

# ***Research on the Promotion Path of Innovation Catalytic Ability of Liaoning Equipment Manufacturing Enterprises***

**Hui Sun, Shuaikang Wu\*, Yonghua Han, Ming Liu**

*School of Economics and Management, Liaoning University of Technology, Jinzhou, Liaoning, 121001, China*

*\*corresponding author*

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**Abstract:** With the advent of the information age, Liaoning, as an old industrial base, equipment manufacturing enterprises have always been in a leading position. However, these enterprises have weak independent innovation ability, the utilization rate of existing resources is lower than expected, and the development of enterprises is restrained. This study studies the path to improve the innovation catalytic ability of Liaoning equipment manufacturing enterprises, gives reference value to manufacturing enterprises, and allows enterprises to formulate various policies or take relevant measures according to their own characteristics to improve the innovation ability, so as to maximize the economic benefits of enterprises.

## **1. Introduction**

Since 2012, the Chinese government has placed innovation in the key position of the country's all-round development, advocating firmly grasping the key core technologies in its hands and striving to solve the 'neck sticking' problem. The independent innovation ability of equipment manufacturing enterprises is not only related to their own strength, but also affected by the external environment. Therefore, only by studying the promotion path of catalytic innovation ability can we fundamentally improve the innovation ability of enterprises, so as to build a competitive advantage in the wave of informatization, make full use of various resources and complete the self-reform of enterprises. According to Wang, in today's obvious trend of globalization, 31% of enterprises export less than US \$2 million. The above data shows that most products of Liaoning equipment manufacturing industry flow to the domestic market and less cooperate with foreign markets, which provides a breakthrough for our research on innovation catalytic ability [1]. The above is the basic current situation of Liaoning equipment manufacturing enterprises, which will be analyzed according to specific problems. While Wang and Zhang, through the catalytic reaction principle of "Brussels reactor" [2], skillfully use the chemical equation to explain the catalyst and its operation mechanism affecting innovation easily. However, for this study, the problem to be faced is to adjust

measures to local conditions, not only using the relevant research of the above data, but also studying the factors affecting innovation according to local characteristics.

## **2. Importance of the research on the promotion path of innovation catalytic capacity**

"Made in China 2025" promulgated by the state is a programmatic document for all industrial reform and development. All manufacturing industries should rectify the internal of enterprises according to the instructions of the document. We find that it is somewhat different from an industrial environment advocated by the state, so we need to make further changes according to the situation of local manufacturing industry. The independent innovation ability of enterprises is a complex integration, and the expected effect cannot be achieved by the improvement of a single path. The ability of independent innovation is closely related to the strength of the enterprise itself. For the above-mentioned state-owned enterprises with small scale, there are certain restrictions on the number of employees, such as human resources and fixed assets of machinery and equipment. On the existing basis, study the improvement path of innovation catalytic ability to improve the utilization ability of enterprises to limited resources, At the same time, improving the incentive mechanism of employees in all departments and giving full play to the incentive role, so as to improve the enthusiasm of employees, further improve efficiency, coordinate and organize various internal and external factors and resources of the enterprise, constantly improve and improve the quality and performance of products, firmly grasp customers, improve existing services and further expand the market, which is the key to improve the profits of the enterprise, Thus, it can improve the enthusiasm of employees for innovation and improve the independent innovation ability of enterprises [3]. And find the action mechanism of influencing factors, abandon unfavorable factors, focus on finding the foothold from favourable factors, and analyse the multiple effects of these factors, that is, the research of multiple promotion paths.

## **3. Analysis of external factors**

As an invisible hand, the government plays an obvious role in market intervention and plays a significant role in creating a good innovation atmosphere. The government needs to provide a strong legal guarantee system, good tax policies and innovation encouragement mechanism in order to better promote the independent innovation process of enterprises [4].

### **3.1. Legal safeguards system**

For a strong legal guarantee system, it is an effective means to maintain market order and support knowledge innovation [5]. If there is no legal protection for knowledge and those who rely on plagiarism will enjoy their success, it will hinder the progress of science and the world will stagnate. Now, in order to stimulate technological innovation, countries all over the world are constantly improving the intellectual property system with the patent system as the core, so as to maintain the crystallization of the wisdom of scientific researchers [6]. Therefore, strengthening the legal construction of independent innovation and safeguarding the legitimate achievements of innovation of enterprises can further improve the independent innovation mechanism of enterprises and promote the fundamental guarantee of innovation activities [7]. However, for this external factor, self-improvement can better serve the market and promote economic development, there are the following requirements: keep pace with the times, timely update laws and regulations, have appropriate legal interpretation means for vicious competition of different nature, severely crack down on violations of intellectual property rights, and strengthen the legal interpretation of intellectual property rights, Open up legal ways for knowledge sharing.

### **3.2. Fiscal policy and encouragement mechanism**

The lifeblood of enterprise operation is the capital chain, and the integrity of the capital chain is the necessary foundation for enterprises to become bigger and stronger. Small and medium-sized enterprises are more vulnerable to financial risks [8]. Therefore, even if there is a wave of innovation in the whole market, small and medium-sized enterprises dare not be the first person to eat crabs due to their own strength, so they cannot better seize the opportunity. Innovative measures are less reflected in the whole enterprise, so the overall income is not obvious. Liaoning industrial base is in line with the above characteristics, with a large proportion of small and medium-sized enterprises, and the ability of independent innovation largely depends on the measures of the government, especially the tax policies related to the capital chain. The government's financial incentive support to enterprises is the most direct and effective way of encouragement [9]. At the same time, by appropriately reducing the tax rate of patent income, technicians can be indirectly encouraged to invest in inventions. The government's financial policies and industry-related policies are important strategic directions for enterprises [10].

## **4. Market impact path**

The market is the original driving force of enterprises' independent innovation, and the production activities of all enterprises are mainly based on market demand. Therefore, there are many factors with innovation catalytic ability in the market [11].

### **4.1. The driving force of market cooperation**

Win-win cooperation and establish technology alliance among enterprises. Under the wave of informatization, the situation in the market is changing rapidly [12]. Even if there is fierce competition, the competitive advantage among enterprises lies in the mastery of core technology. In the large environment, knowledge sharing is one of the most acceptable ways [13]. Cooperation among enterprises is one of the most effective ways of knowledge sharing [14]. An enterprise can't be complacent and actively learn more advanced technology from other enterprises [15]. Knowledge sharing can open the barriers of technical blockade. If an enterprise wants to develop for a long time, it needs to establish a technical alliance with its peers to achieve a win-win goal. In the era of information transparency, blocking technology is an act of lifting a stone and hitting yourself in the foot, and win-win cooperation is the king [16].

### **4.2. Market demand has a positive impact on independent innovation. Demand drives production and production brings benefits**

According to the innovation demand pull theory [17], technological innovation is the best means to deal with market changes. When there is a new product demand in the market, enterprises will try their best to realize the production of products. The depreciation loss of inherent assets is large. Enterprises need to consider reforming on the original basis, which directly promotes the technological innovation of enterprises [17]. The innovation of an enterprise is the passive transformation of the whole industry. Therefore, market demand is the wind vane of independent innovation of enterprises. For the equipment manufacturing industry, the market demand promotes the technological change of enterprises, which is inevitable.

## **5. Analysis of internal factors**

The independent innovation ability of enterprises is affected by many internal and external factors, but we should pay more attention to the initiative of enterprises themselves. The good conditions created by the market and the government cannot be fully applied, and enterprises cannot be fully developed.

### **5.1. Realistic limitations of enterprise system**

Due to the limitation of its own scale, the infrastructure development of the enterprise is not very good under the same opportunities outside. At this time, it needs to find another way and choose a better way to achieve the same purpose. The independent innovation system of enterprises needs to be further improved, increase the research and test funds [18], pay attention to the cooperation form of integration of industry, University and research, actively introduce advanced technology and speed up the pace of technological innovation [19]. At the same time, pay attention to the importance of intellectual property rights as a whole, formulate corresponding reward mechanisms, encourage employees to actively participate in various trainings and arm their minds with new technologies. For Liaoning equipment manufacturing enterprises, simple traditional parts processing can no longer meet the development needs of the whole enterprise, and more design products need to be launched. The R&D and launch of products need the cooperation of all departments of the whole enterprise. Enterprises should encourage more R&D departments to establish science and technology parks to enhance the overall R&D power.

### **5.2. Utilization of human resources**

The operation of an enterprise depends on the rational distribution of personnel, and the adaptability of personnel quality and position is equally important. In the information age, the establishment of knowledge network is generated through the accumulation of high-quality personnel. The construction of network is conducive to knowledge sharing and breakthrough of key core technologies of enterprises. For the absorption and management of talents, enterprises also need to make some efforts. Most equipment manufacturing industries mainly recruit labor, and the proportion of R&D personnel has gradually decreased. However, the overall operation of the manufacturing industry not only depends on the output, but also needs to consider the personalized needs of customers. However, when dealing with the personalized needs, the enterprise has insufficient R&D talents and backward infrastructure, so it is difficult to complete the product delivery on time, which will lead to the loss of customers, From a long-term perspective, it is not conducive to the full development of enterprises. The equipment manufacturing industry should attach importance to adopting appropriate ways to attract talents. While obtaining talents, it should also establish an appropriate reward and punishment mechanism. This reward and punishment mechanism should consider the value of time. It should not be proud of scientific research achievements and no longer study modestly. Excellent scientific research achievements should be rewarded in time, but the degree of reward will gradually depreciate with the passage of time, urge scientific researchers to actively participate in the seminars on high-end science and technology in the current manufacturing industry, contribute their creativity, and be good at using the limited resources of the enterprise to create better value. Talents have a positive impact on the development of innovation catalytic ability. Human resources directly promote innovation, but rational use of human resources can get twice the result with half the effort. The rational use of human resources also needs to vary from person to person, adapt to different jobs, recruit talents according to needs and select the best, pay more attention to the practical ability of talents, consider the talents of

vocational colleges, recruit widely, establish a reasonable elimination mechanism, and stimulate the subjective initiative of employees. To do this, there should be no discrimination against academic qualifications. We should pay attention to the development potential of talents, take a long-term view, don't carry personal gratitude and resentment, treat them equally, and don't talk about professional titles, diplomas, past and present, capable, obedient and considerate employment standards and methods [20]. Let knowledge workers fully understand the business situation of the enterprise and participate in decision-making, give more consideration to their opinions on enterprise management affairs, and fully affirm their role. It is also an indirect incentive to scientific research talents. The above description and suggestions are the research on the promotion of talents' catalytic ability to enterprise innovation in equipment manufacturing enterprises.

### **5.3. Internal management mechanism of innovation catalytic ability of Liaoning equipment manufacturing enterprises**

The successful operation of enterprises is inseparable from perfect management mechanism, which must include perfect innovation management. The whole process of enterprise innovation management is dynamic. Innovation management is a flexible management that takes innovation as the center, fully mobilizes the innovation enthusiasm of various departments, rationalizes the organizational structure and operation to the greatest extent, makes full use of various internal and external innovation resources, and forms collaborative innovation of enterprises [21]. Through the above description, the internal management mechanism of Liaoning equipment manufacturing enterprise can be analysed according to the current situation of Liaoning equipment manufacturing enterprise. The first is the problems faced: (1) Due to the production characteristics of the enterprise, the internal management organization is too single. (2) There is a shortage of scientific research talents in the production department, and the department strategy is not clear. It is only suitable for mass production and lacks flexible management. For the above situation, in order to improve the innovation ability of enterprises, there are the following suggestions: (1) for the internal management structure, consider the diversified management mode, and adopt a reasonable management structure within the department according to the functions of each department, with regional flattening, non-one size fits all and appropriate decentralization. Enterprises focus on sales, product R&D and production departments, broaden the market and consider overseas customers according to their own product characteristics. (2) Enterprises should properly adjust their product structure in production, no longer focus on single parts, cooperate with other enterprises, add more self-developed products, master technical advantages and expand market share. At the same time, the production department should also consider the reform of the production line, mainly automatic or semi-automatic machinery, bordering on modern artificial intelligence, appropriately update the equipment according to its own strength, maximize the realization of unmanned workshop and reduce the waste of human resources. At the same time, it should also consider the depreciation loss of the original fixed assets of the enterprise and fully calculate the available resources within the enterprise, Avoid loss maximization.

## **6. Conclusions**

Based on the actual situation of Liaoning equipment manufacturing enterprises, this study analyses the external and internal influencing factors of the enterprise respectively. Among the many factors that can improve the innovation catalytic ability, the internal innovation management of the enterprise, the recruitment and incentive of scientific research talents and the sensitivity of the enterprise to market changes are very important, If all enterprises can formulate corresponding strategies from these aspects and have a high degree of completion, the overall self-innovation

ability of the enterprise will have a qualitative leap, seize the opportunity in the crisis of intelligent manufacturing transformation in the future, successfully complete the transformation, and make the enterprise bigger and stronger. But more importantly, enterprises should make reasonable changes according to their own conditions. It is not advisable to aim high. Being down-to-earth is the key magic weapon of victory.

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