

The Digital Transformation Path of Manufacturing Enterprises based on Product Innovation

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Abstract

With the continuous development of science and technology and the increasingly fierce market competition, manufacturing enterprises are facing unprecedented challenges. In order to maintain competitive advantage in the fierce market competition, manufacturing enterprises must constantly innovate and improve production efficiency and quality. Digital transformation refers to the application of digital technology to the production, management, sales and other aspects of the enterprise, to realize the automation, intelligence and information of the production process, improve production efficiency and quality, and enhance market competitiveness.

Keywords

Digital Transformation; Manufacturing Enterprise; Product Innovationun.

1. Introduction

The digital transformation path of manufacturing enterprises based on product innovation is an important content of this study. Product innovation refers to improving the added value and market competitiveness of products by developing new products or improving existing products. In the context of digital transformation, the integration of product innovation and digital technology is of great significance for the sustainable development of manufacturing enterprises. Through the application of digital technology, enterprises can better understand customer needs, optimize product design, production and sales, and improve product quality and market competitiveness. At the same time, digital transformation can also promote information sharing and collaborative work between enterprises, suppliers and customers to achieve supply chain optimization and effective allocation of resources. Through the research on the digital transformation path of manufacturing enterprises based on product innovation, we can deeply understand the importance and mechanism of digital transformation for manufacturing enterprises. At the same time, it can also provide enterprises with operational digital transformation solutions and suggestions to help enterprises achieve sustainable development and improve market competitiveness. Therefore, this study has important theoretical and practical significance.

2. Overview of Digital Transformation in Manufacturing

2.1. Definition and Importance of Digital Transformation

Digital transformation refers to the application of digital technology to all aspects of the enterprise, to carry out a comprehensive digital transformation of the enterprise, in order to realize the automation, intelligence and information of the production process, improve production efficiency and quality, reduce costs, and enhance market competitiveness. Digital transformation is one of the important ways for manufacturing enterprises to achieve sustainable development. The application of digital technology can realize the automation and intelligence of the production process, improve production efficiency and quality, reduce costs,

and improve the economic benefits and market competitiveness of enterprises. Promote the innovation of the organizational structure and management mode of manufacturing enterprises, achieve a more efficient, flexible and collaborative management mode, and improve the management efficiency and innovation ability of enterprises. Improve the market competitiveness of manufacturing enterprises, so that they can better adapt to market changes and customer needs, and expand new market areas and business models. Realize information sharing and collaborative work between enterprises, suppliers and customers, and reduce enterprise operating costs. Digital transformation is one of the important ways for manufacturing enterprises to achieve sustainable development. It can help enterprises improve production efficiency and quality, optimize product design, production and sales, promote the innovation of organizational structure and management mode, enhance market competitiveness, promote the optimization of supply chain and the effective allocation of resources, and achieve remarkable results.

2.2. The Position and Role of Product Innovation in Manufacturing Digital Transformation

Product innovation plays a crucial role in the digital transformation of manufacturing. First of all, product innovation is the core driving force for the digital transformation of the manufacturing industry. In today's increasingly fierce market competition, manufacturing enterprises must constantly innovate to meet the increasingly diversified needs of consumers through product innovation if they want to maintain their competitive advantage. Secondly, the integration of product innovation and digital technology is the key to the digital transformation of the manufacturing industry. Digital technology provides strong support for product innovation, so that manufacturing enterprises can carry out more detailed product design and optimization through digital modeling, simulation and other technical means. At the same time, digital technology can also help manufacturing enterprises to achieve product intelligence and personalization, improve the added value of products and market competitiveness. Digital transformation provides a broader development space and opportunities for product innovation, while product innovation provides more application scenarios and needs for digital transformation. In the process of digital transformation, manufacturing enterprises need to constantly innovate their organizational structure, management model and business model, and these innovations need to be supported and promoted by product innovation. At the same time, the continuous development and progress of product innovation in turn promotes the progress and application of digital technology, forming a virtuous circle.

3. Analysis of Manufacturing Digital Transformation Path based on Product Innovation

3.1. Integration of Product Innovation and Digital Technology

With the rapid development and wide application of digital technology, the integration of product innovation and digital technology has become the core of digital transformation of manufacturing enterprises. This integration is not only reflected in the product design and production process, but also throughout the entire value chain of the enterprise. In the process of product innovation and digital technology integration, digital modeling and simulation technology is playing an increasingly important role. Through digital modeling, enterprises can simulate and predict the shape, structure and performance of products on the computer, so as to find and solve problems in the product design stage, reducing the possibility of later modification and rework. At the same time, through simulation technology, enterprises can test and verify the performance of products before actual production to ensure the quality and reliability of products. In addition to digital modeling and simulation technology, digital

technologies such as the Internet of Things, big data, and artificial intelligence are also playing an increasingly important role in product innovation. The integration of product innovation and digital technology is also reflected in the optimization of the organizational structure and business processes of manufacturing enterprises. The application of digital technology enables enterprises to organize and manage resources more flexibly and realize more efficient production and service.

3.2. Different Stages and Characteristics of Digital Transformation

Digital transformation consists of the following phases: 1. The initial phase: The enterprise evaluates the current product line, market trends, and customer needs to determine the direction and goals for product innovation. 2. Technology integration stage: In this stage, enterprises introduce and integrate various digital technologies, such as the Internet of Things (IoT), big data, artificial intelligence (AI), etc., to support product innovation and the digitization of production processes. 3. Product development stage: Enterprises use digital technology to conduct product development and design, including digital modeling, simulation and optimization. Through real-time interaction and feedback with customers, companies can continuously improve and optimize their products to meet market and customer needs. 4. Production process optimization stage: In this stage, enterprises carry out automation, intelligence and information transformation of the production process through digital technology to improve production efficiency and quality. 5. Business model innovation stage: Based on product innovation and digitization of production process, enterprises explore new business models and market opportunities in this stage. 6. Improvement phase: Enterprises should periodically evaluate and adjust the results of digital transformation to adapt to the changing market environment and customer needs. At the same time, enterprises should also pay attention to emerging technologies and trends, and constantly update and improve the digital infrastructure and technology stack.

4. Practices and Suggestions for Digital Transformation of Manufacturing Enterprises

4.1. Enhance Product Innovation Capabilities, and Promote the Deep Integration of Digital Technology and Manufacturing

Improving product innovation ability and promoting the deep integration of digital technology and manufacturing industry is the key to the successful transformation of manufacturing enterprises in the digital era. Digital technology provides a broader development space and opportunities for the product innovation of manufacturing enterprises, and also provides more application scenarios and needs for the digital transformation of enterprises. Improving product innovation ability needs to start from many aspects. First of all, enterprises need to continuously strengthen the investment in technology research and development and product design, and actively introduce and train high-quality technical talents and design talents. At the same time, enterprises can conduct in-depth analysis and mining of market trends and customer needs through digital technologies, such as big data and artificial intelligence, in order to better understand the market and customer needs, so as to carry out accurate product development and design. In addition, enterprises can also cooperate with universities and scientific research institutions to jointly carry out technology research and development and product innovation to enhance their technical strength and innovation ability.

4.2. Optimize the Organizational Structure and Management Model of Enterprises to Adapt to the Needs of Digital Transformation

In the process of digital transformation, optimizing the organizational structure and management model of the enterprise is an indispensable step. The introduction and application

of digital technology requires manufacturing enterprises to adjust and optimize their traditional organizational structure and management mode to meet the needs of digital transformation. First, companies need to build a more flexible and efficient organizational structure. The traditional vertical organizational structure has been unable to meet the needs of the digital age, so enterprises need to establish a more flat organizational structure, reduce management levels, and improve decision-making efficiency and response speed. At the same time, enterprises need to build a cross-functional, cross-functional collaboration team in order to better respond to market changes and customer needs. Secondly, enterprises need to introduce advanced management concepts and tools to improve management efficiency and decision-making ability. For example, enterprises can introduce advanced management concepts and tools such as lean production and agile management to continuously improve and optimize the production process and supply chain management.

5. Conclusion

This study explores the digital transformation path of manufacturing enterprises based on product innovation. Through the analysis of existing literature and practical cases, this study finds that digital transformation is the only way for manufacturing enterprises to improve product innovation ability and market competitiveness. Digital technology can help enterprises realize the automation, intelligence and information of the production process, improve production efficiency and quality, and also help enterprises realize the intelligence and personalization of products, improve the added value of products and market competitiveness. In the process of digital transformation, enterprises need to formulate scientific and reasonable strategic planning, clarify the goals and vision of digital transformation, conduct a comprehensive market and industry analysis, choose digital technologies and solutions suitable for themselves, and optimize the organizational structure and management mode. At the same time, it is also necessary to strengthen the cultivation and introduction of talents, build a high-quality digital talent team, and improve the digital literacy and skill level of employees.

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