Research on Manufacturing Process Reengineering Based on Advanced Manufacturing Technology

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Abstract: Manufacturing industry plays an important role in China's economic development. The wide application of advanced manufacturing technology promotes the development of manufacturing industry and improves the overall level of manufacturing enterprises. The expectation of the industry is very high, but it is difficult to achieve the expected goal in practical application. How to reengineer the production process under the environment of the increasingly popular advanced manufacturing technology is a problem worthy of in-depth study. Therefore, based on advanced manufacturing technology, the author conducts research on manufacturing process reengineering. The research finds that advanced manufacturing technology is more and more widely used in manufacturing enterprises, but the application effect is affected by many factors, and organizational structure is one of the important factors. In addition, production process reengineering is a systems engineering, and its successful implementation also requires the support of organizational change.

1. Introduction

Manufacturing is the cornerstone of human society's survival and development. It is inseparable from manufacturing in any era, and manufacturing is immutable and irreplaceable [1]. Therefore, research on the reengineering of modern manufacturing production processes under the influence of advanced production technology not only conforms to the current environment of advanced manufacturing technology development, but also has long-term significance for the development of China's manufacturing industry [2]. The manufacturing industry plays an important strategic role in national economic construction, social progress, scientific and technological development and national security. It is mainly reflected in the fact that material wealth is the basis for the survival and development of human society, and that manufacturing is the first pillar industry to build a well-off society in an all-round way and accelerate the realization of modernization [3]. Nowadays, advanced manufacturing technologies such as sensor technology, industrial process automation system and fieldbus control system have formed considerable industrial scale abroad. 80% of manufacturing enterprises in developed countries have basically realized informatization. Developed manufacturing industry must be supported by advanced manufacturing technology and talents [4]. In the manufacturing industry, the machinery manufacturing industry, especially the equipment manufacturing industry, shoulders the important task of providing equipment for all sectors of the industry. It is the basic manufacturing of national economic development and not only the pillar industry of a country's national economy [5]. Moreover, it has a decisive impact on its economic and political leadership. The rise of a country's economy largely depends on the development of manufacturing industry [6].

If we say that China's manufacturing industry is gradually occupying an important position in the world. However, under the increasingly fierce competition in the world economy and the situation that our competitors are catching up with each other, we still need to make arduous efforts to maintain our status as a big manufacturing country. It is a long journey to become a powerful manufacturing country [7]. However, some enterprises in China can not fully realize this in the implementation of 012. Advanced manufacturing technology will continue to integrate the research results of new technologies such as optoelectronics, computer and information, making the industrialization of advanced manufacturing technology a new economic growth point [8]. Therefore, since the late 1980s, all countries in the world have taken the development of advanced manufacturing technology

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as an important strategy to improve their comprehensive competitiveness. At the same time, the development of manufacturing technology also requires the training of talents to adapt to it, which puts new demands on engineering education [9]. However, almost all of them have formed a consensus that advanced manufacturing technology can not only meet the needs of modern manufacturing processes, but also the result of the common development of modern information technology and management technology. How to adapt to this change, so that the content and methods of the course can meet the requirements of quality education and the development of the situation, this presents us with a new topic [10]. Although China's manufacturing industry has the advantage of low wage costs, other costs other than wages, such as material costs, transportation costs, and reserve costs, are higher than those of developed countries. The resource consumption is high, the capital turnover is slow, and the energy consumption, water consumption and material consumption per unit of product are also higher than those of developed countries.

2. Major Problems in the Development of Manufacturing

China's manufacturing industry now belongs to the "jujube-type" structure, showing a situation of weak research and development capabilities and market competitiveness, and strong processing and manufacturing links. Business process reengineering has a breadth and depth. Its development is mainly manifested in two aspects: First, precision engineering technology, represented by the cutting-edge part of ultra-precision machining, micro-machining, nanotechnology, will enter the era of micro-mechanical electronics and micro-robots. The second is the high degree of automation of machine building, represented by the further development of Computer Integrated Manufacturing Systems (CIMS) and Agile Manufacturing (AM). Flattening makes the middle management of the enterprise simple and focuses on both ends. From "olive" to "dumbbell", such as matrix structure and team work style. The longer the chain of command, the higher the probability of management vacuum and decision-making errors. The information technology requirement in advanced manufacturing technology reduces the intermediate management level and provides the technical basis for this requirement. For manufacturing enterprises, the ratio of raw material cost to total manufacturing cost is generally more than 50%, and some enterprises are even more than 80%. One of the problems brought about by traditional functional management is that each functional department only collects relevant information from the perspective of its own management, and the communication between departments is not in place. The information of the same object obtained by senior managers from different departments may be inconsistent, thus affecting their correct decision-making.

The fundamental problem to be solved in production process reengineering based on AMT is the cooperation between AMT and production process and the full application of AMT. In manual management mode, it is difficult to accurately calculate the time and quantity of raw materials required. In order to ensure that production is not delayed, excessive purchase of raw materials is usually carried out ahead of time, resulting in the increase of inventory costs and ultimately the increase of production costs. The traditional organizational structure is also a major waste of human resources, and the post redundancy is high. The structure of China's manufacturing export products is relatively low. Most of the products exported by Chinese manufacturing are labor-intensive products. The proportion of high-processing, high-value-added technology and capital-intensive products is not high. High-tech products are particularly scarce, and many high-tech products still rely on imports. The adoption of integrated technology in the production process requires the accuracy of information collection, the timeliness of input and the sharing of the use process. When production enters the off-season, orders are reduced, and the company's large resources are idle. The factory will have to bear a lot of business pressure. The most common method is to reduce the wage level of workers and dismiss employees. Psychologist All port has long pointed out that in the 1950s and 1960s, enterprises were regarded as a social system. Like other social systems, their basic components should not be entities. They should be activities or events, that is, Later, Hammer proposed the "enterprise process."

3. Manufacturing Development Strategy

China now has many favorable conditions for independent innovation. First of all, after several generations of efforts, China has built a complete scientific and technological system that is only available in a few countries in the world. This is an important foundation for China's independent innovation. The career team is to accomplish organizational goals, organizational members weaken their position and function differences, emphasize collaboration and cooperation, and collective honors and achievements become the main goal pursued by employees. The ever-changing customer needs, increasingly fierce external competition, and rapid technological development are the three major problems facing the company. After the enterprise accepts the order, the production department is responsible for compiling the production plan, and then each workshop performs the processing operations in sequence according to the process flow of the product processing, forming a sub-process of the shop sequential production. Authorization is an important way to reduce management level, expand democratic management and self-management, and shorten the link of information transmission. Therefore, as long as we seize the favorable opportunity of accelerating the transfer of international manufacturing capital to China, insist on improving the ability of independent innovation as the basis, substantially increase investment in science and technology, and improve the efficiency of the use of science and technology funds. On the one hand, these application technologies meet the needs of mechanical manufacturing itself, and at the same time support the advanced manufacturing technology system. The sub-process mainly deals with logistics, and mainly solves the problem of smooth flow of products between workshops.

According to the survey, 70% of the major research results in recent years are based on basic theory research. The hierarchical processing of information in an organization according to its importance and jurisdiction can effectively improve the efficiency of information transmission. Due to the uncertainty of competitive environment, top managers of enterprises gradually realize that only achieving low cost and high quality can no longer maintain and improve their competitive position. Therefore, companies increasingly emphasize the flexibility of production and use it as a way to gain new competitive advantages. Although the state has organized many manufacturing technology tackles and invested heavily, it has not been able to achieve technological innovation because of its failure to put basic theory and technological basic research in the right place and blindly pursue technological transformation. For the manufacturing enterprise, the order review sub-process, the shop sequential production sub-process, and the workshop manufacturing sub-process complete the production of the product. Flexibility refers to the ability to effectively configure and reconfigure resources in response to changing environments. The number of departments has been reduced, which has reduced the number of bottlenecks in the work flow and, to some extent, promoted a wider range of target convergence. For small and medium-sized manufacturing enterprises with huge number of industrial core technologies, it is the best experimental field to seek breakthroughs in basic theory and technology foundation and create core competence of enterprises. It is also a good strategy for the survival and development of Chinese manufacturing industry.

4. Conclusions

In many processes in the manufacturing industry, the production process is one of the important processes. Whether it is reasonable or not only affects the output of the production system. In a certain sense, it also directly affects the implementation of the enterprise's competitive strategy and affects the enterprise. Business objectives. The concept of three dimensions of advanced manufacturing technology selection is proposed, namely: technology success dimension, manufacturing success dimension, competition success dimension, and corresponding mathematical model of choice is given according to these three dimensions. Almost all conflicts come from the gains and losses of rights. The resistance of employees to change is also due to distrust of uncertainty about future interests and concerns about the loss of vested interests. The training of adaptable application engineers should be similar to the educational training objectives of local engineering colleges in our hospital. From the perspective of interaction between advanced manufacturing

technology and production process, advanced manufacturing technology is divided into three categories: independent technology, integrated technology and information technology. The model is a linear one-time model, which is intuitive and practical. It has a wide range of parameters, involving the organization of the whole process, and is representative. Frequency statistics is used to determine the coefficients of linear models. It is suggested that we should make use of humanization rather than power, take full account of the actual situation and psychological characteristics of employees, redistribute the interests, and share the corresponding responsibilities on the shoulders of the corresponding beneficiaries, so as to achieve the unity of powers and responsibilities.

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