# Study on the Influencing Factors of the Development of New-Quality Productivity in Liaoning Manufacturing Enterprises

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**Abstract: The manufacturing industry is the primary pillar industry of Liaoning Province. However, there are issues such as brain drain and insufficient innovation. This thesis zeroes in on the growth of New-quality productivity within manufacturing enterprises in Liaoning Province. Its core objective is to dissect the various factors that exert an influence thereon, with the ultimate aim of furnishing both theoretical underpinnings and practical suggestions to power the transformation and elevation of Liaoning's manufacturing sector. The article comprehensively utilizes methods such as literature research and case study to explore the influencing factors that constrain the New-quality productivity of manufacturing enterprises in Liaoning. From the aspects of enterprises themselves, government support, and industrial collaboration, it puts forward countermeasures such as increasing R & D investment, strengthening policy support, and promoting collaborative innovation in the industrial chain. The advancement of new quality productivity calls for the concerted efforts of the government, enterprises, academic research bodies and other associated groups. Only by forming a joint force can we boost the enduring and vigorous development of new quality productivity.**

**Keywords: Manufacturing Enterprises in Liaoning; New-Quality Productivity; Influencing Factors; Countermeasures; Industrial Collaboration**

## 1. Introduction

Manufacturing is the primary pillar industry in Liaoning Province, accounting for nearly 30% of the above-scale industries. It has a solid foundation in major technical equipment and holds an important position in the fields of robots, intelligent equipment, and CNC machine tools nationwide. In the period of the "14th Five-Year Plan", Liaoning is supposed to continuously concentrate on the real economy and push forward the deep blending of advanced manufacturing with modern service trades. However, in recent years, Liaoning's manufacturing industry has faced problems such as severe brain drain, weak awareness of technological innovation, and low-level innovation investment. Therefore, Liaoning has taken intelligent manufacturing and intelligent services as the main direction of attack, and is making every effort to promote the upgrading and metamorphosis of the equipment manufacturing industry in the province, with a focus on high-end elements and intelligent features, characteristic, and green development of manufacturing.

New-quality productivity is a brand-new concept that was first proposed in China in 2023 and is characteristic of China. During the two-sessions in 2024, it was the first time that "New-quality productivity" had been written into the government work report, that is, "Energetically drive forward the construction of a modern industrial system and expedite the advancement of New-quality productivity." The proposal of the concept of "New-quality productivity" has pointed out the direction for the thorough integration of high-end manufacturing and up-to-date service trades in Liaoning Province.

Currently, the studies regarding the influencing factors of the development of New-quality productivity mainly involves four aspects: first, digital transformation [1]; second, total factor productivity [2]; third, enterprise innovation models [3]; and fourth, environmental governance [4]. Looking at the current research situation, the existing literature has laid a solid research foundation. Scholars have qualitatively expounded on the influencing factors of New-quality productivity, but there

 

are few achievements exploring the influencing factors of New-quality productivity at the enterprise level.

This article focuses on Liaoning manufacturing enterprises, explores the factors influencing the development of New-quality productivity in Liaoning manufacturing enterprises, and puts forward countermeasures.

## 2. The Connotation of New-Quality Productivity and the Development Overview of Liaoning Manufacturing Enterprises

### 2.1 The Theoretical Connotation and Characteristics of New-Quality Productivity

New-quality productivity generally takes as its fundamental connotation the significant upgrade of laborers, means of labor, objects of labor, and their optimized combinations [5], with a significant increase in total factor productivity as the core symbol. It features innovation, emphasizes high quality, and essentially represents advanced productivity, possessing the hallmarks of hi-tech nature, high effectiveness and superior quality [6-7].

New-quality productivity signifies a great jump in productivity. It is a new-level modern productivity, different from traditional productivity. Such is the productivity that scientific and technological innovation dominates and is the latest embodiment of the modernization transformation of productivity [8]. Therefore, the logical main line of the development of New-quality productivity is that a new round of scientific and technological revolution drives industrial innovation and industrial structure change, promotes the upgrading of the economic structure, and ultimately leads to a remarkable upsurge in total factor productivity [9-10]. Thus, leading the construction of a modern industrial system with scientific and technological innovation has become the basic path for the development of New-quality productivity [11]. Of course, for productivity to develop, it is also essential for the production relations to be adjusted to fit it, and the optimization of the economic structure and the significant leap in the level of productivity are promoted through institutional innovation and scientific and technological innovation.

It can be seen that New-quality productivity is not only a “quantitative” improvement of the various elements of traditional productivity but also a comprehensive transcendence of the productivity system from quantitative change to qualitative change [12].

### 2.2 The Development Status of Liaoning Manufacturing Enterprises

2.2.1 Industrial Scale and Structure

Liaoning Province has a large-scale manufacturing industry, covering many fields such as machinery manufacturing, chemical industry, metallurgy, and electronic information. In Liaoning’s manufacturing enterprises, traditional heavy industries such as steel, petrochemicals, and equipment manufacturing account for a large proportion, while emerging industries are relatively behind in their development process. The transformation and upgrading of traditional industries are facing great difficulties and significant structural adjustment pressure. Although the industrial system is relatively complete, the synergistic cooperation between upstream and downstream business entities in the industrial chain is not close enough. There are problems such as poor connection between supporting enterprises and leading enterprises and weak collaborative innovation ability within industrial clusters, which restrict the improvement of the overall competitiveness of the industrial chain.

2.2.2 Domestic and Foreign Market Competitiveness

Liaoning’s manufacturing enterprises are facing fierce competition from enterprises in the Yangtze River Delta, Pearl River Delta, and other regions. These regions have certain advantages in industrial supporting, technological innovation, and market mechanisms, attracting a large amount of capital, talent, and resources, squeezing the market share of Liaoning’s manufacturing enterprises. Factors such as the unstable global economic situation and the rise of trade protectionism have caused certain impacts on the expansion of international markets by Liaoning’s manufacturing enterprises.

2.2.3 Technological Innovation

High-end technologies are imported. In some key core technologies and high-end equipment fields, Liaoning’s manufacturing enterprises are highly dependent on foreign technologies and products. Their independent innovation ability is insufficient, and there is an absence

 

of core technologies and brand products with independent intellectual property rights on their part, which puts them at a disadvantage in international market competition.

Low innovation input and transformation efficiency. Some enterprises do not attach enough importance to technological innovation and have insufficient investment. Problems such as insufficient R & D funds and shortage of innovative talents are prominent. At the same time, the scientific research achievement transformation mechanism is not perfect, which makes it difficult to quickly transform innovative achievements into actual productivity.

2.2.4 Talent and Capital

Serious brain drains. Liaoning's manufacturing enterprises are facing a relatively serious problem of brain drain, especially the loss of high-end technical talents and management talents, which restricts the improvement of the enterprise's innovation ability and management level. The enterprise lacks a complete set of talent-supporting policies, making it difficult to form a R & D team that masters the key technologies of New-quality productivity.

Difficulty in financing. The development of manufacturing enterprises requires a large amount of capital investment, especially in technological transformation, new product R & D, and market expansion. However, some manufacturing enterprises in Liaoning, especially mid-sized and small-scale enterprises, face the problems of difficult and expensive financing due to their small scale, insufficient collateral, and low credit rating, which restricts the development and expansion of enterprises.

## 3. Factors Influencing the Development of New-Quality Productivity in Liaoning Manufacturing Enterprises

### 3.1 Technological Innovation Factors

3.1.1 R & D Investment and Innovation Ability

The capital and human investment of enterprises in scientific research directly determine the speed and depth of technological innovation. Increasing R & D capital investment, attracting high-quality R & D talents, and establishing a sound R & D system are helpful to enhance the enterprise's independent innovation ability and promote the development and application of new technologies, new processes, and new products. Some manufacturing enterprises in Liaoning have insufficient R & D investment, which restricts the R & D of novel technologies. Compared with the developed coastal areas, the proportion of R & D funds invested by Liaoning's manufacturing enterprises in their operating income is generally low, which limits the enterprise's exploration and breakthrough of frontier technologies and makes it difficult to support the in - depth application R & D of newly emerging technologies like artificial intelligence and quantum science in the manufacturing industry.

3.1.2 Technology Introduction and Cooperation

Actively introducing advanced technologies and equipment from home and abroad and carrying out technical cooperation with universities, research institutions, and other enterprises can quickly elevate the technical capabilities of enterprises and spur the growth of New-quality productivity. Liaoning is rich in scientific and educational resources, but problems such as insufficient transformation ability of scientific and technological achievements and the lack of professional scientific and technological service institutions restrict, to a certain extent, the adaptation and transformation of sophisticated and useful scientific and technological outcomes into productivity. In some high-end manufacturing fields, such as high-end chip manufacturing, if Liaoning's manufacturing enterprises cannot master the key core technologies, they will rely on imports, which will limit the development of New-quality productivity.

### 3.2 Talent Support Factors

3.2.1 Talent Structure and Quality

Liaoning has problems such as an unreasonable talent structure, a shortage of high-end R & D talents, and a disconnection between the cultivation of skilled talents and market demand. A large number of high-end R & D talents who master frontier technologies and professional talents with management knowledge are needed. Insufficient quantity or low quality of talents will restrict the improvement of the enterprise's innovation ability and production efficiency.

3.2.2 Talent Attraction and Retention

Factors such as the standard of economic

expansion and employment chances make Liaoning face pressure in attracting and retaining talents. The outflow of excellent talents is relatively prominent, which is not conducive to the development of New-quality productivity.

### 3.3 Industrial Upgrading Factors

3.3.1 Transformation and Upgrading of Traditional Industries

Liaoning's traditional industries such as petroleum refining and steel have a large scale but face problems such as aging technical equipment and low - value - added products. A complete industrial chain can achieve efficient resource allocation and collaborative development. There is short-boards in the industrial chains of some manufacturing industries in Liaoning, and key links rely on external supply, which affects the overall advancement of the industrial sector and origination of New-quality productivity.

3.3.2 Development of Industrial Clusters

Industrial clusters can produce agglomeration effects and collaborative innovation advantages. Although Liaoning has industrial clusters, the cooperation between enterprises within some clusters is not close enough, and there is a lack of specialized division of labor and collaborative innovation, which restricts the development of New-quality productivity.

### 3.4 Resource Allocation Factors

Adequate funds are the foundation on which enterprises conduct activities such as technological innovation, equipment renewal, and talent training. Enterprises need to broaden financing channels, optimize the capital structure, and improve the efficiency of capital use. The development of New-quality productivity by Liaoning's manufacturing enterprises requires a large amount of funds. The single-channel financing and high-cost financing will limit the enterprise's technological R&D, equipment renewal, and talent introduction activities. The credit policies and financial product innovation services of financial institutions for the manufacturing industry are insufficient, and the support of venture capital and the capital market for Liaoning's manufacturing enterprises is not strong enough, which is not conducive to the development of New-quality productivity.

### 3.5 Market and Policy Environment Factors

3.5.1 Market Demand and Competition

Market demand is the guide for enterprise development. Enterprises need to pay close attention to market dynamics and adapt the product configuration and production arrangements layout according to market demand. Consumers' demands for intelligent, green, and personalized products are increasing. If Liaoning's manufacturing enterprises cannot respond to changes in market demand in a timely manner and adapt the product configuration and production arrangements mode, they will lose market share and affect the development of New-quality productivity. At the same time, fierce market competition also forces enterprises to continuously innovate, improve product quality and service levels, and enhance New-quality productivity. The manufacturing enterprises in the developed coastal areas of China and the international advanced manufacturing enterprises form competitive pressures in terms of technology, brand, and cost, forcing Liaoning's manufacturing enterprises to speed up the growth of New-quality productivity.

3.5.2 Policy Support and Guidance

The industrial policies, scientific and technological policies, and talent policies introduced by the government play an important guiding and supporting role in the development of New-quality productivity of enterprises. Consider the following two aspects: First, the intensity of policy support. The government's fiscal subsidies, tax incentives, R & D investment support, and other policies are crucial for enterprises to develop New-quality productivity. Insufficient policy support or ineffective implementation will affect the innovation enthusiasm of enterprises. Second, institutional innovation and reform. Deepening the reform of the economic system, scientific and technological system, and other aspects, establishing a high-standard market system, and innovating the allocation method of production factors can create a good institutional environment for the development of New-quality productivity.

## 4. Countermeasures and Suggestions for Promoting the Development of New-Quality Productivity in Liaoning Manufacturing

 

**Enterprises**

New-quality productivity is an innovative type of productivity under which circumstances innovation occupies the dominant position, breaking away from the orthodox economic growth manner and the path of productivity development, and characterized by high-tech, high-efficiency and high-quality features, which complies with the new development concept. To promote the development of New-quality productivity in Liaoning manufacturing enterprises, it can be started from the levels of the enterprises themselves, government support, and industrial collaboration.

### 4.1 Enterprise Itself Level

4.1.1 Increase R & D Investment and Innovation

Manufacturing enterprises should set up special R & D funds to ensure the stability and continuity of capital investment, focusing on the R & D of pivotal core technologies in the fields of high-end equipment manufacturing and intelligent manufacturing. At the same time, establish an incentive mechanism to give heavy rewards to scientific research personnel who have made outstanding contributions to stimulate their innovation enthusiasm.

4.1.2 Strengthen Talent Training and Introduction

Collaborate with universities and research bodies to implement bespoke talent development programs to provide the enterprise with the urgently needed professional and technical talents and management talents. At the same time, set up a special talent reward fund and formulate favorable policies formulated to draw in top-notch talents and innovation teams to develop in Liaoning.

4.1.3 Promote Digital Transformation

Introduce advanced digital technologies such as big data and artificial intelligence to build intelligent factories and digital workshops to achieve intelligent control and optimization of the production process. Establish an enterprise-level industrial Internet platform to improve production efficiency and product quality through data - driven.

4.1.4 Enhance Brand Building

Clarify the brand positioning, combine the traditional advantages of Liaoning manufacturing and the characteristics of regional culture to create an internationally competitive brand image. Formulate a long-term brand strategy and carry out brand communication and promotion through various channels to improve brand awareness and reputation.

### 4.2 Government Support Level

4.2.1 Strengthen Policy Support

The government should increase the policy support for the manufacturing industry, improve the relevant policy system, and create a good policy environment for the development of enterprises. Formulate targeted industrial policies, provide tax incentives, fiscal subsidies, and other support for manufacturing enterprises that develop New-quality productivity, and encourage enterprises to increase R & D and innovation investment. Simplify the administrative approval process to provide convenience for the landing and development of enterprise projects.

4.2.2 Strengthen Infrastructure Construction

Increase investment in transportation, energy, communication, and other infrastructure, improve the supporting facilities of industrial parks, and furnish a sound hardware backdrop for the progress of manufacturing enterprises. Accelerate the construction of new - type infrastructure such as 5G networks and industrial Internet to drive the digital makeover of the manufacturing sector.

4.2.3 Optimize the Business Environment

Establish and improve the intellectual property protection system, strengthen the protection of enterprise innovation achievements, and create a fair-competition market environment. Strengthen market supervision, crack down on counterfeiting, shoddy, and other unfair competition behaviors, and maintain market order.

### 4.3 Industrial Collaboration Level

4.3.1 Promote Collaborative Innovation in the Industrial Chain

Led by leading enterprises, jointly with upstream and downstream enterprises and research institutions, form an industrial innovation alliance to carry out collaborative research on the key links of the industrial chain to accomplish the most favorable allocation and dissemination of innovation resources. Build an industrial chain collaborative innovation platform to promote information exchange and technical cooperation and

 

promote the overall upgrading of the industrial chain. Through digital, intelligent, and green transformation, optimize the production process, improve product quality and production efficiency, which can promote the transformation of traditional industries into New-quality productivity.

4.3.2 Cultivate Emerging Industries and Develop Industrial Clusters

Accelerate the cultivation and development of emerging industries such as aviation equipment, integrated circuit equipment, and robots to form new industrial growth points and increase the proportion of emerging industries in the manufacturing industry, which plays an important role in promoting the development of New-quality productivity. According to the industrial characteristics of various places in Liaoning, plan and build a number of characteristic industrial clusters, guide manufacturing enterprises to gather in the clusters, and achieve industrial collaborative development and scale effects. Establish a public service platform within the cluster to provide enterprises with public services such as technical R & D, inspection and testing, and talent training.

4.3.3 Strengthen Industry-University-Research Cooperation

Encourage enterprises to establish long-term and stable cooperative relations with universities and research institutions, jointly build innovation platforms such as R & D centers and laboratories, carry out industry-university-research joint research projects, and accelerate the transformation and industrial application of scientific and technological achievements. Establish a benefit- sharing and risk-sharing mechanism for industry-university-research cooperation to safeguard the rights and interests of every party involved. and improve the stability and effectiveness of cooperation.

## 5. Conclusion

The development of New-quality productivity calls for concerted efforts from multiple stakeholders, including governments, enterprises and research institutions. To begin with, policy guidance plays a pivotal role. Secondly, scientific and technological innovation stands as the central driver. Thirdly, industrial upgrading is an important pathway. Fourthly, talent cultivation is the fundamental guarantee. Finally, international cooperation is an important support. Only by forming a joint force can we promote the sustained and healthy development of New-quality productivity and inject new impetus into economic and social development.

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