The Impact of Digitalization on Key Economic Sectors

OPEN ACCESS

Volume: 13

Special Issue: 2

Month: January

Year: 2026

E-ISSN: 2582-0397

P-ISSN: 2321-788X

Citation:
Shanthi, M., and Navaneetha S. "The Impact of Digitalization on Key Economic Sectors." *Shanlax International Journal of Arts, Science and Humanities*, vol. 13, no. 2, 2026, pp. 33–37.

DOI:
https://doi.org/10.34293/sijash.v13iS2-i4-Jan.10574

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Abstract
In recent years, the world has undergone a digital revolution in all spheres. The economy's adaptability and acceptance of this technological shift has accelerated growth in many industrial sectors, including commerce, banking, and trading. This technological shift can be referred to as digital transformation. It is the revolution arising from the integration of technology and industry. Technological advance encompasses innovation and inception. The major introduction by information technology to the world was the introduction of artificial intelligence. AI and blockchain play a crucial role in the digitizing of industry and commerce. Marketing automation, analytics and reporting tools, inventory and logistics tools, and payment gateways are some technological tools applied in the economy, commerce, and industry. This transformation serves as a new normal in the economy. However, despite its profound effect on the commercial and industrial sectors, the revolution has certain drawbacks. Technology has the ability to be both a friend and a nemesis. Depends on its usage in various scenarios. Despite all the pros and cons, the technological advance has a significant influence on the current economy and industry.

Keywords: Digitalization, Digital Transformation, Economy, Industry, Commerce, Banking, Trading, Digitalization in Key Economic Sectors

Introduction

The twenty-first century marks an age of technology. The shift of technology from early 80s to 2000s was drastic and impactful. From computerization to artificial intelligence, there was a massive digital transformation all over the world. The strategic imperatives of digitization have created a space of development of economy and industry. Digital transformation refers to the unification of technology to different sectors by changing their operation and delivery, and directing new efficient models and processes. This shift has had great impact in all areas of an economy including the innovative models, processes, workforce, products and data, throughout the years. The mid to late twentieth century centered on the automation of tasks through computerization, the emergence of telecommunication, and the introduction of internet. Today, the focus has been shifted to the deep integration of technology in all platforms. This leads to the usage of technology for transforming and improving the process to work on the business and economic models. It is an essential component in modern economy and industry as it facilitates growth and fosters

innovation in all spheres. The purpose of this study is to understand how digitalization have transformed some sectors namely economy, industry, commerce, banking and trading. It analyses the role of digital tools like, artificial intelligence, machine learning, cloud computing services, and many more in key economic sectors. It contributes to the analysis of the impact of technology in significant domains. Existing literatures emphasize on the dominating role of digitalization in transforming the structure of economy, systems, processes, highlighting both opportunities and challenges across key sectors of economy. [1]–[7]

Digital Transformation

According to D. Schilirò, Digital transformation refers to the adoption of advanced digital technologies to revolutionize service or business. (Schilirò, 2024) [13]. In simple words, digital transformation is the shift in the foundation of a sector by incorporating technology to its domains, resulting in its effective and efficient operations. It is about redefining the structure to develop and modernize the concept, process and culture using technology. The digital transformation works in the following ways:

This strategic shift is driven by some factors including customer demand, advancements of technology, competition, data-driven decisions, and efficiency. These key factors have been the reason for the innovation of Artificial Intelligence (AI), Machine Automation, Robotics, Internet of Things (IoT), Big Data Analytics, and Cloud computing services. All these factors are applied in various sectors to provide solutions to the technological problems and to modernize the systems. [4]

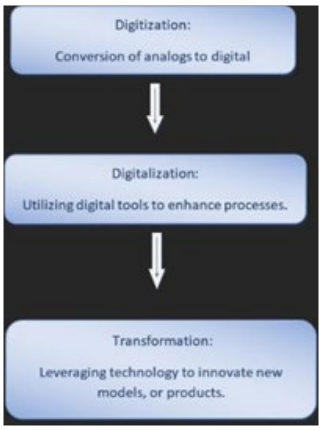

Figure 1 Digital Transformation Framework

Digital Transformation in Economy

Digitization in economy was attained through the digital economy. Digital economy is the combination of two words; Digital and Economy. The concept explains the leveraging of digital tools to remodel the economy. It was also called the Internet Economy due to its integration and reliance with the internet. A significant instance for implying the influence of digitalization in the economy will be the introduction of Unified Payments Interface (UPI) in India. It is a payment system, launched in 2016, linking multiple bank accounts to an app facilitating transfers using a unique identity number. Digitization also offers many other services like online markets (example: Amazon) and cloud services (example: Azure). All these digital platforms have offered huge services by the optimal utilization of technology. [1]–[2]

According to the United Nations report 2024, the digital economy is marking a boom period. The Gross Domestic Product (GDP) is showing a productive increase since the rise of digital era. Let us look at its inclusion in overall categories through a graph calculated on the basis of approximate percentage:

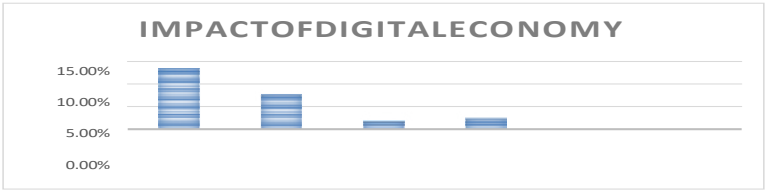

Figure 2 Impact of Digitalization in the Economy

The graph presents the relative impact of the digitalization in the economy through four aspects—growth, productivity, innovation, employment in the recent years. As per the illustration, the growth and productivity had a great impact while comparing to innovation and employment. This implies that digital economy supports streamlining processes, business expansions, and data-driven decisions using digital platforms and global markets. Digital economy can also displace the employability in the beginning but, later can create high demand in employment. Overall, the digital transformation plays a significant role in the economy by influencing the key drivers. [5]–[6]

Impact of Digitalization in Industry

A major revolution resulted in the industry due to the inclusion of technology in manufacturing and production process. These advanced technical tools have improved the productivity, efficiency and competitiveness of the industrial sector in the dynamic global market.

One of the most important technology advancements in the sector was the Fourth Industrial Revolution or Industry 4.0. It is the integration of technologies or the cyber-physical systems and enhancing the communication. It facilitates the inclusion of artificial intelligence, internet of things and robotics in the manufacturing process. These digital tools allow machines, sensors, and software to connect and communicate with each other to break down the complex production process and decision-making. Another advancement is the introduction of automation. Automation helps to break down and complete a large-scale task with the usage of an automatic equipment. It will reduce the difficulty of labor-intensive tasks, thereby improving productivity and enhancing workforce efficiency. Digitalization of supply chain plays an important role in the increased productivity of the current state of industrial sector. It uses data integration, transparency, automation and big data analytics to better resource allocation, improve customer demand, and reduce manual errors. Schedule maintenance, maintaining machines and equipment health, and many other preventive measures could be managed through predictive maintenance. This integrated use of technological advancements improves and ensures operational efficiency. Ultimately, the digital transformation has improved the manufacturing and production sector in terms of productivity, resource allocation, efficient workforce and better output. [4], [7]

Digitization in Commerce and Trading

In olden days, traditional commerce was present in the market, which implies the inclusion of physical marketing, and offline advertisements. This face-to-face interaction has limited reach commercially and geographically. In 1900s, first secure online transaction was introduced and thereby created a pathway for e-commerce. Although the idea of e-commerce was being spread in 2000s, the growth rate was slow. The Covid-19 pandemic was the reason for the popularity of the digital market. Smartphones play a significant role in the widespread usage of e-commerce, facilitating online transactions. One important example to understand the growth of e-commerce would be Amazon. It was introduced in 2005, and implemented the idea of immediate purchase where goods will be shipped and delivered from another state or country to our door step in three days. This innovative idea changed the customer mindset and revolutionized the concept of market. Another important innovation in digital market was blockchain. Blockchain is a digital

ledger where data is stored as blocks in a chronological chain with a cryptographical security. It is a system which ensures transparent and secure transactions with smart contracts, reduction of fraudulent activities, and reliable relationships with negotiators. In e-commerce, it ensures honest online transactions that takes place in the market providing customer security to improve productivity. Digital commerce is not the only sector to utilize the blockchain, it is being used by trading sector too. [8]–[9], [11]–[12]

Digital trading platforms are the platforms that allows the marketing of stocks, forex, cryptos and bonds using advanced analytics and automation. Some major global players in the sector are Fidelity, Interactive brokers, Robinhood, Metatrader, and Binance. They use algorithm-based trading systems, charting software, stock screeners, and some analytical tools to provide a useful and secure trading platform. Real time data feeds provide live access to stock prices and volumes and charting software allows visual analysis of the stocks using drawing tools and multiple chart types. Automation using algorithms is a great advantage for placing large orders. Blockchain in trading provides transparency by removing the intermediaries and allowing the concept of peer-to-peer trading, enforce smart trading rules and regulations, and gives proof of ownerships. Digital revolution in trading has brought the idea of safe, secure, fast and efficient trading and therefore has provided with huge customer inclusion. [10]

In general, the digital revolution has created a space for people to reach to the global market from any part of the world through online markets removing time, cost and geographical hindrances. It improves market efficiency by ensuring optimal allocation of its resources through the usage of digital advancements. Digital markets enforce and ensures transparency, time and cost allocation, productivity and accurate information, thereby facilitating unbiased competition and cooperation.

Digital Revolution in Banking Sector

In the late twentieth century, banks started to experiment on digitalizing the banking sector. The first innovation was the introduction of Automated Telling Machines (ATMs), which facilitated withdrawals with the help of unique pin numbers. Later, telephone banking and internet banking came into account for providing bank account access through digital platforms. When there was a widespread usage of smartphones, the sector created mobile apps for accessing accounts and facilitating online transactions. The banking sector was quick with embracing technological advancements.

The key player in digitizing the banking sector was Fintech. It uses artificial intelligence and big data analytics to facilitate quick and easy financial services. It aims for providing convenience to its customers through its innovative ideas like mobile wallets, P2P payments, buy now pay later systems and embedded finance. It creates a space for easy accessibility, efficiency, security and personalization. Digital platforms have created a revolution by shifting the economy to a cashless economy. They have also provided fraud detection and security systems in the sector using artificial intelligence. With the help of machine learning, banks have been able to detect abnormalities by analyzing real-time data. Pattern recognition, predictive analysis and behavioral biometrics are key tools used in the security management of banking sector. [3]

Banking sector was remodeled by the digital transformation throughout the years. Using the technical tools, the sector has been trying to strengthen the online financial services while proving with necessary safety and security regulations. Digital transformation acts a crucial role in the development of the sector's efficiency and productivity.

The Digital Future

Digitalization is creating a new reality. Digital technologies are shaping society's future path. [14] In future, the digitalization is expected to create a new wave across the economy, industry, commerce, trading and banking sectors through digital advancements such as deep artificial intelligence and machine learning integration, robust cybersecurity, hyper automation, immersive realities like metaverse, edge computing and quantum computing. These helps to make independent decisions, for providing higher speed in operations,

blending ideas, and automation. The coming years will open a new door to the digital technologies by combining the physical and virtual world. They will contribute to sustainability, productive growth and efficiency of a cooperative digital world.

Conclusion

Digital Transformation has become a dominant force in the world. It has been developed to remodel the working of industries, reimagining commerce and trading platforms, revolutionizing banking sector, and innovating new concepts in economy. The combination of technological advancements has increased productivity and efficiency, improved financial inclusion, facilitated convenience and developed a new environment. While the security risks and gaps are included, the developing technologies have exceeded these limitations. The digital advancements are expected to evolve while maintaining the sustainable principles, ethics and market strategies. The future is holding many more possibilities and innovations for the tech-world. Overall, the study helps to provide a detailed idea about the how digital transformation has influenced some of the key economic sectors with the help of various tools.

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