THE ROLE OF DIGITAL TRANSFORMATION IN OPTIMIZING PRODUCTION COSTS

[1]Turaboyeva Kimiyohon, [2]Eshkobilova Nargiza
[1]Denau Institute of Entrepreneurship and Pedagogy, Chairman of the Department of Digital Economy
[2]Denau Institute of Entrepreneurship and Pedagogy, Teacher of the Department of Digital Economy

Abstract. This article discusses how the implementation of digital economy tools for industrial enterprises can reduce time to market, improve the quality of products and services, and enable new business models, which can help manufacturers improve production processes, reduce costs, and increase their competitiveness in the market.

Keywords: digital economy, business model, Industry 4.0, IoT sensors, Artificial intelligence.

Introduction

Digital transformations are developing in the countries of the world, and digitization of all industries is becoming global. The development of the economy of many countries is unimaginable without digital transformations. Digital transformations have penetrated various industries and have a great impact on the development of industries. The digitalization of the industrial sector is causing serious changes in the industry. Therefore, for development in our country, great attention is being paid to the digitization of production and service sectors. Decree of the President of the Republic of Uzbekistan No. PF-6079 of 05.10.2020 on the approval of the "Digital Uzbekistan - 2030" strategy and measures for its effective implementation "Development of robotic industry in real sectors of the economy and implementation, organization of robotics and engineering specializations for large industrial enterprises, widespread introduction of additive (layer-by-layer construction and synthesis technology, 3D printing) technologies in production enterprises.

Digital transformation in manufacturing means the integration of digital technologies, processes, and data along the entire production value chain. Optimizing business operations, increasing efficiency, and increasing customer satisfaction are achieved through digitalization of production.

Through digitalization, businesses gain access to tools such as the Internet of Things (IoT), artificial intelligence (AI), robotics, and cloud computing to automate production processes, collect and analyze data, and facilitate rapid decision-making. It helps manufacturers to improve production processes, reduce costs, and increase their competitiveness in the market.

The Internet of Things allows companies to collect reliable information about the state of production processes, provide them with new tools, and carry out monitoring related to the human factor with the lowest costs and risks. Robotization and virtual and augmented reality technologies will have the strongest impact on the transformation of production models. Modern 3D printers bring the manufacturer closer to the consumer and allow the production of products in a short period with a small batch.

A revolution is taking place in the global economy as a result of the digitization of various sectors. The introduction of digital economy tools for industrial enterprises provides an

opportunity to reduce the time of goods entering the market, improve the quality of products and services, and use new business models. In the industry, tools of the digital economy mean the means of digitizing all physical assets of the enterprise and integrating them into digital ecosystems with the information of the enterprise's business partners.

A prerequisite for the integration of an industrial enterprise into the digital economy is the introduction of a single information space into production, with the help of which enterprise management systems and industrial equipment can exchange information promptly. Industry 4.0 is a set of relations that arise in production processes related to the penetration of digital technologies (Industry 4.0) aimed at increasing the competitiveness of the country and business. In contrast to the German state initiatives aimed at the Internet of Industry, the term "Industry 4.0" for the Republic of Uzbekistan means the digital transformation of all sectors of the economy. According to Luding von Bertalanffy's general systems theory, every system has inputs and outputs that change processes and feedback. If we explain the meaning of the term "Industry 4.0" in the language of systems theory, then the following should be understood: "Industry 4.0" is a chain of production processes in which the digital exchange of information between system links (people, machines, DATA centers) using online technologies is considered a necessary element. is a system consisting of a "Digital economy? Taking into account the amendments to the "Uzbekistan" program, it can be said that Industry 4.0 is a set of relations that arise in production processes during the penetration of advanced "end-to-end" innovative technologies in all sectors of the economy aimed at increasing the country's competitiveness. E-commerce technologies should be understood as methods of conducting e-commerce, mechanisms, and means of e-commerce management aimed at ensuring the growth of profits.

Digital transformation in the manufacturing industry is the use of technology to create a more efficient and customer-centric manufacturing environment, enabling companies to stay competitive and adapt to the changing business landscape.

Digital transformation in manufacturing helps companies optimize their operations, improve quality, increase efficiency, and create new business models by leveraging digital technologies and data.

The main part

Manufacturers can automate repetitive tasks, reduce errors, and improve efficiency by digitizing processes and operations.

Digital technologies such as Internet of Things (IoT) sensors and automation help reduce the time required for product development, testing, and delivery. The Internet of Things refers to a network of data transmission between physical objects equipped with built-in tools and technologies to interact with each other or with the external environment. Digital control systems to automate production process control, service information systems to optimize operator tools and equipment safety and security fall under the purview of the Internet of Things. IoT, or the Internet of Things, can also be used to manage assets through predictive maintenance, statistical evaluation, and measurements to ensure maximum reliability. Industrial control systems can be integrated with smart grids to optimize energy consumption.

Manufacturers can easily optimize workflows and improve communication between departments by using digital technologies. Some of the reasons why digital efficiencies are important in manufacturing include faster time to market, improved quality, and increased productivity.

Digital transformation helps manufacturers gain insight into customer behavior and preferences, enabling them to create customized products and services. This can lead to increased customer satisfaction and loyalty.

In today's competitive market, manufacturers must focus on meeting their customer's needs and providing a great customer experience to stand out from the competition. A good customer experience in manufacturing is essential for the following reasons:

1. Increase customer satisfaction

2. Increased income

3. Improved brand reputation

Using digital technologies such as AI, machine learning, and big data analytics, manufacturers can gain new insights into their operations, identify areas for improvement, and develop new products and services.

By using digital technologies and data, manufacturers can gain new insights into their operations, identify areas for improvement, and develop new products and services. Today's factory with digital technology is very different from the leading factory of ten years ago. Advances in data and analytics, AI and ML, and technology vendors in the marketplace mean manufacturers can choose from hundreds of potential solutions and technology applications to improve the way they work.

Successfully implemented, these solutions provide irreversible returns. It leads to a 30-50% reduction in machine downtime, a 10-30% increase in production capacity, a 15-30% improvement in labor productivity, and 85% more forecast accuracy in various industries.

Industry 4.0 is the fourth wave of the industrial revolution in the United States. Industry 1.0 started with mechanization and 2.0 brought us mass production. With the advent of computerization in manufacturing, Industry 3.0 has taken its place. In Industry 4.0, computers and automation will come together in completely new ways.

According to Forbes, for a developer to be considered 4.0, it must include:

- Interoperability: Machines, devices, sensors, and people need to connect and communicate with each other.

- Information transparency: Computer systems create a virtual copy of the physical world using sensor data to contextualize information.

- Technical assistance: Machines must support humans in decision-making and problem-solving and can assist or replace humans in tasks that are too difficult or dangerous.

- Decentralized decision-making: A cyber-physical system should be able to make simple decisions on its own to be as autonomous as possible.

It is designed to connect embedded system manufacturing technology with intelligent manufacturing processes. This is particularly evident in manufacturing variability, which allows businesses to better understand and understand processes, products, and even customer usage and behavior.

When Industry 4.0 systems are installed, organizations will be able to collect real-time information throughout the entire supply chain from start to finish. uses it to improve products themselves through near-instant feedback.

Companies that adopt a digital-first mentality will be more prepared for the next industrial revolution.

Digital transformation is taking over all aspects of production, these processes affect not only productivity in industrial production but also people making the right choices. The right use of technology can lead to more empowered decision-making; new opportunities for training, retraining, and functional cooperation; better attract and retain talent; and provide opportunities such as increased workplace safety and employee satisfaction.

Digitization of the industry allows to preparation of ready-made products for customers in a short period, to improve the provision of quality services. is prevented.

If the industry is digitized, the product quality will be produced by the consumer demand. As a result, the demand for the product increases. There has been a significant increase in demand - the volume will double in a short period.

Several technologies are used in the implementation of digital transformations in enterprises. These include Cloud Computing, Artificial Intelligence, Machine Learning, the Internet of Things, 5G, Blockchain, and Digitization technologies.

Cloud computing - moving software systems and data to cloud-based servers.

This option consolidates infrastructure costs and allows companies to significantly share costs. Companies can also benefit from third-party services that offer cloud computing. Cloud computing allows your organization to scale quickly to meet changing business challenges.

Artificial Intelligence (AI) and Machine Learning (ML) are algorithms that learn based on trends and behaviors and react without human interaction.

Modern cloud-based ERP solutions are now leveraging AI and ML capabilities in reporting, dashboards, and data analytics tools to succeed in this digital economy. Risk analysis can now be done with the help of artificial intelligence, which produces business predictions and forecasts based on real-time organized data, freeing up employees for other tasks.

The Internet of Things (IoT) is about connecting and creating intelligence from all the devices around us.

In industrial facilities, the IoT concept is implemented through mobile applications, digital cameras, digital scanners, and sensors. This information can then be stored, reported, or processed as needed and the system can respond accordingly.

5G connection - wireless connection at a speed of up to 10 Gbit / s.

It provides the upload and download speeds required for IoT systems, big data, and machine learning.

Blockchain technology is a method of secure data transfer with applications outside of the world of banking and finance.

It is now used in supply chain operations to ensure information security.

Digitization - Converting handwritten notes, documents, and pictures into a digital equivalent that can be received, processed, and stored by a computer.

As you can see, digital transformation technologies are related to the collection and processing of large amounts of data. However, data is not useful if it is deleted and not available for decision-making. Digital transformation also requires providing real-time data across the entire organization. This, in turn, increases communication and interaction between different departments.

Data mining is one of the benefits of IoT. Every step of production can be monitored and studied. The sheer volume of data is overwhelming, but it presents a world of opportunities for

businesses to better manage their supply chain, improve day-to-day operations, and enhance customer relationships.

As companies move to a data-driven environment, there must be a system in place to manage data and processes. Implementing cloud-based ERP solutions integrates people, technology and processes to become a connected business through digital technology and digital platforms. Cloud ERP software is flexible, intuitive, collaborative, automated, and intuitive, providing users with a real-time single source of truth, accessible anytime, anywhere.

The use of technology in all operations increases operational efficiency. This allows the organization to quickly respond to a changing environment. It can change the way a product is packaged, shipped, or even manufactured based on the information it collects. Automating business processes can help reduce errors and reduce costs. Digital transformation requires changing how businesses think about customers, products, and processes. This requires openness to evaluating data and flexibility to make changes based on data.

Digital transformation uses technologies like the Internet of Things to capture the data needed to customize product lines, tailor marketing, accelerate product improvements, and offer more effective customer service.

The technology offers cost savings and increased productivity as they are automatically alerted to system and machine errors. Manufacturers and distributors are experiencing reduced machine downtime, improved quality, less waste and greater visibility through improved analytics.

Ways to reduce manufacturing costs through digital transformation include:

1. Product design: Availability of product usage data allows manufacturers to improve product quality and design.

2. Lean manufacturing: Big data enables manufacturers to provide predictive rather than preventive maintenance. This reduces machine downtime and increases the return on investment. Digital data about the production line can be collected and used to find problems and inefficiencies and recommend corrective measures. Timely and accurate information such as critical orders, material delivery delays, equipment failures, and inventory levels can be analyzed. Once analyzed, it can be used to optimize production schedules, demand forecasts, and lead times, leading to benefits such as inventory minimization, just-in-time production, and waste reduction.

3. Product standardization: using IoT, manufacturers can achieve "mass customization". This opens up opportunities for new service offerings without adding significant costs.

4. Product Line Rationalization: Good product cost information improves the ability to quickly understand profitability and optimize pricing.

5. Simplify supply chain management: A seamless flow of information for critical events across the supply chain between manufacturers, distributors, and customers facilitates response.

6. Total cost measurement: Big data opens the door to more opportunities to analyze costs throughout the production cycle and organization.

7. Focus on communications: Technology enables easy communication of critical information to improve vendor, partner, and customer relationships.

Digital transformation in manufacturing can significantly increase worker productivity. When you incorporate automated data collection into your business processes, you instantly free up time for your employees to work on other projects. In addition, automated data collection results in fewer errors and more efficient order fulfillment.

Conclusions and Recommendations: Investing in technology and innovation is key for organizations today and is only one way to reduce costs. Even small companies must adapt to increasing consumer demand and disruptive competition. The use of cloud computing software and digital tools directly contributes to financial management and control. From an operational perspective, technology has been used in many companies to optimize profitability and reduce costs.

One of the simplest and most effective ways to reduce costs within the company with the help of technology is to reduce material costs. A clear example is the transition to digital documents and efforts to make your organization paperless. Reducing the cost of paper, ink, printing, postage, and transportation can significantly reduce costs. Digitalizing manual and paper processes can also speed up the speed of doing business.

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