive economic strength of manufacturing enterprises.

Wuhan manufacturing enterprises should adopt an open innovation mode combining internal and external innovation resources. Wuhan should also effectively integrate external technology with independent R&D, increase investment in independent R&D and digestion, absorb and re-innovation, realize the integration of technology introduction, digestion, absorption and re-innovation, supplement and promote the use of imported technology as much as possible to enhance independent R&D capability. The effective integration of external technology sources and independent R&D is an effective way to rapidly enhance the technological innovation capability of Wuhan manufacturing industry.

REFERENCE

- [1] Xiaoping Li et al. Empirical analysis of British enterprises'direct investment in Wuhan [J]. Journal of Huazhong University of Science and Technology, 2002 (1).
- [2] Yingbin. An analysis of the present situation of foreign-invested manufacturing industry in Wuhan [J]. Journal of Zhongnan University of Finance, Economics and Law, 2005 (2).
- [3] Yinchun Gong. Advantages and Countermeasures of Wuhan becoming a modern manufacturing center in China [J]. Journal of Wuhan University of Technology (Social Science Edition), 2003 (12).
- [4] Qiongfang Yan, Jianguo Wei. An Empirical Study on the Utilization of Foreign Capital in Wuhan [J]. Wuhan Finance, 2016 (01).
- [5] Xiaojun Wang. Economic Development and Foreign Investment Attraction in Midwest China: Policy Orientation and Effectiveness Analysis [J]. Contemporary Economic Science, 2017 (1).