

# Challenges and Strategies for Digital Transformation in Business Organizations: A Theoretical Model

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**Abstract** – Incorporating both digital and physical systems, as well as the combination of the two, is what sets digital transformation apart. It is characterized by the rise of creative business structures and processes, as well as the establishment of smart consumer services and products. This paper analyzes the challenges faced by corporations during digital transformation (DT) and provides a theoretical framework for overcoming such challenges. The aim of this research is to review the basics of DT and the conditions under which it may take place. It also creates an algorithmic model for the transition of digital enterprises by classifying and organizing the challenges that develop throughout the implementation of DT. The article is aimed to provide light on the complex landscape of digital transformation among the 28 member states, which form the European Union. The study seeks to provide a full knowledge of the possibilities and challenges connected with this process of transformation.

**Keywords** – Digital Transformation, Competitive Advantage, Resource-Based View Theory, Small and Medium-Sized Business, Digitization of Business Organizations.

## I. INTRODUCTION

In recent decades, companies have faced increasing pressure due to the phenomenon of globalization, necessitating substantial adaptations for their survival. To thrive in competitive environments, businesses must adeptly integrate their activities, ensuring not only their survival but also their prosperity. In order to achieve effective integration, Hynninen [1] argue that digital processes and collaborative tools must be used. This context has led to a dramatic increase in the importance of digital transformation (DT). Incorporating digital transformation (DT) into existing business frameworks is emphasized by Matt, T. Heß, and Benlian [2]. This topic involves more than simply technological changes and has far-reaching effects on many facets of business. A firm's capacity to respond to the changes in the marketplace requires that its resources be used and explored in parallel, as stated by Gervais and Millear [3].

The term “digital transformation” is cropping up often in professional and academic circles. A quick look at the Google Trends data shows a significant growth in popularity, with the interest level going from 1 in 2013 to 100 in 2019, or six years. The publication of more academic articles, conference panels, and journal special issues is rising in tandem with this trend [4]. Moreover, with regards to its strategic significance, it is widely acknowledged that DT is exerting an impact on and posing challenges for managers in many sectors and settings. The COVID-19 epidemic prompted organizations to take action and intensify their recognition of the need to expedite DT efforts. The extensive body of research on DT is featured by the deficiency of consensus over its precise definition and the scope of its coverage.

Systematic reviews or meta-analyses are seldom conducted and tend to have a small scope. Alternatively, they may originate from disciplines other than management. Despite the ambiguity surrounding this phenomenon, a prevailing topic in the ongoing discourse is that contemporary organizations are impacted by and must adjust to the proliferation of digital technologies. These technologies are characterized as the amalgamation and interconnectivity of numerous dispersed information, communication, and computing technologies. Hence, the aforementioned phenomena are inherently linked to the subject of organizational change, which may be defined as a “variation in structure, characteristics, or condition within an organizational entity over a period of time”.

Thus, “digital transformation” refers to the process of organizational change that is driven by the pervasive adoption and usage of digital technology. By drawing on the rich body of literature on organizational change and innovation, this

viewpoint provides a potential explanation for the phenomenon of DT and its management in actual business practice. It is possible that the current business model would become obsolete as a consequence of disruptive developments brought about by the process of digitalization. As a result of these shifts, DT is occurring in many different settings as a direct result of fast or disruptive developments in digital technology. These changes introduce substantial unknowns, compelling industries and businesses to seek adaptation methods. For instance, banks may get an advantage over their competitors by offering e-banking services. Strategically astute businesses incorporate transformative imperatives to help them maintain a competitive edge in today's ever-changing markets.

According to Brunetta, Caldarice, Tollin, Rosas-Casals, and Morató [5], individuals engage in this behavior as a means of adapting to emerging possibilities and developing resilience in the face of potential risks. The importance of DT in maintaining competitiveness within a modern economy is shown by the implementation discussed by Sousa and Rocha [6]. According to Mergel, Edelmann, and Haug [7], digitalization offers benefits like as enhanced productivity, decreased costs, and innovative advancements that have an impact on digital transformation. Numerous scholars from various academic fields have made significant contributions to the assessment of DT and its associated prospects and obstacles. Furthermore, the influence of DT extends beyond its effects on industries, since it also has significant implications for society. Hence, as the significance of DT becomes more evident, it is accompanied with heightened expectations imposed on it.

The objective of this study is to analyse the difficulties that firms face in the context of digital transformation and provide a methodology for effectively addressing these obstacles. This can be accomplished by (1) conducting research into the nature of digital transformation and the conditions that call for it, (2) analyzing the challenges encountered by businesses as they implement modern transformation, and (3) developing a theoretical framework outlining the algorithm for modern business transformation. The rest of the paper has been organized as follows: Section II presents a literature review, which sets the basis of this article. Section III discusses the method employed in composing this article. Section IV presents a discussion of the results, which focus on digital transformation, challenges of digital business transformation, and the methodology for introducing digital transformation into organizations. Lastly, Section V presents a conclusion and future scope of the research.

## II. LITERATURE REVIEW

According to Jafari-Sadeghi et al. [8], Digital Transformation (DT) has long been intertwined with the industrial sector, and is presently undergoing significant shifts as Industry 4.0 continues to develop. The primary objective is to concentrate on the comprehensive digitization of assets and their seamless incorporation into digital systems alongside the key stakeholders of value chains. Secondly, it involves the seamless incorporation of digital technologies into the fundamental structure and operations of business models. The importance of this factor cannot be overstated in ensuring the success of any organization, and it is increasingly being seen as a crucial concern in the field of management. Similar to any IT-enabled transformation, just introducing IT to an organization is insufficient. The achievement of Digital Transformation relies upon the implementation of improvements in process and operations management. In order to effectively manage IT, individuals must undergo training in a change process that considers the unique issues associated with information technology.

According to Matos, Vairinhos, Salavisa, Edvinsson, and Massaro [9], the digital revolution is facilitating the expansion of digital and standardized working environments. The virtualization or remote control of some workplaces necessitates the acquisition of new communication skills and an understanding of virtual environments. In the context of the Digital Era, consumers are increasingly developing new competencies in order to effectively interact with digital organizations, hence enhancing their social engagement. The digital era is not only facilitating innovation within the commercial sector, but it also seems to be exerting an influence on advancements within the public sector. The digitalization of government is a very promising area of study, showing significant potential for future development. There has been an increased interest in the medical industry, since much research has been done on the digitalization of healthcare in recent years.

Fredericks [10], the origins of the resource-based perspective of businesses may be attributed to Penrose's work in 1959. Barney [11] argued that firms are comprised of a collection of resources, and management research plays a role in both facilitating and constraining company expansion by optimizing the utilization of existing resources. The Resource-Based View (RBV) has been widely used in the study on DT to explicate the mechanisms via which organizations maintain a competitive advantage over time. An organization may get an edge in the market, according to the RBV hypothesis, if its personnel and resources are non-substitutable, inimitable, rare, and valuable. Digital transformation, as defined by Hartley and W. J. Sawaya [12], is a phenomenon that spans several fields and affects many facets of modern business, including supply chains, IT, strategy, and marketing.

The RBV theory provides an applicable theoretical framework for comprehending digitalization in this setting, particularly as it pertains to small and medium-sized businesses (SMEs). Digital strategy, IT, and personnel skills are singled out by Eller, Alford, Kallmünzer, and Peters [13] as the three most important factors for SMEs in their pursuit of digitalization. From the standpoint of the RBV, Lutz, Boucher, and Roustant [14] emphasize the significance of IT capacity, arguing that IT competence contains features that may enhance a firm's performance. Research by Srivastava, Fahey, and Christensen [15] integrates the RBV framework of business with a cognitive perspective to assess the effect of digital technologies and GMI on the internationalization of SMEs.

According to Tien, Chung, and Tsai [16], this theory postulates the mechanisms via which businesses generate and maintain a competitive advantage. According to Teece, Peteraf, and Leih [17], dynamic capabilities encompass both ordinary capabilities, such as operational, administrative, and governance-related capabilities necessary for task fulfilment, and

dynamic capabilities, which involve tasks that enable a firm to redirect ordinary tasks towards efforts that generate greater value. Sousa and Rocha [18] provide an analysis of the dynamic skills shown by service providers in the context of digital transformation. These capabilities include consulting, orchestration, insights, network management, information access, and standardization. This theory builds upon the RBV framework, focusing on the firm's capacity to adapt its resource base in order to preserve its longevity and enhance its alignment with the firm's external environment. Demirkan, Spohrer, and Welser [19] have underscored the significance of dynamic capabilities in enabling digital sterilization and strategic transformation within a customer-driven company, modern, and competitive company environment. Ibarra, Ganzarain, and Igartua [20] have provided evidence to support their identification of three distinct stages: business model digitalization, product and service digitalization, and process digitalization. They argue that these phases need the presence of dynamic capabilities throughout.

According to Barad [21], strategy is defined as the overall scope and direction of a corporation over an extended period of time. It involves leveraging capabilities and resources to effectively navigate a dynamic environment and meet the expectations of stakeholders. According to the configuration theory, a comprehensive understanding of the whole necessitates adopting a systemic perspective, whereby the whole is conceptualized as an intricate network of interrelated parts. Henry Mintzberg advocated for a configurational approach to the philosophy of management and organization. The theory under consideration presents configurations as constellations of interdependent aspects, including organizational structures, processes, and strategies. According to Hill and Birkinshaw [22], the adoption of configurations leads to a heightened pace of digitization inside corporate organizations. These configurations exhibit three distinct patterns of interaction between the talents, networks, and behaviors of chief digital officers. According to Fiss, Cambre, and Marx [23], the use of configurational theory is expected to enhance our understanding of the many ways in which digital transformation advantages might manifest, whether as formal design methods or as substitutes or complements.

### III. METHODOLOGY

The research technique used in the study on digital transformation in the EU-28 aims to provide a full comprehension of this dynamic phenomenon. Utilizing a mixed-methods methodology, this study integrates quantitative and qualitative research methodologies to comprehensively capture a diverse array of ideas. The quantitative aspect of the study will be based on the utilization of surveys, questionnaires, and statistical data acquired from reputable government and business sources. The primary factors being investigated include the expansion of electronic sales, the rates at which cloud computing is being used, the presence of rules pertaining to information security, and the current state of the workforce possessing electronic skills. Simultaneously, the qualitative component of the research will explore the intricacies of digital transformation by conducting comprehensive interviews with important individuals involved in the process, such as company executives, IT experts, and legislators. In addition, the incorporation of industry reports, case studies, and policy papers will serve to enhance the qualitative data gathering.

The process of sampling is of high significance in guaranteeing the reliability and accuracy of the study's results. The research methodology will use a stratified random sampling strategy to ensure the selection of a broad and representative sample of firms across various sectors within the European Union-28. The determination of the sample size will be conducted via the use of statistical power calculations, which aim to ensure the dependability and accuracy of the quantitative findings. The qualitative component of this study will use intentional sampling as a method for selecting interview participants. This approach will enable the inclusion of individuals with diverse viewpoints, including a range of sectors and positions. Ethical issues will be of high significance throughout the whole of the study procedure. The acquisition of informed permission will be conducted with utmost care and attention, guaranteeing the protection of interview participants' privacy and the confidentiality of their data.

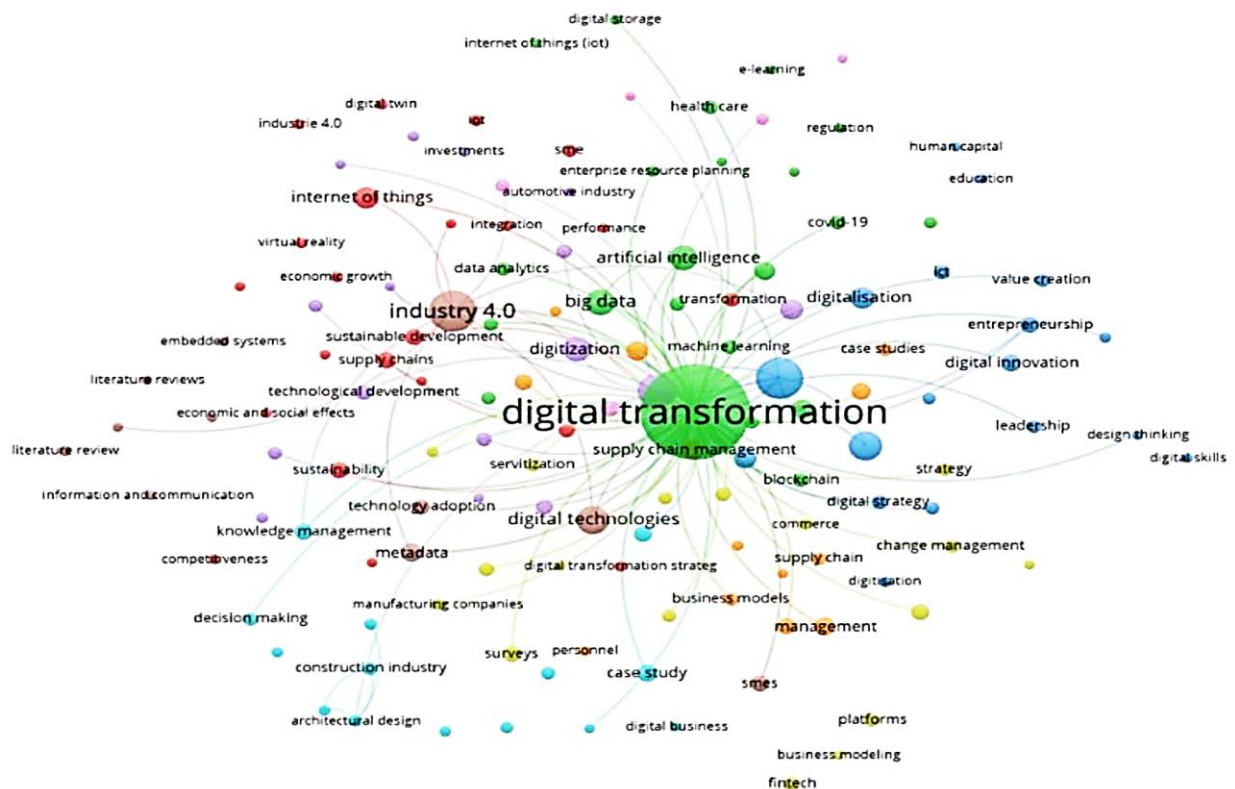
The study will be carried out in adherence to recognized ethical norms and protocols, guaranteeing the conscientious acquisition and management of data. Furthermore, an assessment was conducted on the distribution of citations, as shown in **Table 1**. The publications that get the highest number of citations mostly address the difficulties that companies have in relation to emerging technology, as seen by Sayed, Tarighat, and Khajehnouri [24]. Hence, the scholars fail to analyse the factors that influence digital transformation after its acceptance, hence limiting their comprehension of its impacts. Furthermore, there is a growing number of pertinent papers that discuss the increasing attempts by governments to digitize healthcare systems in order to enhance their safety, accessibility, and affordability.

It is important to note the limitations of this research. It is essential to acknowledge that the study is dependent on self-reported data obtained via questionnaires, which may be susceptible to response bias. Furthermore, it is important to note that the study's findings are constrained by the knowledge cutoff point of September 2021. Consequently, any further advancements or alterations that have transpired may not have been included into the research. Notwithstanding these limitations, the chosen study technique has been carefully crafted to provide significant findings about the complex terrain of digital transformation throughout the European Union's 28 member states. The incorporation of both quantitative and qualitative data will provide a holistic comprehension of the obstacles and possibilities linked to this transformational process. The primary objective of this research is to provide a scholarly contribution to the current body of literature on digital transformation. Additionally, the study may offer policy suggestions that are grounded in empirical results.

**Table 1.** Studies carried out on the perception of digital transformation and industry 4.0

<i>Top 10 Authors</i>	<i>Journal Title</i>	<i>Year of Publication</i>
<i>Frank, Dalenogare, and Ayala</i>	“Industry 4.0 technologies: Implementation patterns in manufacturing companies”	2019
<i>Lim, Zheng, and Chen</i>	“A state-of-the-art survey of Digital Twin: techniques, engineering product lifecycle management and business innovation perspectives	2019
<i>Pal and Gander</i>	Modelling environmental value: An examination of sustainable business models within the fashion industry”	2018
<i>Zuhdi</i>	“Analyzing the influence of creative industry sector to the national Economic Structural Changes by Decomposition Analysis: The case of Indonesia”	2012
<i>Sedera, Tan, and Xu</i>	“Digital business transformation in innovation and entrepreneurship	2022
<i>Sanders</i>	An empirical study of the impact of e-business technologies on organizational collaboration and performance”	2007
<i>Ostmeier and Strobel</i>	“Building skills in the context of digital transformation: How industry digital maturity drives proactive skill development”	2022
<i>Rajabion, Shaltooki, Taghikhah, Ghasemi, and Badfar</i>	“Healthcare big data processing mechanisms: The role of cloud computing”	2019
<i>Gopang, Nebhwani, Khatri, and Marri</i>	“An assessment of occupational health and safety measures and performance of SMEs: An empirical investigation”	2017
<i>Jovanović, Filipović, and Bakić</i>	“Energy management system implementation in Serbian manufacturing – Plan-Do-Check-Act cycle approach”	2017

The literature was divided into three groups based on a co-occurrence analysis of the keywords: (A) digital business transformation; (B) the objective of technology in enhancing DT; and (C) the ramifications of digital transformation on institutions and society. **Fig 1** is a bibliometric map depicting the connections between disciplines, keywords, and categories. The size of the nodes and the thickness of the lines between them show the importance and strength of the connections between them. Many recent developments in IT, such as big data, AI, and data analytics, are intrinsically linked to DT. All of this points to the importance of technology in allowing and facilitating the achievement of a competitive advantage through digital transformation.



**Fig 1.** Bibliometric atlas of the Informational Revolution

IV. RESULTS AND DISCUSSION

The digital transformation

The use of business models and contemporary technology to facilitate organizational transformation is a need for modern organizations in order to enhance economic performance and effectively adapt to evolving customer behavior. The scientific researchers are enthusiastic about the digital transformation due to various factors. These include the determination algorithm for factors proposed by Frank, Dalenogare, and Ayala [25], the convergence of products, services, and industries within ecosystems, the implementation, strategies, and e-commerce and practice of digital business management outlined by Lim, Zheng, and Chen [26], the examination of business models by Pal and Gander [27], the management of digital supply chains explored by Torkzadeh and Doll [28], and the impact on managers in different sectors such as information and communication technologies as studied in [29], business information systems development and implementation as analyzed by Zuhdi [30], and the influence on creative industries.

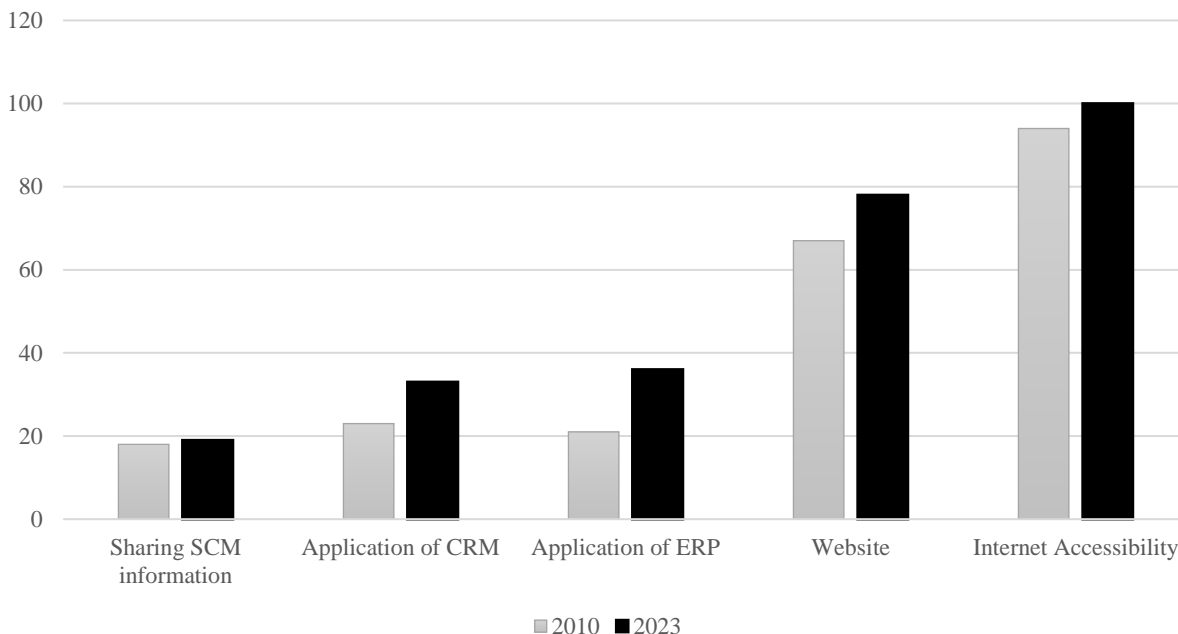


Fig 2. The percentage of firms in the European Union (EU-28) that have used e-business technology in the years 2010 and 2023

The below definitions encapsulate the fundamental concept of “digital transformation”. Digital business transformation alludes to the implementation of substantial modifications to organizational processes, structures, and systems with the aim of enhancing organizational performance by augmenting the utilization of digital media and technology platforms. According to Sedera, Tan, and Xu [31], Digital business transformation refers to the process of implementing organizational change by using business models and digital technologies with the aim of enhancing performance. According to Sanders [32], The use of e-business technologies, cloud computing utilization services, implementation of e-sales strategies, incorporation of disruptive technologies and ensuring information security are all of paramount significance in driving digital business transformation. Information and communication technologies (ICTs) have rapidly become a crucial component of corporate operations. The widespread and intense use of ICTs, together with innovative methods of effectively using and accessing the internet, define what is often known as the e-economy or modern economy (see Fig 2).

The Eurostat data provides evidence of the growth and adoption of information technologies in different business sectors. According to the data, there has been an upward trend in the utilization of cloud computing services in the European Union (EU 28), with an increase from 19% in 2014 to 21% in 2023. Fig 3 illustrates this trend, showcasing the purpose for which cloud computing services are being employed. The degree of reliance on cloud computing, categorized by the activity of economy, is seen in Fig 4. Between 2008 and 2023, there was a notable increase in the proportion of firms within the EU-28 region that engaged in e-sales, with a corresponding rise in the turnover generated from these online transactions. Specifically, there was a 7-percentage point increment in the number of firms involved in e-sales, while the revenue derived from these e-sales saw a 6-percentage point growth. In the year 2023, a significant proportion of big firms, namely 44%, engaged in electronic sales, which accounted for around 26% of the overall revenue generated by enterprises of this magnitude. In a similar vein, it was found that 29% of medium-sized firms engaged in electronic sales, which accounted for 13% of the overall revenue generated within this particular size category. In contrast, according to [33], a mere 18% of small firms were involved in electronic sales, which accounted for just 7% of their total revenue.

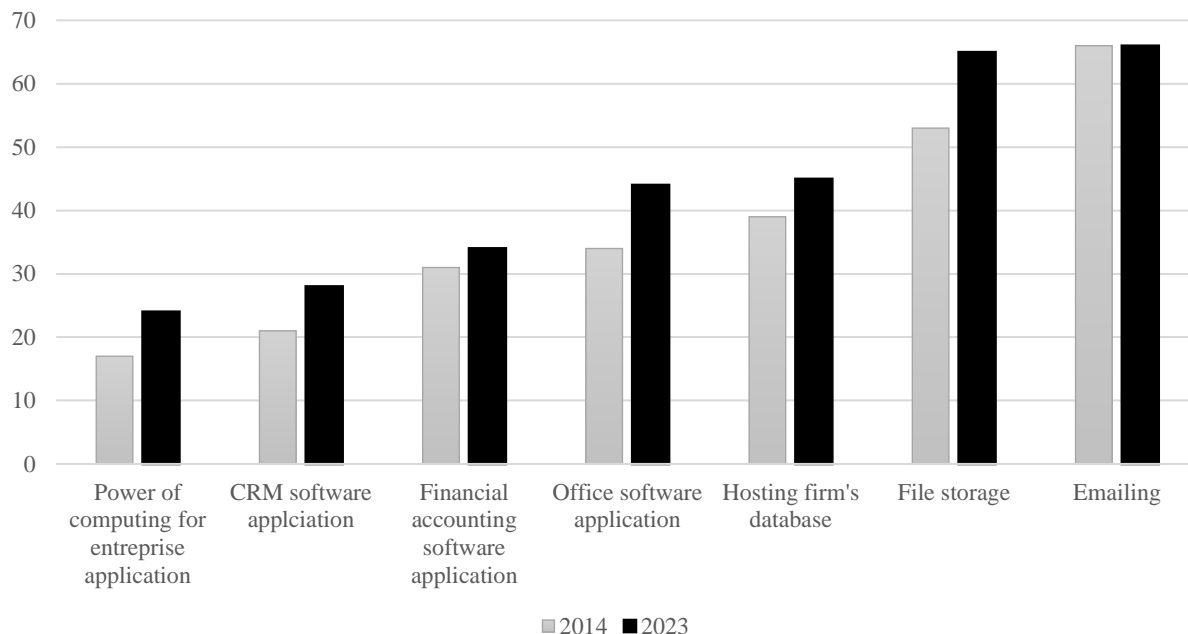


Fig 3. The percentage of businesses adopting cloud services between 2014 and 2023 for various uses

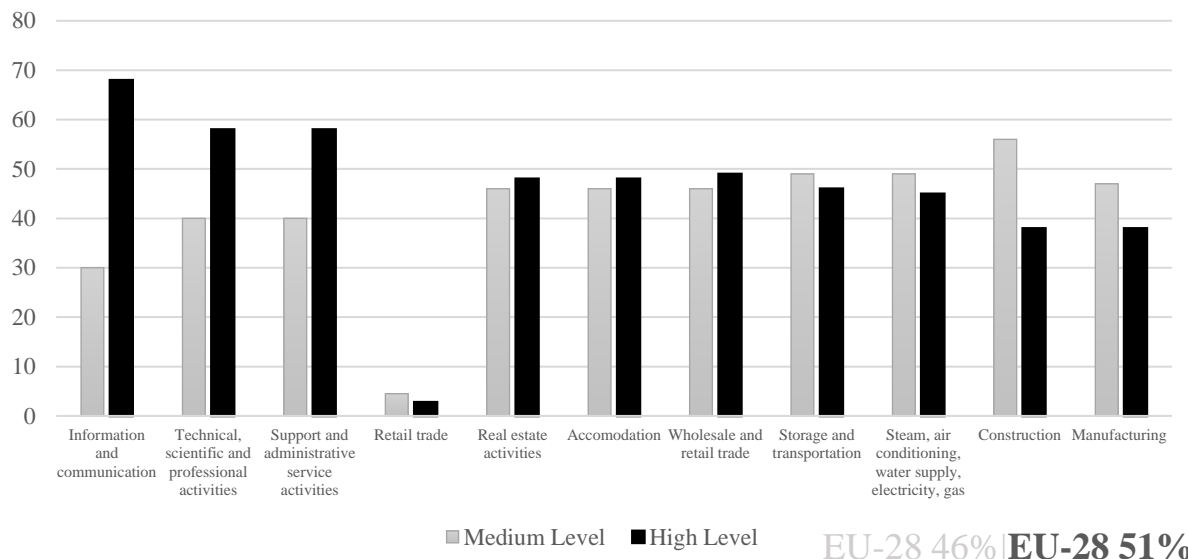


Fig 4. Reliance on cloud computing among various economic activities in the European Union (EU-28) 2023

In [34], around 32% of firms within the European Union's 28 member states have a properly established policy pertaining to the security of information and communication technology. The sectors with the biggest percentage of firms implementing such policies in the EU-28 were Information and Communication Activities (60%) and Professional, Scientific, and Technical Activities (49%). According to Statista [35], the industries with the lowest shares were Transportation and storage (26%), Real estate (25%), and Construction (20%). According to Gil Press [36], it is projected that in the year 2020, AI will have a positive impact on job creation, resulting in the generation of 2.3 million jobs. However, it is expected that only 1.8 million jobs will be eliminated as a result of AI.

Additionally, by 2030, it is anticipated that Internet of Things technology will be incorporated into 95% of new product designs in the electronics industry. Furthermore, by the year 2021, it is predicted that 40% of IT staff will possess versatile skill sets, encompassing multiple roles, with a majority of these roles being business-oriented rather than technology-focused [37]. The occurrence of digital transformation is influenced by various preconditions, which encompass both essential factors for achieving change and the innovations that arise from advancements in information and communications technologies,

commonly referred to as “disruptive technologies”. The interplay between the two sets of elements (key metrics in attaining change, and disruptive technologies in DT) has been shown in Fig 5.

Key metrics in attaining change		Disruptive technologies in DT
Change levers	Success factors	Sensors RFID
Market and business models	Leadership commitment	Machine-to-machine communication
Business processes	Project management	Robotics
Organizational structure and culture	Employee acquisition, retention	3D printing
Technology infrastructure	Employee ownership	Drones
		Blockchain & cryptocurrencies
		Virtual and augmented reality
		Artificial intelligence

**Fig 5.** The preconditions necessary for the effective application of DT  
The multitude of factors contributing to DT highlights the challenges organizations face while undertaking the process of digitization.

*The issues of digital business transformation*

According to a study conducted by Gartner, it is projected that by the year 2020, over 75% of firms will have either adopted a digital business model or started the process of transforming their operations to become digital. However, the success rate of these digital transformation endeavors is expected to be rather low, with only around 30% of such initiatives achieving their intended objectives. For firms established before to the advent of the digital era, the primary challenge is in adapting to change. It is essential to recognize that the locus of change does not just reside on the Internet, but rather inside the organization itself. This pertains to the organizational culture and the disposition towards embracing change. In order to effectuate a transformation, it is important to cultivate an awareness of the requisite need and evaluate the available means via which it might be actualized. Ostmeier and Strobel [38] has proposed a conceptual framework for evaluating organizational preparedness in the contextualization of digital transformation. This framework seeks to identify and delineate the necessary resources, opportunities, and management strategies required to effectively adapt to the emerging digital landscape.

Numerous research studies have been conducted to examine the obstacles that firms across all industries and nations encounter during the implementation of digital transformation initiatives. It has been explicitly stated that business organizations face various challenges, including political and structural obstacles. Additionally, they encounter challenges related to scale, scope, and regulation. To add insult to injury, there is a dearth of spatial-temporal statistical models that can efficiently handle business data in order to optimize product placement, assess consumer transactions and market structure, design individualized product systems, mitigate risks, and make prompt business choices. Rajabion, Shaltookki, Taghikhah, Ghasemi, and Badfar [39] analyze the role of cloud computing in promoting innovation across diverse domains of operation in relation to the many difficulties associated with big data, including its quality, storage, privacy, transmission, security, management, architecture, processing, visualization, analyses, and integration.

Commission of the European Society 2007 report “Communications of the E-skills for the 21<sup>st</sup> century” concluded that, “further efforts will be required to enhance and broaden the proficiency in e-skills among the workforce and population” for the EU and its member states to achieve continued competitive advantage in the international economy stimulated by swift technological advancements [40]. According to the scholars, this is considered a fundamental aspect of establishing a knowledge-based society. In 2023, a significant proportion of major firms, approximately 41%, engaged in the recruitment or attempted recruitment of persons with specialized information and communication technology (ICT) capabilities. Additionally, 20% of these enterprises had challenges in filling openings for positions that demanded such specialized ICT skills.

In comparison, according to Gopang, Nebhwani, Khatri, and Marri [41], the equivalent proportions for medium-sized firms were 6% and 16%, while for small enterprises they were 2% and 6%. A systematization has been constructed in order to define the issues faced by business organizations throughout the process of DT. The categorization of challenges is based on the 7S model developed by the consulting organization “McKinsey,” which was further expanded upon by Hanafizadeh and Ravasan [42]. Additionally, the transformation group of the “digitization piano,” as categorized by the “Global Center for Digital Business Transformation”, are also considered. The problems that corporate organizations must face throughout their digital transformation may be categorized into the following areas: The consequences arising from the development of the Information Technology (IT) sector and its influence on strategies and business models in other sectors are significant. This necessitates the modification of organizational structures to effectively manage digital businesses. Additionally, there is a significant for the advancement of specific computing models, processes, information systems, and procedures capable of handling large volumes of data to support Internet marketing efforts. These changes also extend to key abilities, skills,

and leadership styles of managers. Furthermore, the advancement of channels, shared values, and approaches to interact with vendors, partners, and customers becomes crucial in this context.

Only a limited number of studies have attempted to provide a detailed analysis of the digital transformation and its associated obstacles. However, there is a significant gap in information about the implementation of digital transformation. **Table 2** illustrates four primary challenges that conventional organizations encounter, particularly throughout the periods of “digital introduction” and “digital strategy implementation.”

**Table 2.** Identified challenges of the introduction and implementation of digital technologies

<i>Identified challenge</i>	<b>Explanation</b>
<i>Competencies</i>	Digitally-related skill sets. If a business is serious about shifting its focus to digital, it must provide its workers with training in new management techniques and big data analysis. Understanding new forms of (unstructured) data, processing it, and making choices based on that knowledge is essential. Companies should train their employees in both technology and analytics.
<i>Organizational culture</i>	A mode of thought permeating a company where experimenting with new methods gradually takes precedence. A shift in perspective is necessary for businesses to thrive in today's dynamic environment, where the only way to stay ahead of the competition is to provide answers, no matter how rough they may be in their early stages. Data sharing and the shift to a more systematic, less function-based perspective need collaborative efforts across organizational silos.
<i>Support</i>	Internal backing, with top brass and business owners pushing for the change. It's going to be tough to get individuals out of their comfort zones and into a new way of thinking if the company's leaders don't believe in and support the changes. Policies from the outside world that provide businesses access to funds for upgrading their informational systems and technology as well as educational initiatives.
<i>Technology</i>	This is the last element since technology itself plays no role in digital transformation other than to facilitate it. We discussed in our book how technology is necessary but not sufficient for a successful digital transformation. Companies may instead focus on their core competencies and then use the most effective technologies to accomplish their objectives.

*Methodology for Introducing Digital Transformation into Organizations*

The advent of cloud computing, the IoT, and the proliferation of smartphones have provided the groundwork for the establishment of digital business. In the contemporary context of contemporary transformation, the process of digitizing firms has emerged as a crucial survival strategy for organizations in order to navigate the rapidly evolving and unpredictable business landscape. Although digital transformation is crucial for the advancement of conventional businesses in the current transitional period and presents several possibilities, the primary problems encountered revolve around determining the necessary actions and strategies to effectively handle business-related concerns. Furthermore, it is important to note that in the present day, the quantity of data is growing at an exponential rate. However, it is crucial to recognize that raw data has inherent value unless it undergoes analysis or is put to practical use. Algorithmic business has emerged as a viable answer to the aforementioned difficulties. The use of intelligent algorithms plays a crucial role in delivering significant business insights, establishing organizational procedures for managing customer services, conducting comprehensive analysis of corporate data, and facilitating critical decision-making processes.

The issues that are now recognized and the questions pertaining to assistance have the ability to effectively aid the process of digital transformation inside corporate organizations. A theoretical algorithm has been devised to facilitate the fulfillment of digital business transformation. The motive of this initiative is to provide assistance to participants in the actual process of organizational transformation and adaptation to current circumstances. These conditions have arisen due to the rapid growth of technology, increased rivalry across sectors, and evolving consumer requirements and behaviors. The sequential arrangement of the fundamental elements involved in achieving digital transformation bears resemblance to the Plan-Do-Check-Act Cycle. This is because the process of transformation is not a singular event, but rather an ongoing phased endeavor aimed at enabling organizational adaptation to a dynamic environment and the perpetual pursuit of enhancements (see **Table 3**)

**Table 3.** The phases of the digital business transformation adhere to a predetermined and sequential order.

<i>Phase</i>	<b>Explanation</b>
<i>Conducting a digital audit</i>	This is the initial step since determining the current state is essential before any additional steps can be taken.
<i>Creating a digital transformation strategy</i>	A strategic framework outlines the future growth of a company in light of its existing state.
<i>Goal-setting that can be tracked</i>	Time-bound, detailed, measurable, and having real-world consequences: these are the hallmarks of goals set in line with a strategic framework.



<i>Prioritization</i>	Assignment of tasks based on their relative relevance
<i>Applying development measures</i>	Based on the results achieved and the differences with the objectives established, as well as according to the changes that have occurred in the meanwhile in the external environment, improvement recommendations are made and the transformation cycle is resumed.
<i>Conducting a modern audit</i>	This is the initial step since determining the current state is essential before any additional steps can be taken.

## V. CONCLUSION AND FUTURE SCOPE

In conclusion, this research has demonstrated the following conclusions and contributions: The digital transformation in business organizations is a recognized phenomenon wherein business models and modern technologies are employed to enhance economic performance and adapt to intersectoral competition and evolving consumer behavior. The identification and categorization of issues encountered throughout the process of digital transformation in business organizations have been undertaken in a systematic manner, taking into account the specific domains in which these challenges arise. The implementation of digital transformation has been substantiated and validated through a systematic algorithmic process. This process commences with a comprehensive digital audit, followed by the formulation of a strategic plan, establishment of measurable objectives, prioritization of tasks, evaluation of the achieved impact through result measurement, and ultimately culminates in the generation of improvement proposals and a theoretical model for executing the digital business transformation.

Contemporary enterprises across diverse sectors, including ecommerce, travel, real estate, and finance, have been actively adopting digital transformation initiatives, incorporating digital technology into their operational frameworks. Smaller organizations and startups have the potential to augment the digital transformation business value and market size by employing business innovation technologies and low-code initiatives. The potential implications of digital transformation on the corporate environment in the next three years have been forecasted by the International Data Corporation. By the end of 2023, it is projected that a majority of prominent chief executive officers (CEOs) would have embraced a management approach that prioritizes the implementation of cutting-edge digital technologies. By the year 2025, a projected 75% of company leaders are expected to use digital platforms and ecosystem capabilities in order to enhance their agility and ensure the long-term viability of their platforms. It is projected that by the end of 2023, a significant majority of organizations, around 75%, will have implemented strategic plans for digital transformation. Digital transformation not only enhances the conversion rates of enterprises and establishes supplementary sales channels, but also significantly enhances the customer experience.

### Data Availability

No data was used to support this study.

### Conflicts of Interests

The author(s) declare(s) that they have no conflicts of interest.

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### Competing Interests

There are no competing interests.

## References

- [1]. N. Hynninen, "Impact of digital tools on the research writing process: A case study of collaborative writing in computer science," *Discourse, Context and Media*, vol. 24, pp. 16–23, Aug. 2018, doi: 10.1016/j.dcm.2018.01.005.
- [2]. C. Matt, T. Heß, and A. Benlian, "Digital Transformation Strategies," *Business & Information Systems Engineering*, vol. 57, no. 5, pp. 339–343, Aug. 2015, doi: 10.1007/s12599-015-0401-5.
- [3]. R. L. Gervais and P. M. Millear, *Exploring Resources, Life-Balance and Well-Being of women who work in a global context*. Springer, 2016.
- [4]. G. Vial, "Understanding digital transformation: A review and a research agenda," *Journal of Strategic Information Systems*, vol. 28, no. 2, pp. 118–144, Jun. 2019, doi: 10.1016/j.jsis.2019.01.003.
- [5]. G. Brunetta, O. Caldarice, N. Tollin, M. Rosas-Casals, and J. Morató, *Urban Resilience for risk and adaptation governance: Theory and Practice*. Springer, 2018.
- [6]. M. J. Sousa and Á. Rocha, "Digital learning: Developing skills for digital transformation of organizations," *Future Generation Computer Systems*, vol. 91, pp. 327–334, Feb. 2019, doi: 10.1016/j.future.2018.08.048.
- [7]. I. Mergel, N. Edelman, and N. Haug, "Defining digital transformation: Results from expert interviews," *Government Information Quarterly*, vol. 36, no. 4, p. 101385, Oct. 2019, doi: 10.1016/j.giq.2019.06.002.
- [8]. V. Jafari-Sadeghi, A. García-Pérez, E. Candelo, and J. Couturier, "Exploring the impact of digital transformation on technology entrepreneurship and technological market expansion: The role of technology readiness, exploration and exploitation," *Journal of Business Research*, vol. 124, pp. 100–111, Jan. 2021, doi: 10.1016/j.jbusres.2020.11.020.
- [9]. F. Matos, V. Vairinhos, I. Salavisa, L. Edvinsson, and M. Massaro, *Knowledge, people, and digital transformation: Approaches for a Sustainable Future*. Springer Nature, 2020.
- [10]. E. Fredericks, "Infusing flexibility into business-to-business firms: A contingency theory and resource-based view perspective and practical implications," *Industrial Marketing Management*, vol. 34, no. 6, pp. 555–565, Aug. 2005, doi: 10.1016/j.indmarman.2004.09.022.

- [11]. J. B. Barney, "Firm resources and sustained competitive advantage," *Journal of Management*, vol. 17, no. 1, pp. 99–120, Mar. 1991, doi: 10.1177/014920639101700108.
- [12]. J. L. Hartley and W. J. Sawaya, "Tortoise, not the hare: Digital transformation of supply chain business processes," *Business Horizons*, vol. 62, no. 6, pp. 707–715, Nov. 2019, doi: 10.1016/j.bushor.2019.07.006.
- [13]. R. Eller, P. Alford, A. Kallmünzer, and M. Peters, "Antecedents, consequences, and challenges of small and medium-sized enterprise digitalization," *Journal of Business Research*, vol. 112, pp. 119–127, May 2020, doi: 10.1016/j.jbusres.2020.03.004.
- [14]. M. Lutz, X. Boucher, and O. Roustant, "Information Technologies capacity planning in manufacturing systems: Proposition for a modelling process and application in the semiconductor industry," *Computers in Industry*, vol. 63, no. 7, pp. 659–668, Sep. 2012, doi: 10.1016/j.compind.2012.03.003.
- [15]. R. K. Srivastava, L. Fahey, and H. K. Christensen, "The resource-based view and marketing: The role of market-based assets in gaining competitive advantage," *Journal of Management*, vol. 27, no. 6, pp. 777–802, Dec. 2001, doi: 10.1177/014920630102700610.
- [16]. S. Tien, Y. Chung, and C. Tsai, "An empirical study on the correlation between environmental design implementation and business competitive advantages in Taiwan's industries," *Technovation*, vol. 25, no. 7, pp. 783–794, Jul. 2005, doi: 10.1016/j.technovation.2004.01.004.
- [17]. D. J. Teece, M. A. Peteraf, and S. Leih, "Dynamic capabilities and organizational agility: risk, uncertainty, and strategy in the innovation economy," *California Management Review*, vol. 58, no. 4, pp. 13–35, Aug. 2016, doi: 10.1525/cm.2016.58.4.13.
- [18]. H. Demirkan, J. Spohrer, and J. J. Welsler, "Digital Innovation and Strategic Transformation," *IT Professional*, vol. 18, no. 6, pp. 14–18, Nov. 2016, doi: 10.1109/mitp.2016.115.
- [19]. D. Ibarra, J. Ganzarain, and J. I. Igartua, "Business model innovation through Industry 4.0: A review," *Procedia Manufacturing*, vol. 22, pp. 4–10, Jan. 2018, doi: 10.1016/j.promfg.2018.03.002.
- [20]. M. Barad, *Strategies and techniques for quality and flexibility*. Springer, 2017.
- [21]. S. A. Hill and J. Birkinshaw, "Strategy–organization configurations in corporate venture units: Impact on performance and survival," *Journal of Business Venturing*, vol. 23, no. 4, pp. 423–444, Jul. 2008, doi: 10.1016/j.jbusvent.2007.04.001.
- [22]. P. C. Fiss, B. Cambre, and A. Marx, *Configurational Theory and methods in organizational research*. Emerald Group Publishing, 2013.
- [23]. A. H. Sayed, A. Tarighat, and N. Khajehnouri, "Network-based wireless location: challenges faced in developing techniques for accurate wireless location information," *IEEE Signal Processing Magazine*, vol. 22, no. 4, pp. 24–40, Jul. 2005, doi: 10.1109/msp.2005.1458275.
- [24]. A. G. Frank, L. S. Dalenogare, and N. F. Ayala, "Industry 4.0 technologies: Implementation patterns in manufacturing companies," *International Journal of Production Economics*, vol. 210, pp. 15–26, Apr. 2019, doi: 10.1016/j.ijpe.2019.01.004.
- [25]. K. Y. H. Lim, P. Zheng, and C. Chen, "A state-of-the-art survey of Digital Twin: techniques, engineering product lifecycle management and business innovation perspectives," *Journal of Intelligent Manufacturing*, vol. 31, no. 6, pp. 1313–1337, Nov. 2019, doi: 10.1007/s10845-019-01512-w.
- [26]. R. Pal and J. Gander, "Modelling environmental value: An examination of sustainable business models within the fashion industry," *Journal of Cleaner Production*, vol. 184, pp. 251–263, May 2018, doi: 10.1016/j.jclepro.2018.02.001.
- [27]. G. Torkzadeh and W. J. Doll, "The development of a tool for measuring the perceived impact of information technology on work," *Omega*, vol. 27, no. 3, pp. 327–339, Jun. 1999, doi: 10.1016/s0305-0483(98)00049-8.
- [28]. "Business information systems—analysis, design and practice," *Information & Software Technology*, vol. 34, no. 2, p. 132, Feb. 1992, doi: 10.1016/0950-5849(92)90116-7.
- [29]. U. Zuhdi, "Analyzing the influence of creative industry sector to the national Economic Structural Changes by Decomposition Analysis: The case of Indonesia," *Procedia - Social and Behavioral Sciences*, vol. 65, pp. 980–985, Dec. 2012, doi: 10.1016/j.sbspro.2012.11.230.
- [30]. D. Sedera, C. Tan, and D. Xu, "Digital business transformation in innovation and entrepreneurship," *Information & Management*, vol. 59, no. 3, p. 103620, Apr. 2022, doi: 10.1016/j.im.2022.103620.
- [31]. N. R. Sanders, "An empirical study of the impact of e-business technologies on organizational collaboration and performance," *Journal of Operations Management*, vol. 25, no. 6, pp. 1332–1347, Jan. 2007, doi: 10.1016/j.jom.2007.01.008.
- [32]. "Digital economy and society in the EU - Online businesses & e-sales," *Digital Economy and Society in the EU*. <https://ec.europa.eu/eurostat/cache/infographs/ict/bloc-2b.html>
- [33]. "Delivering the European Green Deal," *European Commission*, Jul. 14, 2021. [https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en)
- [34]. Statista, "Transport and storage as a share of GDP in Kenya 2016–2020," *Statista*, Sep. 22, 2023. <https://www.statista.com/statistics/1301357/transport-and-storage-as-a-share-of-gdp-in-kenya/>
- [35]. Gil Press, "54 Predictions About the State of Data In 2021," *Forbes*, Dec. 30, 2020. [Online]. Available: <https://www.forbes.com/sites/gilpress/2021/12/30/54-predictions-about-the-state-of-data-in-2021/>
- [36]. I. T. Ag, "Future of the Internet of Things: IoT 2030 - Infineon Technologies," *Copyright Infineon Technologies AG - All Rights Reserved*. <https://www.infineon.com/cms/en/discoveries/internet-of-things-2030/>
- [37]. E. Ostmeier and M. Strobel, "Building skills in the context of digital transformation: How industry digital maturity drives proactive skill development," *Journal of Business Research*, vol. 139, pp. 718–730, Feb. 2022, doi: 10.1016/j.jbusres.2021.09.020.
- [38]. L. Rajabion, A. A. Shaltoolki, M. Taghikhah, A. Ghasemi, and A. Badfar, "Healthcare big data processing mechanisms: The role of cloud computing," *International Journal of Information Management*, vol. 49, pp. 271–289, Dec. 2019, doi: 10.1016/j.ijinfomgt.2019.05.017.
- [39]. G. F. and N. Security, "Commission of the European Communities. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: winning the battle against global climate change | Knowledge for policy," 2005. [https://knowledge4policy.ec.europa.eu/publication/commission-european-communities-communication-commission-council-european-parliament\\_en](https://knowledge4policy.ec.europa.eu/publication/commission-european-communities-communication-commission-council-european-parliament_en)
- [40]. M. A. Gopang, M. Nebhwani, A. Khatri, and H. B. Marri, "An assessment of occupational health and safety measures and performance of SMEs: An empirical investigation," *Safety Science*, vol. 93, pp. 127–133, Mar. 2017, doi: 10.1016/j.ssci.2016.11.024.
- [41]. P. Hanafizadeh and A. Z. Ravasan, "A McKinsey 7S Model-Based Framework for ERP Readiness assessment," *International Journal of Enterprise Information Systems*, vol. 7, no. 4, pp. 23–63, Oct. 2011, doi: 10.4018/jeis.2011100103.
- [42]. B. Jovanović, J. Filipović, and V. Bakić, "Energy management system implementation in Serbian manufacturing – Plan-Do-Check-Act cycle approach," *Journal of Cleaner Production*, vol. 162, pp. 1144–1156, Sep. 2017, doi: 10.1016/j.jclepro.2017.06.140.