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THE ROLE OF DIGITAL TECHNOLOGIES IN ENHANCING THE COMPETITIVENESS OF INDUSTRIAL ENTERPRISES

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Abstract

This thesis examines the main characteristics of industrial enterprises in the digital economy, sheds light on the multifaceted nature of digitization in industrial operations and its consequences.

Keywords: Digital economy, industrial enterprises, digital technologies, artificial intelligence, cloud computing.

Introduction

In today's rapidly changing business landscape, industrial enterprises are increasingly adopting digital technologies to optimize their operations, increase efficiency, and gain a competitive advantage. According to a recent report, 85% of industrial companies are currently in the process of implementing a digital transformation strategy. This trend is not surprising, given the enormous potential of digital technologies to revolutionize the activities of industrial enterprises. The digital economy, characterized by the increasing use of digital devices, platforms, and algorithms, has changed the way industrial activities are conducted and led to the emergence of new forms of industrial enterprises.

The digital transformation of industrial enterprises has led to the integration of new technologies such as cloud computing, artificial intelligence and big data, which has had a significant impact on their productivity. According to a Deloitte

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report, cloud computing has enabled industrial enterprises to reduce costs, increase productivity, and boost productivity.[2] This technology has enabled enterprises to store and use large amounts of data remotely, reducing the need for physical infrastructure and increasing flexibility. In addition, artificial intelligence has automated repetitive tasks, which has improved productivity and it reduces the number of errors. By implementing artificial intelligence-based systems, industrial enterprises can optimize their processes and reduce their workforce in order to focus on more strategic tasks.

Big data has also played a crucial role in decision-making processes, enabling industrial enterprises to make decisions based on real-time data. For example, GE Transportation uses big data to optimize train schedules, which reduces fuel consumption by 15% (GE Transportation, 2021). This technology has the potential to revolutionize the way industrial enterprises operate, giving them valuable information and enabling them to make better informed decisions.

However, critics claim that the digital transformation of industrial enterprises can lead to job losses due to automation. While this is a major concern, research shows that digital transformation is creating new jobs that require specialized skills such as data analysts and cybersecurity specialists. [3] For this reason, it is very important that industrial enterprises invest in retraining and advanced training of their workforce to ensure that they have the skills necessary to succeed in the digital economy.

The integration of digital technologies into industrial enterprises has fundamentally changed the way they work. For example, the use of digital tools can significantly reduce production costs and increase efficiency. A McKinsey report has shown that these tools can lead to a 20-50% reduction in production costs and a 10-20% increase in productivity. [1] In addition, the growth of e-commerce has allowed industrial enterprises to reach a wider customer base. Big data has also played an important role in facilitating real-time decision-making and predictive maintenance. The introduction of artificial intelligence has led to automation of repetitive tasks, reducing human resources for value-added activities.

Critics may argue that the digitization of industry activities could lead to job losses, especially in low-skilled positions. However, the transition to digitization

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is also creating new jobs with demand for workers with digital skills. In addition, the use of digital technologies can improve the safety of workers in industrial environments. According to a study by the International Labor Organization, the introduction of digital technologies has led to a decrease in the number of accidents and injuries. [4] The use of big data in industrial operations is becoming increasingly important in the digital economy, as it can lead to significant cost savings and increased efficiency. According to a McKinsey report, using big data in industrial operations can lead to productivity increases of 1-3 percent and maintenance costs reductions of 25-50 percent. This is due to the ability of big data to make data-driven decisions, increase operational efficiency, and optimize resource allocation. For example, GE Digital uses predictive analysis to monitor machine performance and predict possible malfunctions, reducing downtime and maintenance costs. In addition, big data can improve supply chain management by enabling real-time tracking of products and materials.

Although some critics may argue that implementing big data in industrial operations is expensive and complex, data storage and processing costs have been significantly reduced, and the availability of cloud solutions has made it easier for industrial enterprises to implement big data. In addition, the benefits of using big data in industrial operations, such as increased efficiency, cost savings, and increased competitiveness, far outweigh the initial investment. In the digital economy, which provides industrial enterprises with the opportunity to make decisions based on data, optimize operations and reduce costs, the role of big data in industrial operations is crucial. As the volume of data produced by industrial equipment and processes continues to grow, the use of big data in industrial operations is expected to become even more important in the future.

The integration of artificial intelligence (AI) into industrial processes has led to significant improvements in productivity and productivity, as automation using artificial intelligence allows human workers to focus more on collaboration. According to a McKinsey report, the use of artificial intelligence in the manufacturing sector could generate additional revenue of between $1.2 trillion and $3.7 trillion in global economic value by 2030. One of the main advantages of artificial intelligence in industrial processes is the use of predictive

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maintenance, which can identify potential problems. before they cause significant disruptions. For example, General Electric has implemented predictive AI-based services in its energy production business, which has reduced unplanned downtime by 5% and increased productivity by 10%. However, the use of artificial intelligence in industrial processes also raises concerns about the need for job replacement and retraining and advanced training of the workforce.

In short, the integration of digital technologies such as cloud computing, artificial intelligence, and big data has had a significant impact on industry productivity. While there are concerns about job losses, digital transformation is also creating new jobs, highlighting the importance of retraining and upgrading the skills of the workforce. The integration of these technologies is crucial to maintain the competitiveness of industrial enterprises in the digital economy. The impact of digital technology on industry productivity is undeniable, with a number of benefits including efficiency, productivity gains, and innovation. Digitalization of production activities is also aimed at creating new jobs and improving worker safety in the production environment. However, it is important to address potential issues and ensure that the transition to digitization is carried out in a way that supports both businesses and employees.

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