

The Impact and Practice of Digital Technology Management on the Transformation and Upgrading of Traditional Industries

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Abstract: This paper aims to explore the impact and practice of digital technology management on the transformation and upgrading of traditional industries. By analyzing the applications of digital technology in data analysis, intelligent manufacturing, supply chain management, and marketing, this paper elaborates on the important role of digital technology in the transformation and upgrading of traditional industries. Based on case studies and theoretical analysis, this paper delves into the specific practices of digital technology management in traditional industries and demonstrates its achievements. Finally, the key influencing factors of digital technology management on the transformation and upgrading of traditional industries were summarized, and further research and practical suggestions were proposed to promote the sustainable development and transformation and upgrading of traditional industries.

Keywords: digital technology management, traditional industries, transformation and upgrading, data analysis, intelligent manufacturing

1. Introduction

With the rapid development and popularization of digital technology, traditional industries are facing unprecedented opportunities and challenges for transformation and upgrading. Digital technology management, as an innovative management approach, has gradually entered traditional industries and has had a profound impact on their development [1]. This paper aims to explore the impact and practice of digital technology management on the transformation and upgrading of traditional industries, in order to provide new ideas and insights for the development of traditional industries. Traditional industries play a crucial role in the modern economic system. However, with the rapid transformation of the social economy and the continuous advancement of technology, traditional industries are facing many challenges such as increasingly fierce market competition, intensified resource constraints, and diversified demand. In order to address these challenges, traditional industries need to undergo transformation and upgrading to adapt to the needs and development of the new era. Digital technology management, as a management approach based on information technology and data analysis, provides new ideas and solutions for traditional industries. Through the application of digital technology, traditional industries can achieve intelligent production processes, personalized marketing, and precise resource allocation, thereby enhancing the competitiveness and production efficiency of enterprises.

This paper introduces the concept and characteristics of digital technology management, and explores the importance of digital technology management in the transformation and upgrading of traditional industries. Subsequently, the current situation and challenges faced by the transformation and upgrading of traditional industries will be analyzed, and the role and practical experience of digital technology management in the transformation of traditional industries will be elucidated through case studies. Finally, summarize the impact of digital technology management on the transformation and upgrading of traditional industries, and look forward to future development directions.

Through in-depth research on the application of digital technology management in traditional industries, this paper aims to provide theoretical support and practical guidance for the transformation and upgrading of traditional industries, promote the development of traditional industries towards digitalization and intelligence, and achieve sustainable development and competitive advantages.

2. Overview of digital technology management

2.1 Definition and characteristics of digital technology management

Digital technology management refers to the combination of modern information technology and traditional management methods to achieve intelligent, refined and efficient enterprise management through data analysis, artificial intelligence, Internet technology and other means [2]. Its core lies in utilizing digital tools and technologies to improve the management efficiency and decision-making quality of enterprises, in order to adapt to the rapidly changing market environment and demand.

Digital technology management has many characteristics. Firstly, emphasize data-driven decision-making. Through data analysis and mining, enterprise managers can better understand market trends and customer needs, thereby formulating more scientific and reasonable business strategies and decision-making plans. Secondly, digital technology management focuses on intelligent production processes. The application of automation equipment, intelligent robots and other technologies can improve production efficiency, reduce costs, and ensure stable product quality. Furthermore, personalized marketing is one of the important characteristics of digital technology management. Through big data analysis and personalized recommendation algorithms, precise insights into customer needs can be achieved, providing customized products and services. Finally, digital technology management also emphasizes flexible and efficient resource allocation, achieving precise resource allocation and utilization through supply chain management systems, intelligent logistics and other technological means, and improving the overall operational efficiency of enterprises.

2.2 Application status of digital technology management in traditional industries

Driven by the current wave of digitalization, traditional industries are accelerating their digital transformation and showing more development trends in the application of digital technology management [3]. In the manufacturing industry, innovation and development of digital technology are helping enterprises achieve intelligence and automation in their production processes. For example, the wide application of intelligent manufacturing, industrial Internet and other technologies enables enterprises to better monitor the production process and improve production efficiency and product quality. Meanwhile, digital technology can also provide more accurate decision support for enterprises through production data analysis and prediction, helping them achieve more flexible and intelligent production operations. In the retail and service industries, digital technology is driving the industry towards digital transformation. The widespread application of digital technologies such as e-commerce, mobile payments, and O2O models has changed the shopping experience of consumers and the way businesses operate. Digital technology can also help enterprises better understand market demands, accurately target users, improve sales conversion rates and customer satisfaction. In industries such as energy, transportation, and healthcare, digital technologies such as big data analysis and the Internet of Things are also bringing new growth points and innovation opportunities to traditional industries. For example, the energy industry can optimize and save energy consumption through big data analysis, the transportation industry can achieve intelligent traffic management and safety control through Internet of Things technology, and the medical industry can achieve medical informatization and precision medicine through digital technology.

In summary, the application of digital technology in traditional industries has shown various development trends, which will make traditional industries more intelligent, efficient, and sustainable, bringing more opportunities and challenges to enterprise development.

2.3 The importance of digital technology management for the transformation and upgrading of traditional industries

Digital technology management is crucial for the transformation and upgrading of traditional industries. With the continuous changes in the global economic environment and intensified competition, traditional industries are facing challenges such as diversified market demand, rising production costs, and increasing competitive pressure. The introduction of digital technology management can help traditional industries optimize production processes, improve product quality, expand market channels, and improve operational efficiency, thereby enhancing enterprise competitiveness and adapting to market changes. Through digital transformation, traditional industries can achieve refined management, personalized services, improve customer satisfaction, and achieve sustainable development.

In summary, the current application status of digital technology management in traditional industries and its importance for the transformation and upgrading of traditional industries cannot be ignored. Traditional industries should actively embrace digital transformation, accelerate the application of digital technology management, enhance competitiveness, and achieve sustainable development.

3. Analysis of the current situation of transformation and upgrading of traditional industries

3.1 Challenges faced by traditional industries

In the current context, traditional industries are facing increasing challenges, mainly including rapid changes in market demand, rising production costs, and increasing environmental pressure. With the continuous development of the global economy and the rapid popularization of information technology, market demand has become increasingly diversified and personalized, and consumers have higher requirements for products and services. This rapidly changing market demand makes it difficult for traditional industries to keep up with the trend, while also bringing greater market competition pressure to enterprises.

On the other hand, under the influence of fluctuations in labor costs and raw material prices, the production costs of traditional industries are also constantly rising, which requires enterprises to adopt more efficient production methods and management models to reduce costs and improve profitability. At the same time, with the continuous strengthening of environmental awareness, traditional industries need to bear more environmental responsibilities and costs, which requires enterprises to consider how to adopt more sustainable development strategies to achieve a balance between economy, society, and environment. Only through innovative thinking, technological upgrading, and management innovation can traditional industries better adapt to market changes, achieve transformation and upgrading, and bring more opportunities and challenges to enterprise development.

3.2 The necessity of transforming and upgrading traditional industries

Faced with various challenges, the transformation and upgrading of traditional industries is imperative. Firstly, the rapid development of digital technology has changed consumer behavior and market environment. Traditional industries need to use digital technology to optimize production processes, improve product quality, and meet market demand. Secondly, the transformation and upgrading of traditional industries can help enterprises reduce production costs, improve production efficiency, and enhance competitiveness. In addition, the rise of emerging industries and fierce market competition have also forced traditional industries to transform and upgrade in order to seek new growth points and innovation opportunities. The most important thing is that the transformation and upgrading of traditional industries are crucial for sustainable development. By reducing emissions and improving resource utilization efficiency, traditional industries can achieve sustainable development through transformation and upgrading, which is in line with the trend of social development.

3.3 Analysis of existing cases: successful transformation and upgrading cases

In the process of transforming and upgrading traditional industries, many successful cases have emerged. Taking the manufacturing industry as an example, some traditional manufacturing enterprises have successfully realized the intelligent upgrading of production lines and improved production efficiency and product quality by introducing intelligent manufacturing and industrial Internet technologies. In the retail industry, some traditional retail enterprises have successfully opened up online channels, expanded sales channels, and increased market share by utilizing e-commerce and mobile payment technology. In addition, some traditional energy enterprises have successfully achieved green transformation, reduced emissions, and enhanced their corporate image and competitiveness by promoting the application of clean energy technologies.

These successful transformation and upgrading cases demonstrate that the transformation and upgrading of traditional industries is feasible and can bring substantial benefits. These cases provide valuable reference and inspiration for other traditional industries, inspiring more traditional industries to actively explore the path of transformation and upgrading. In summary, analyzing existing successful cases can provide more inspiration and reference for the transformation and upgrading of traditional industries, promote the acceleration of transformation and upgrading of traditional industries,

and meet future challenges.

4. The role of digital technology management in the transformation of traditional industries

Digital technology management plays a crucial role in the transformation and upgrading of traditional industries, involving data analysis and decision support, intelligent manufacturing and production efficiency improvement, supply chain management and resource optimization, as well as marketing and customer relationship management.

4.1 Data analysis and decision support

Digital technology provides more precise and comprehensive data support for traditional industries. Through big data analysis, data mining, and data visualization technologies, enterprises can better understand market demand, product circulation, and consumer behavior. This in-depth data analysis is not just about simply collecting and organizing data, but also discovering hidden business opportunities and potential problems through deep mining and analysis of massive amounts of data. These data analysis results provide strong support for enterprise decision-making, helping enterprises to more accurately grasp market dynamics, adjust product structure and market positioning, optimize product portfolio and supply chain management, thereby improving operational efficiency and market competitiveness. Meanwhile, data visualization technology transforms tedious data into intuitive graphical displays, enabling decision-makers to better understand the meaning behind the data and make corresponding decision adjustments more quickly. This refined data support and decision optimization has brought unprecedented opportunities to traditional industries, accelerating the transformation, upgrading, and sustainable development of enterprises.

4.2 Intelligent manufacturing and production efficiency improvement

Digital technology plays a crucial role in intelligent manufacturing, including the widespread application of cutting-edge technologies such as the Internet of Things, cloud computing, big data analysis, and artificial intelligence. The integration of these technologies can achieve automation, intelligence, and flexibility in production lines, significantly improving production efficiency, reducing costs, and improving product quality. The Internet of Things technology enables information sharing and collaborative operation between devices, thereby achieving intelligent production process management; Cloud computing technology provides enterprises with elastic computing and storage resources, supporting large-scale data processing and analysis; Big data analysis and artificial intelligence technology can discover potential problems in the production process from massive amounts of data, and achieve predictive maintenance and quality control.

Through a digital production management system, enterprises can achieve real-time monitoring and scheduling of the production process, as well as intelligent management of production equipment and raw materials. This real-time monitoring and scheduling can greatly improve the accuracy and flexibility of production plans, reducing waste and delays in the production process. At the same time, digital production systems can also support customized production, meet personalized needs, and achieve more flexible production modes. In summary, the widespread application of digital technology in the field of intelligent manufacturing has brought enormous transformation opportunities to traditional industries, accelerating the modernization of production methods and the enhancement of competitiveness for enterprises.

4.3 Supply chain management and resource optimization

The widespread application of digital technology in supply chain management has greatly promoted the establishment of efficient supply chain networks for enterprises, and achieved transparency of supply chain information and optimization of processes. By monitoring and analyzing supply chain data in real-time, enterprises can more accurately predict market demand, optimize inventory management, reduce inventory costs, and avoid inventory backlog or shortages. At the same time, digital technology enables enterprises to comprehensively optimize resource allocation, improve resource utilization efficiency, achieve supply-demand matching, and thus reduce operational risks.

In supply chain management, IoT technology can achieve interconnection and interoperability between devices, enabling information sharing and collaborative operation of various links in the

supply chain; Big data analysis can help enterprises extract valuable information from massive data and provide support for supply chain decision-making; Artificial intelligence technology can optimize supply chain planning and scheduling, improve the flexibility and responsiveness of the supply chain. The application of these digital technologies enables enterprises to establish agile and flexible supply chain networks, better adapt to market changes, improve competitiveness, and lay a solid foundation for sustainable development.

4.4 Marketing and customer relationship management

The application of digital technology in marketing and customer relationship management can help enterprises build a more refined marketing system. Through big data analysis and artificial intelligence technology, consumer needs and behavioral characteristics can be explored to achieve precision marketing, personalized recommendations, and customized services. At the same time, digital technology can also help enterprises establish a comprehensive customer relationship management system, achieve centralized management of customer information, customer interaction tracking, and customer satisfaction evaluation, enhance customer loyalty and corporate brand influence.

In summary, digital technology plays an indispensable role in the transformation and upgrading of traditional industries. It provides enterprises with more opportunities and possibilities, helps them better respond to market changes, improve production efficiency and product quality, optimize resource allocation and supply chain management, enhance market competitiveness and customer satisfaction. Therefore, actively promoting the application of digital technology in traditional industries has become an urgent task for enterprise transformation and upgrading.

5. Conclusion

Digital technology management has a profound and positive impact on the transformation and upgrading of traditional industries. Through practices such as data analysis and decision support, intelligent manufacturing and production efficiency improvement, supply chain management and resource optimization, as well as marketing and customer relationship management, significant results have been demonstrated in many traditional industries.

The widespread application of digital technology provides enterprises with more accurate and comprehensive market information and production and operation data, effectively supporting the scientific and refined decision-making of enterprises. The decision support system based on big data analysis enables enterprises to more accurately grasp market demand, product positioning, and production scheduling, thereby reducing decision risks, improving their response speed and market competitiveness. The application of intelligent manufacturing technology has promoted the innovation of production modes and the improvement of efficiency. Traditional industries have achieved lean and flexible production processes through digital, automated, and intelligent transformation, improving production efficiency, reducing costs, and providing technical support for meeting personalized needs. The practice of supply chain management and resource optimization has also brought tremendous changes to traditional industries. The application of digital technology makes the supply chain more transparent and efficient, helping enterprises better predict demand, reduce inventory costs, and optimize resource allocation, thereby improving the overall flexibility and responsiveness of the supply chain. The application of digital technology in marketing and customer relationship management enables enterprises to more accurately understand consumer needs, achieve precision marketing and personalized services, and thus improve customer satisfaction and loyalty. In practice, we have seen many traditional industries achieve significant results through the comprehensive application of digital technology management. However, it is also necessary to recognize that digital technology management still faces some challenges in the practical process, such as information security, talent cultivation, and the transformation of management concepts, which require further research and exploration.

In summary, the impact of digital technology management on the transformation and upgrading of traditional industries is positive. It injects new vitality and momentum into traditional industries, promoting their transformation towards intelligence, efficiency, and sustainable development. Therefore, we should further strengthen the research and practice of digital technology management, promote the widespread application of digital transformation in traditional industries, and promote the upgrading and development of traditional industries.

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