

# Research on the Competitiveness and Innovation Model of China Manufacturing Industry

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**Abstract.** Innovation is the essential path for the China manufacturing enterprises to cope with the market competition. In this paper, it take the connotation of industrial competitiveness as the starting point, combined with the analysis status of China manufacturing industry competitiveness, as well as the characteristics of the sixth generation of innovation model, it discusses the characteristics of China equipment industry innovation system and the affecting factors of the innovation of China equipment enterprises.

**Keywords:** China manufacturing enterprises; Innovation model.

## 1. Introduction

In 2008, the global financial crisis forced China to transfer its economic growth pattern and industrial structure, at the same time, the industrial upgrading can mean the opportunity of China's equipment manufacturing industry to realize its arising. As the manufacturing base and the innovation carrier of the equipment manufacturing industry, the establishment of its technological innovation ability is the important foundation for our country's economy from the investment oriented development to the innovation oriented stage. Some developed countries, such as the United States, Germany and Japan, whose economic development and the rise of the international status are all taking the equipment manufacturing industry as the prerequisite for development. Therefore, this is the significance of choosing China manufacturing technology innovation as the theme of this thesis.

Since the thirty years of Reform and Opening-up China's economy maintained rapid growth, but in a certain extent, it has to rely on the extensive input of production factors such as capital, labor and natural resources. The evolution path of China's equipment industry national competitive advantage is the concrete embodiment of China's economic growth mode. At present, our country in equipment industry can have more competitive industries, which is often not sophisticated machinery and equipment industry, such as the category of China equipment manufacturing, shipbuilding, railway vehicle, container, engineering machinery, most of them are belonging to transport equipment; while the required precision machine tools, high-grade light industry equipment, the energy equipment of high metallurgy chemical industry mostly rely on the imported equipment. In the future, the connotation of industrialization can be reflected in the development of the equipment industry from the primary level to the deep level, upgrading from the pursuit of the quantity investment driven extensive growth to the technological innovation as the core of industry.

## 2. Connotation of Industrial Competitiveness

The concept of competitiveness is a multi-angle, multi-level and dynamic concept [1]. According to the level, competitiveness can be divided into national competitiveness, industrial competitiveness and enterprise competitiveness. The competitiveness of enterprises belongs to the micro level competitiveness, while, the competitiveness of the country belongs to the macro level, therefore, they are closely related to the competitiveness of enterprises. [2] In this paper, it studies on the emerging and potential competitiveness of China equipment manufacturing industry in the domestic market competition, which belongs to the category of regional industrial competitiveness. The definition of this thesis is to define the regional industrial competitiveness as the comprehensive strength, which

can provide effective products or services, as well as the potentiality of development, thus, its economic essence is the comparative productivity of the specific industry relative to other competitors, which can be shown in Fig. 1.

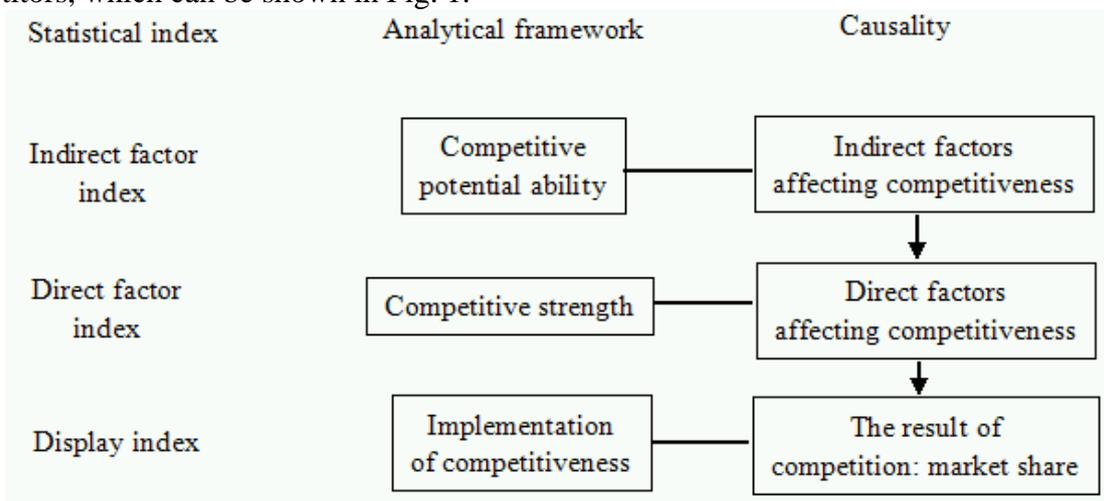


Fig. 1 The Analytical Framework of Competitiveness

From the angle of competitiveness, one region's competitiveness should depend on whether it has the regional growth pole, while the regional growth pole is depending on the promoting industry, as well as the surrounding environment and growth delivery mechanism from three aspects: among the factors, the promoting industry is the core of the growth pole, [3] it can be decided by the industrial relevance, production control, the growth driving force and the size of technological innovation, which can be as shown in Fig. 2.

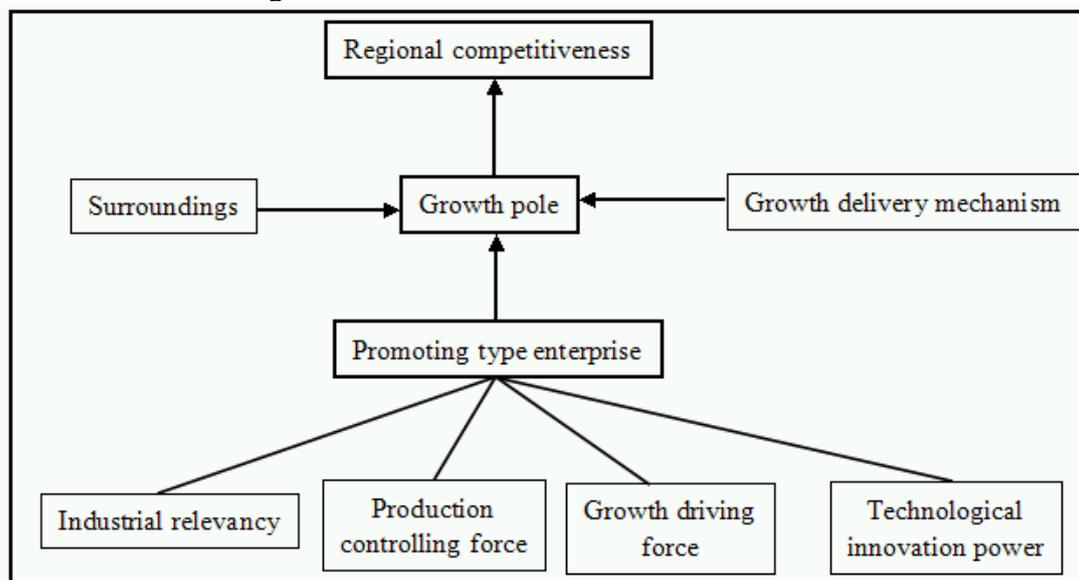


Fig.2 The Relationship between Growth Pole and Regional Competitiveness

### 3. Analysis on the Status of the Industry Competition of China Manufacturing Industry

#### 3.1 The Characteristics of the Sixth Generation Innovation Model

Learning has become the focus of the sixth generation of innovation model, the faster the enterprise learn, the more quickly the enterprise can respond to the market changes, the more quickly the innovative products and services can be created. The most innovative companies must be the fastest learning business, we believe that all projects related to the strategic learning are the sixth generation of innovative models, which are the problems that should be concerned about. (Table 1)

Table 1 The Important Features of the Sixth Generation Innovation Model

<b>Potential strategic factors</b>
Compression of time and space
The most important source of enterprise value is the intangible assets of the enterprise
Emphasizing the connectivity
Stakeholders become the frontier of strategic concern
Forming strategic relationship with strategic rivals
Paying attention to tacit knowledge
<b>Basic dynamic factors</b>
Flexible structure and mobilization of resource
Efficient internal and external knowledge sharing mechanism
Senior management
Culture and language
Building the bridge connected to the external agencies
Establishment of management mechanism and the mechanism of information disclosure to the intangible assets

The potential strategic factors of the sixth generation of innovation model indicated that the strategy that innovation should have, among them, the most important aspects can be including the following aspects: the compression of time and space, the most important source of enterprise value is the intangible assets of the enterprise, emphasizing the connectivity, stakeholders become the frontier of strategic concern, forming strategic relationship with strategic rivals, as well as, paying attention to tacit knowledge and so on. [4]

### **3.2 Characteristic Analysis of Innovation System of China Equipment Industry in China**

Knowledge field and technology field. Since any industry has its own specific knowledge base, technology as well as the related inputs, so we can use a dynamic view to analyze, paying attention to the knowledge field and technology field, putting the industry boundary in the center of the industry, at the same time, the industry boundary is not fixed, which can be changing with time.

Actors and networks. One industry can be composed by a group of people, including various organizations and individuals, such as consumers, entrepreneurs, scientists and so on [5] Among the organizations, they can include some enterprises ( such as users, producers, suppliers, competitors, etc.), which also can include non corporate social organizations (such as universities, financial institutions, governments, business associations, technology associations,etc.), at the same time, it can also include many large organizations in the sub - unit (such as the production sector), as well as organizations (such as trade associations), etc.. The actors in the industry can have a specific learning process, ability, belief, goal, organization structure and behavior, which also can have interaction with each other through communication, exchanging, cooperation, competition and order, etc..

System. The cognition, behavior and interaction of the actors in the industry can be influenced by the system, including the norm, the practice, the common customs, the existed practice, the regulation, as well as the law and the standard and so on. The system is involved in the constraint (e.g. contract) that is imposed on the mandatory constraints of actors and the interaction between the actors and the actors, besides, it also includes the change from a lot of constraints to less constraints; from the formal institutions to the informal institutions (such as patent law or tradition as well as customs).

### **3.3 Analysis on Affecting Factors of the Innovation Output of China Equipment Enterprises**

The strength of high research and development can bring higher gross margin level for the gross margin, at the same time, the elasticity coefficient can reach; the investment on the research and development of the China equipment manufacturing enterprise can bring the innovation of product and process, the intensity of research and development can have a significant positive effect on the enterprise to obtain the right of product pricing, which showed that China equipment manufacturing industry must strengthen the research and development, so as to obtain stronger pricing power and higher production efficiency through improving product and process innovation.

The cash flow of the enterprise can have a significant effect on the innovation output, it can get the cash inflow through the management activities, in this way, and it can accumulate enough financial resources to transform the investment on the research and development, so as to transfer it into enterprise's pricing power and financial performance. In Chinese manufacturing industry, there are a large number of small and medium enterprises in the industry chain which are in the competitive position, if the management of cash flow is negative, a lot of money will be occupied by the industrial chain, therefore, there will be not enough investment on the research and development for the enterprise, lacking innovation and other financial resources are support, thus, the lack of innovation ability in turn will weaken their bargaining power, the enterprise will be in a vicious circle.

The size of the enterprise and the innovation can generate inverse relationship, the new set up innovative small and medium enterprises can obtain higher product pricing power, new ventures has become a important force for technological innovation in Chinese equipment manufacturing industry, especially in the new equipment and technology field; while the strength of per capital and innovation output can also form inverse relationship, in some degree, it can reflect that the investment in tangible assets may not be able to bring the enhancement of the competitive ability of products.

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