Digitalization in Operations Management Practices in Organizations

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Abstract- Controlling an organization's financial objectives, operational protocols, and organizational structure is known as operations management. It is the task management necessary for a business to run well every day. Digital technologies are currently being used to boost productivity or open up new commercial prospects in an organization's operations. It include creating new business models, automating procedures, and integrating new technology into current systems. Organizations that embrace digital transformation can lower expenses, boost productivity, become more agile, open up new markets, and generate new revenue streams. During the digital revolution, collaboration and dismantling organizational silos are also crucial for the business to stay competitive. To guarantee a good customer experience and raise the organization's chances of success, it is critical to build procedures around the needs of the customer. For digital transformation to be supported, a solid technological foundation is required. The expansion and sustainability of the company also depend on having a clear plan for how the technology foundation will be developed and maintained over time. In this paper, we'll talk about operational management and how, throughout time, digitization has touched it. We will go into detail about its significance, trends, uses, and obstacles. We have also spoken about how digitization will impact operational management in the future and how it will benefit businesses in terms of growth, sustainability, customer happiness, and increased productivity.
Keywords- Business, Industry, Operations, Management, Digital, Productivity

I. INTRODUCTION

Every business provides consumers with a service or a product. Providing top-notch services or goods enhances client attraction, fosters trust, increases sales and offers you a competitive edge in the market. A crucial component of any business is making sure the item or service being supplied is of excellent quality and worth the money your clients will pay for it.

The administration of corporate activities is assisted by operations management to meet objectives, increase productivity, and optimize profitability. It is the fundamental aspect of every business and industry. The area of management known as operations management [1] is responsible for supervising a service or product's whole production process, from the input stage to the final stage. Planning, coordinating, and supervising the manufacturing, production, and service delivery processes are all part of this process, which aims to produce high-quality goods and services that satisfy customers.

Operations management oversees a company's entire operational system, which manages its daily activities. Operations management oversees all procedures and handles issues related to system design, operation, maintenance, and improvement. Furthermore, it maintains the timely, effective, and smooth production of goods and services even in the face of unanticipated events.

Happy customers lead to repeat business and recommendations, enhancing brand value and providing a competitive edge. Identifying and refining the processes involved in producing goods or services helps cut costs. This is a key aspect of operations management. Consequently, effective operations management enables organizations to offer more products and services while reducing expenses, thereby fostering growth and increasing revenue. Additionally, efficient operations management boosts employee productivity and motivation.

The innovative application of digital technology to quicken corporate strategy is known as "digital transformation." It is about using digital technology to drastically realign an organization's commercial performance by empowering individuals, streamlining procedures, and automating systems. It can entail building new business models or automating procedures by incorporating new technology into current systems. Organizations may benefit from digital transformation by saving money, increasing productivity, and being more agile. Moreover, it may allow them to expand into new areas, generate new income sources, and provide better customer service.

II. DIGITAL TRANSFORMATION IN THE DIFFERENT ASPECTS OF THE BUSINESSES

In the context of digital transformation, technology is rated according to how well it can support corporate strategy, people resources, processes, data, and assets. Digital transformation may be used in every area of the industry, as shown in figure1. As a result of digital transformation, organizations today must effectively use this technology. In order to maintain the company's data, backend businesses employ cloud technology.

The industrial internet of things [2] is used in

production and supply chain management to manufacture goods and services with utmost accuracy, efficiency, more products, and enhanced customer satisfaction. Deriving real-time data from the production process for decision-making and problem-solving across the business is the main advantage of smart manufacturing [3]. This involves extracting and integrating data using tools and services including computerized control, intelligent sensors, and production management. Using this connectivity, an organization may gather and use real-time data to enhance operations, including the availability of raw materials and work-in-progress inventories.

Offices and the front end of enterprises use digital transformation on an on-premise basis. Big data analysis may be used in sales and marketing to improve client acquisition, and in the middle office, artificial intelligence and the internet of things can help Human resources departments evaluate thousands of candidates for a profile.

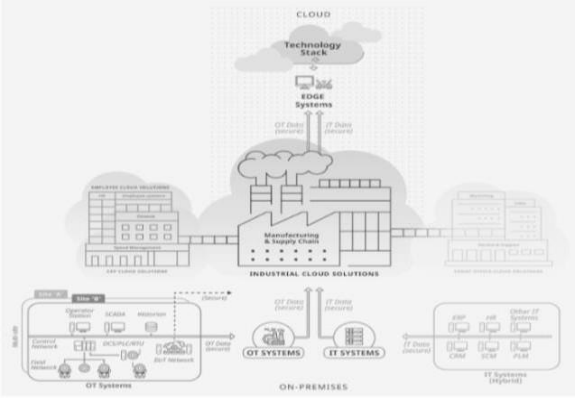


Figure 1: Application of digitalization in every aspect of business

While unattended remote operations represent a first step on the road to digital transformation in the industries, with many businesses experiencing gains in productivity, flexibility, and safety, human interventions and decision-making are still crucial as plant staff learns to operate with digital systems. The industry's near-term objective is to integrate autonomous and human systems, but businesses must view automation as an evolutionary process.

III. OPERATIONAL MANAGEMENT AND ITS IMPORTANCE

Operations management is a vital aspect of any organization, as it is responsible for ensuring that the business operations run efficiently and effectively. This includes managing resources, processes, and people to meet the needs of customers, while also minimizing costs and maximizing profits. Effective operations management can help organizations improve their productivity, quality, and customer satisfaction levels, which in turn can lead to increased competitiveness, profitability, and long-term sustainability. As such, it is essential for businesses to prioritize operations management and continually seek to improve their operations to stay competitive in today's fast-paced and constantly evolving business environment. Some of its important aspects are given below.

- A company's ability to sell or distribute a certain amount of goods or services is assessed as part of capacity planning, an aspect of operations management.
- Product or service design involves generating new ideas and developing a product or service to ensure that what is offered to customers meets their needs and expectations.

Operations management ensures that a product satisfies client demands while taking into account its cost efficiency.

- Quality control may entail quality assurance or management. It involves keeping an eye out for potential problems.
- Process evaluation, improvement, and optimization entail redesigning a process entirely or rearranging its phases to enhance efficiency is managed by operations management.
- Supply chain management ensures the costs of obtaining the materials, production, inventory management, sales, and distribution are reasonable. Lower overhead expenses, efficient manufacturing, and prompt product delivery are the consequences of this.
- High-level planning and strategizing are also responsibilities of operations management.

IV. TRENDS IN DIGITAL OPERATIONS MANAGEMENT PRACTICES

Digital operations management is a rapidly evolving field that is changing the way businesses operate. As technology advances, new trends in digital operations management practices are emerging, which are shaping the way businesses optimize their operations and gain a competitive advantage in the marketplace.

One of the most significant trends in digital operations management practices is the use of automation. Automation can help businesses to streamline their operations and improve efficiency by reducing the time and cost associated with manual processing. For instance, automating order processing can help to speed up the process of fulfilling orders, while automated inventory management can ensure that products are always in stock. This not only helps to improve customer satisfaction but also frees up resources for more strategic work.

Another important trend in digital operations management practices is the use of data analytics. This can help them to identify trends, spot opportunities for improvement, and make informed decisions. For example, data analytics can be used to optimize supply chain management, improve customer service, and personalize marketing efforts.

Cloud computing [4] is another important trend in digital operations management practices. Cloud-based solutions enable businesses to access applications and data from anywhere, at any time, and on any device. This allows for greater flexibility and scalability and can reduce costs by eliminating the need for expensive on-premises hardware.

Artificial intelligence (AI) and machine learning (ML) are also important trends in digital operations management practices. Machine learning can be used to analyze large amounts of data and identify patterns and insights. It helps businesses predict demand and optimize inventory levels. AI and ML can also be used to detect fraud, reduce waste, and improve supply chain efficiency.

However, as businesses adopt these new digital operations management practices, they also face several challenges. One of the

major challenges is the need for skilled talent. Digital technologies require specialized skills, such as data analytics, cloud computing, and cybersecurity, which can be difficult to find in the job market. This can make it challenging for businesses to find and hire the right people to implement these practices.

V. APPLICATIONS OF DIGITALIZATION IN OPERATIONAL MANAGEMENT IN DIFFERENT INDUSTRIES

Digitalization is revolutionizing operational management across various industries by streamlining processes, improving efficiency, and reducing costs. By using digital technologies, businesses can gain a competitive advantage and meet the increasing demands of consumers. Here are some examples of applications of digitalization in operational management in industries:

A. Manufacturing Industry

The manufacturing industry is one of the sectors that has been significantly impacted by digitalization. One of the most significant applications of digitalization in this industry is the use of robotics and automation [5]. Robots are being used to perform tasks that were previously done by humans, such as assembly line tasks, material handling, and quality control. This has helped to improve efficiency, reduce labor costs, and improve product quality.

Digital twins[6] are another application of digitalization in the manufacturing industry. A digital twin is a virtual replica of a physical asset or process. Manufacturers can use digital twins to simulate their production processes and identify potential issues before they occur. This can help to reduce downtime, optimize production, and improve product quality.

B. Healthcare Industry

The healthcare industry is another sector that has been significantly impacted by digitalization. One of the most significant applications of digitalization [7] in this industry is the use of electronic health records (EHRs). EHRs enable healthcare providers to store and access patient information electronically, which can improve patient care, reduce medical errors, and improve efficiency.

Telemedicine is another application of digitalization in the healthcare industry. Telemedicine enables healthcare providers to deliver healthcare services remotely, such as through video conferencing or remote monitoring. This can improve access to healthcare services, reduce costs, and improve patient outcomes.

C. Retail Industry

The retail industry is also being transformed by digitalization. One of the most significant applications of digitalization in this industry is the

use of e-commerce. E-commerce enables retailers [8] to sell products online, which can reach a wider audience and reduce costs associated with physical storefronts.

Digitalization is also being used to improve supply chain management in the retail industry. By using digital technologies such as blockchain and IoT devices, retailers can track products throughout the supply chain, monitor inventory levels, and optimize distribution processes.

D. *Energy Industry*

The energy industry is another sector that has been significantly impacted by digitalization. One of the most significant applications of digitalization in this industry is the use of smart grids [9]. Smart grids use digital technologies such as IoT devices and data analytics to optimize the distribution of electricity. This can improve efficiency, reduce costs, and improve reliability.

Digitalization is also being used to improve asset management in the energy industry. By using digital technologies such as sensors and data analytics, energy companies can monitor their assets in real-time, identify potential issues before they occur, and optimize maintenance processes.

E. *Logistics Industry*

The logistics industry [10] is also being transformed by digitalization. One of the most significant applications of digitalization in this industry is the use of automated warehouses. Automated warehouses use robots and other digital technologies to perform tasks such as picking, packing, and shipping. This can improve efficiency, reduce costs, and improve accuracy.

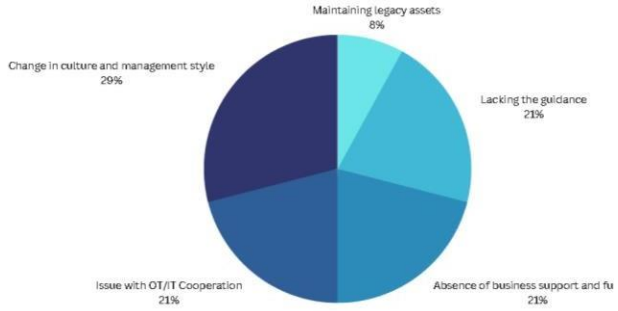
Digitalization is also being used to improve last-mile delivery in the logistics industry. By using digital technologies such as drones and autonomous vehicles, logistics companies can deliver packages more quickly and efficiently. This can improve customer satisfaction and reduce delivery costs.

In conclusion, digitalization is transforming operational management across various industries by streamlining processes, improving efficiency, and reducing costs. Embracing digital technologies like automation, data analytics, and IoT devices allows businesses to gain a competitive edge and address the growing demands of consumers.

VI. CHALLENGES FACED BY BUSINESSES IN DIGITAL OPERATIONAL PRACTICES

As digital technologies continue to advance, businesses must adapt and evolve their operational practices to remain competitive in the marketplace. However, there are several challenges that small and large-sized businesses face when implementing digital operational practices [11]. Graph 1 below describes the major risks faced in different

phases of the businesses. It demonstrates that over 21% of businesses are operating without a strategy for adopting digital operational principles, and they are falling behind. Around 21% of organizations currently lack the necessary capital and investment to build the software and hardware necessary to provide expensive services and digital commodities. Over 29% of businesses are still operating in silos and using outdated methods, and they favor keeping things that way. They avoid cooperating 21% of the time and are hesitant to learn and adapt. Around 8% of companies desire to keep their old assets.



Graph 1: Challenges in digital operational management

One major challenge is the need for skilled talent. Digital technologies require a range of specialized skills, such as data analytics, cloud computing, and cybersecurity. However, there is often a shortage of talent in these areas, making it difficult for businesses to find and hire the right people. The bulk of the labor force today lacks appropriate understanding in this area. In addition to this, intelligent machines have occupied space in industries, depriving laborers and many other professions of their workspace. They foresee that the digital age will threaten their employment [12]. As a result, they continue to be reluctant to learn more about this subject and to advance.

Another challenge is the cost of implementing digital technologies. This includes the cost of hardware, software, and training for employees. The cost of hardware and software prevents small enterprises from investing in them in the majority of situations. As a result, even though they seek higher growth potential, they fall behind in the rat race and are isolated from the enormous bulls of the industry.

Integration with legacy systems is also a common challenge. The capacity of a company to integrate information technology (IT) into all aspects of its business, in conjunction with operational technology (OT), and human resources, is a crucial tenet of digital transformation. Many businesses have existing systems and processes that are not compatible with digital technologies. The machines, devices, and control systems of contemporary factories frequently operate in relative isolation and communicate through a number of specialized protocols due to the range of OT in production. Silos, communication issues, and procedural blind spots result from this. This can make it difficult to implement new solutions and can result in inefficiencies and errors.

Data privacy and security are other challenges. Cybersecurity is an increasingly important consideration in digital operations management. With more and more data being stored online, companies must take steps to protect their data and systems from cyber threats.

Finally, there is a challenge in managing the pace of change. Digital technologies are evolving rapidly, and businesses must keep up with these changes to remain competitive. This can be difficult for businesses that are

already struggling to keep up with day-to-day operations. Many of the aforementioned operational management concerns associated with digitalization result in the sluggish expansion of enterprises. Thus, it is vital that businesses be aware of both current and emerging digital trends in the sector.

In conclusion, digital operations management is evolving rapidly, with emerging trends in automation, data analytics, cloud computing, AI, machine learning, and cybersecurity shaping the way businesses operate. By staying up-to-date with these trends, companies can
improve efficiency, gain insights, and stay competitive in an increasingly digital world.

VII. FUTURE SCOPE

The future of digitalization in operational management in industries is vast and promising. The pace at which digital technologies are evolving, and the way businesses are leveraging these technologies to optimize their operations, shows that digitalization is set to transform the industrial landscape. In order to progress steadily into the next generation, we must adopt cutting-edge digital business strategies [13].

One of the key areas of the future scope of digitalization in operational management is the use of the Internet of Things (IoT). In industrial settings, IoT can be used to monitor equipment and machinery, predict maintenance needs, and improve operational efficiency. Artificial intelligence (AI) and machine learning (ML) are set to have a major impact on the future of digitalization in operational management across industries. These technologies can analyze vast amounts of data, uncover patterns and insights, and make predictions. This can help businesses to optimize their operations, reduce waste and downtime, improve safety, lower operating costs, and improve efficiency.

Cloud computing will continue to be an important area of future scope in operational management. Cloud-based solutions enable businesses to access applications and data from anywhere, at any time, and on any device. This allows for greater flexibility and scalability and can reduce costs by eliminating the need for expensive on-premises hardware.

Another important area of future scope is the use of augmented reality (AR) and virtual reality (VR) in operational management. This can help to improve safety, reduce training time, and increase retention of information. AR and VR can also be used for remote maintenance and repair, allowing technicians to troubleshoot issues without having to be physically present. Blockchain technology can also be employed in operational management.

VIII. CONCLUSION

This paper thoroughly examines operational management and how digitization has impacted it over time. We have spoken about both present as well as potential trends. The use of digitalization in operational management boosts productivity and efficiency by simplifying procedures, automating work, and minimizing mistakes. Profitability can rise and costs can be reduced as a result. Second, digitization in real-time can be utilized to spot patterns, streamline processes, and come to data-driven conclusions. Finally, it facilitates better internal and external communication and

cooperation, allowing for quicker and more efficient decision-making. Fourth, firms can now react swiftly to market developments such as changes in customer behavior or the emergence of new technologies thanks to digitization. Third, digitization lowers the risk of fraud and mistakes by producing a detailed audit trail of all actions, improving openness and accountability.

Technologies like the Internet of Things, machine learning, cloud computing, and artificial intelligence have already established themselves as important segments of several sectors in the modern world. They are gradually joining both huge industries and small-scale ones. However, as with any new technology, there are challenges that businesses will need to overcome to fully realize the future scope of digitalization in operational management in industries. One of the major challenges is the need for skilled talent. Digital technologies require specialized skills, such as data analytics, cloud computing, and cybersecurity, which can be difficult to find in the job market. This can make it challenging for businesses to find and hire the right people to implement these practices.

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