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The potential impacts of digital transformation on organizations

التأثير ات المحتملة للتحول الرقمي على المنظمات

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Abstract

Digital Transformation is the new trend in all industries. Although, the term's usage in the industries is still vague and ambiguous, many organizations have claimed that they have begun their digital transformation journey or have a plan to do so. For those reasons there is an urgent understand necessity to what digital transformation is? and how to evaluate its impact on an organization. Thus, this paper seeks to investigate the potential impact of digital transformation on organizations. This study utilized a qualitative research method of investigation, semi-structured interviews with different participants from different organizations were performed. Two major areas were identified to be the most susceptible organizations' functional areas that impacted by the transformation, and they synthesized into a cohesive model. The model includes Organization Business Processes Optimization, Organizational Information Technology which led to organization innovation. The model can help organizations to identify and consider the impact digital transformation.

Keywords: Digitalization, Digitization, Digital Transformation, Innovation Adoption, Business Process Management.

Introduction

In the 21st century, digital transformation (DT) has emerged as the primary catalyst for economic and social advancement. DT refers to the process of integrating digital technology into all areas of an organization, resulting in fundamental changes to how it operates and delivers value to its customers (Kaur, 2020). Recognizing the importance of DT, Saudi Arabia has made significant investments in technology and

التحول الرقمي هو الاتجاه الجديد في جميع الصناعات. وعلى الرغم من أن استخدام المصطلح في الصناعات لا يزال غامضًا وغير واضح، فقد ادعت العديد من المؤسسات آنها بدأت رحلة التحول الرقمي أو لديها خطة للقيام بذلك. لهذا السبب هناك ضرورة ملحة لفهم ما هو التحول الرقمي؟ وكيفية تقييم تأثيره على المنظمات. لذلك تسعى هذه الورقة إلى التحقيق في التأثير المحتمل نوعية، وأجريت مقابلات متعددة مع مشاركين مختلفين من نوعية، وأجريت مقابلات متعددة مع مشاركين مختلفين من وتم صهر هذه النتائج في قالب واحد لينتج لنا نموذج يوضح الاثمي المحتملة للتحول الرقمي. يشتمل النموذج يوضح الاثمي المحتملة للتحول الرقمي. يشتمل النموذج على تحسين عمليات إلى زيادة ابتكار المنظمة. يمكن لهذا النوذج أن يساعد المنظمات على تحديد تأثير التحول الرقمي والنظر فيه.

> الكلمات المفتاحية: الرقمنة – التحول الرقمي – تبني الابتكار ات – ادار ة العمليات

innovation to encourage its adoption (Alnemer, 2022; Aseeri & Kang, 2023). The Saudi Government's Vision 2030 plan highlights the critical role that technology plays in achieving the country's economic and social goals (Al-Mamary et al., 2020; Mitchell & Alfuraih, 2018).



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The Saudi government has taken several initiatives to promote the adoption of new technologies within the country. One such initiative is the National Industrial Development and Logistics Program (NIDLP), launched in 2019, which aims to foster the growth of innovative technologies and industries. In addition to this, the government is making significant investments in the development of smart cities (Vision2030, 2021). These cities are designed to utilize cutting-edge technologies such as IoT, big data analytics, and AI to provide efficient services to their inhabitants. The implementation of these advanced technologies has the potential to bring about transformative changes in a wide range of industries, including healthcare, education, and finance (Ashford, 1993).

Digital transformation has also brought about significant changes in organizational business models. Digital technologies have allowed businesses to develop new business models and challenge established industries. For example, businesses are using digital technologies to develop new goods and services, enhance customer interactions, and generate new revenue streams. These changes in business models include the adoption of platform business models, a move towards subscription-based models, and the development of digital ecosystems. Thus, this study aims to investigate the potential impact of digital transformation on adopting organizations.

Literature Review

Digital transformation (DT) refers to the changes and disruptions that businesses undergo by using digital technologies to enhance their processes, goods, and services (Reis et al., 2018). The rapid evolution of technology has led to the expansion of the literature on digital transformation in recent years, as specialists explore the impact of technological advancements on organizational strategy and business models (Rogers, 2016). This literature review aims to provide a comprehensive overview of the existing literature on digital transformation and its effects on businesses, with a particular focus on technological, strategic, and business model changes (Mahmood et al., 2019; Rogers, 2016).

As businesses strive to remain competitive, they must adapt to the rapidly evolving technological landscape by embracing digital technologies to optimize their processes, improve their goods and services, and create new business models (Reis et al., 2018). However, digital transformation is a complex and multifaceted process that involves more than just the implementation of technology (Mithas et al., 2013). It also requires a shift in organizational culture and mindset, as well as a reevaluation of business processes and strategies (Fitzgerald et al., 2014). Therefore, it is essential to understand the organization's settings that support successful digital transformation (Hartl & Hess, 2017).

The rapid growth of big data and the internet of things (IoT) has had a significant impact on digital transformation. Kaur (2020) conducted a comprehensive study on the effects of big data on business and identified several areas where it can have a significant impact, including decisionmaking, customer experience, and operational efficiency. The study also evaluates the subjects and trends of IoT and emphasizes the potential and challenges presented by this rapidly developing technology. Big data can provide valuable insights and inform decision-making processes, helping businesses to improve their operations and enhance the customer experience. The IoT offers businesses the opportunity to collect real-time data on products and services, which can be used to optimize operations, reduce costs, and improve customer satisfaction. However, the adoption of these technologies also presents challenges, including data privacy and security concerns and the need for new skills and expertise to manage and analyze large amounts of data. As such, it is essential for businesses to develop a comprehensive strategy for incorporating big data and IoT technologies into their operations while addressing these challenges (Kaur, 2020).

Dibbern and Hirschheim (2020) suggest that digital transformation is not merely a technological change, but rather a more complex process involving people, processes, and governance. In order to align digital transformation with organizational objectives, it is critical to foster a culture that promotes innovation and risk-taking. According to the authors, digital transformation can lead to the creation of new business models that are beneficial for both the organization and its customers (Hess et al., 2020; Matt et al., 2015). They highlight the importance of a customercentric strategy, agile development, and collaboration with external partners as crucial elements for successful business model innovation. In this regard, organizations need to recognize the potential of digital technologies and focus on their effective utilization to create value for their customers and stakeholders.

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Moreover, digital transformation can help organizations to gain a competitive advantage and create new opportunities for growth and expansion (Bharadwaj et al., 2013; Hess et al., 2020). Therefore, a clear and well-defined digital transformation strategy is essential for organizations to succeed in today's dynamic and competitive business environment.

Mergel et al., (2019) identified a number of knowledge gaps in the research on digital transformation and called for a deeper understanding of its impact on organizational performance and culture. Similarly, (Espig et al., 2021; Hartl & Hess, 2017) emphasized the importance of organizational change and a willingness to accept new business models, in addition to adopting new technologies, as key components of digital transformation. To successfully implement digital transformation, businesses need to develop a culture that promotes experimentation and innovation, as well as a clear strategy that outlines their digital transformation goals (Adaba et al., 2021). This includes examining how technology can be used to improve processes, goods, and services, as well as how it can be leveraged to support strategic and business model changes (Alilavel, 2020). Therefore, it is crucial for organizations to not only adopt new technologies but also to develop a digital mindset and change their organizational culture in order to fully exploit the benefits of digital transformation (Fitzgerald et al., 2014).

According to (Piccinini et al., 2015), agility and flexibility are the main managerial challenges when implementing digital transformation, and they are essential values that organizations must cultivate to master digital transformation successfully. This is because digital transformation requires continuous adaptation to stay up-to-date with the latest technological Organizations developments. that value openness towards change are more likely to accept, implement, encourage, and develop a change-oriented mindset, which is critical for successful digital transformation (Kane et al., 2015). Furthermore, the impact of digital transformation on business models has been significant, enabling organizations to create new products and services, explore new markets, and foster more innovative collaborations with other businesses (Hess et al., 2020; Singh & Hess, 2020). As a result, organizations have had to adapt their strategies in order to remain competitive and capitalize on new opportunities (Chanias & Hess, 2016). According to Matarazzo et al., (2021), the influence of digital

technologies on business models has been enormous.

In a 2019 KPMG report by Szalavetz (2019), it was noted that digital transformation has facilitated the emergence of new business models such as platform-based, subscription-based, and outcome-based models. Platform-based business models, such as Uber and Airbnb, have disrupted traditional industries by directly connecting buyers and sellers. Subscription-based models, such as Netflix and Spotify, have disrupted the media and entertainment sectors by offering customers access to a wide variety of content for a monthly fee. Outcome-based models, such as GE's "power by the hour" approach, have disrupted the industrial sector by compensating customers based on how their products are actually used. These new business models highlight the transformative power of digital technologies on organizational strategy and innovation.

Moreover, Digital strategy is a plan of action for an organization to utilize digital technology to achieve its goals (Singh & Hess, 2020). It is important to consider the demands and preferences of consumers and stakeholders as part of the organization's overall strategy and digital strategy, according to (Vial, 2019). To remain competitive, an organization should have a digital strategy that is flexible and adaptable to market conditions changing and new technologies. Being open to experimenting with new technology and business models is crucial for an organization to remain competitive (Matt et al., 2015).

Methodology

The aim of this study is to examine the impact of digital transformation on organizations. While many organizations purport to have undergone digital transformation, there is a lack of clarity surrounding the actual implementation of this transformation. Many organizations remain in the early stages of digitization and digitalization, and the actual effects of digital transformation on organizations remain elusive beyond the marketing hype.

To address this knowledge gap, this research employs a qualitative case study approach. Qualitative research is a valuable tool for exploring the perspectives and behaviors of individuals in specific contexts. It provides a more profound understanding of the phenomenon under study. In particular, this study employs the grounded theory approach as



it permits a comprehensive understanding of the phenomena and the development of a theory to describe it. The version of grounded theory utilized in this research enables the researcher to review and incorporate existing literature to develop the research question. To ensure research validity, this study's research plan is based on the process described by (Eisenhardt, 1989). This plan comprises seven steps. In the first step, Getting Started, the research questions are defined. In the second step, Selecting Cases, a criterion is developed to select the organizations to be included in the study. This step ensures that the organizations selected are relevant to the research questions and will provide valuable data.

In the third step, Crafting Instruments and Protocols, interview instruments are developed. These instruments are designed to gather relevant data from the organizations' employees and leaders who have firsthand experience with the digital transformation process. The fourth step, Entering the Field, involves actual interaction with interviewees through conducting interviews. This step provides the opportunity to collect in-depth data and insights about the organizations' experiences with digital transformation. The fifth step, Data Analysis, involves applying grounded theory data analysis techniques to analyze the interviews. This step enables the researcher to identify patterns and themes that emerge from the data. The sixth step, Shaping Hypotheses, involves developing concepts in the theory through several iterations of data analysis. This step serves to refine and clarify the emerging hypotheses.

Finally, the seventh step, Building Theory, involves transforming the emerging hypotheses into a unified theory that describes the phenomenon. The theory developed in this study aims to explain how digital transformation impacts organizations, including the challenges they face and the benefits they reap.

Following such research methodology, this research is expected to make a significant contribution to a better understanding of the digital transformation process and its impact on organizations. The study's methodology and research plan ensure that the data collected is reliable and valid, enabling the development of a theory that provides a comprehensive explanation of the phenomenon. The proposed research methodology and theoretical framework have the potential to aid organizations in better understanding the digital transformation process and its impacts, enabling them to make more informed decisions about their digital transformation journeys.

Sampling and Data Collection

Grounded theory methodology requires a rigorous process of data collection to enable the researcher to develop a theory that is grounded in the data (Charmaz, 2006). In this study, data for the case study was collected using the interview technique as it is a powerful tool for qualitative research (Myers, 2019). Furthermore, the use of interviews allowed the researcher to engage with the participants and encourage them to share their perspectives and experiences of the digital transformation process. The participants were carefully selected based on their involvement in the digital transformation process, such as executives, directors, and managers, who were in charge of or involved in the early stages of the process.

To ensure the quality of data collection, questions were developed based on Eisenhardt (1989)'s framework, which emphasizes the importance of addressing the researcher's questions and understanding the context of the case. The questions were designed to obtain information about the industry, history of organization data flow management, choices and alternatives that might be open to the decisionmakers at the time, and how the change was managed. By using these questions, the researcher was able to gather comprehensive information about the digital transformation process and its impact on the organization. The selection of cases was based on a set of criteria, including having a digital transformation vision and already implementing or being in the late stages of their digital transformation deployment. By targeting organizations that had already undergone the digital transformation process, the study was able to investigate the impact of the transformation beyond the marketing hypes. Furthermore, selecting high-profile personnel who were involved in the transformation process ensured that the data collected was from individuals who had comprehensive а understanding of the process.

To maintain the rigor of the research process, the study followed a research plan developed based on the research process described by Eisenhardt (1989). The plan included seven steps: getting started, selecting cases, crafting instruments and protocols, entering the field, data analysis, shaping hypotheses, and building theory. Following this plan ensured that the research was





conducted systematically, and the results were based on sound empirical evidence.

The use of qualitative case studies, combined with the grounded theory methodology, provided a comprehensive understanding of the impact of digital transformation on organizations. By using interviews as the primary means of data collection, the study was able to obtain rich and detailed data from high-profile personnel who were involved in the digital transformation process. The selection of cases based on a set of criteria ensured that the study investigated organizations that had already undergone the digital transformation process, providing valuable insights beyond marketing hypes. Finally, following a research plan ensured that the study was conducted systematically and produced reliable and valid results.

Data Analysis

Analyzing data using the Grounded Theory method of investigation is a rigorous and systematic process that involves multiple stages of data coding and analysis. The first stage, which is open coding, is described by Strauss and Corbin (1998) as the process of developing and deriving codes from the data through microanalysis techniques. This stage requires a thorough and detailed examination of the data line by line, with the aim of generating and identifying broad concepts and their preliminary associations.

For this study, the initial stage of analysis has revealed 162 broad concepts that were examined and re-examined to ensure consistency and accuracy. The researcher then proceeded to the second stage of data analysis, which is axial coding. This stage involves the merging of concepts into categories based on their essence and properties, and clarifying the linkages between these categories and their characteristics, such as causes, conditions, and consequences (Mills et al., 2006).

In this study, the result of the axial coding stage has revealed 12 categories that emerged from the 162 broad concepts identified in the initial stage. However, not all the concepts were used in the categorization process, as some were deemed irrelevant, and others were merged into one concept after re-examination and identification of shared properties. The 12 categories that emerged from axial coding were then categorized into three broad categories that may be impacted by the implementation of digital transformation: Process/Model. Information Business Technology/System, Organizational and Innovation. To further examine the relationships among the concepts, the researcher utilized memos and cross-concept matrix queries. These tools allowed for a more nuanced understanding of the interrelationships and interdependencies among the categories and their properties, providing valuable insights into the complex nature of the implementation of digital transformation initiatives.

Grounded Theory method of investigation has provided a robust and rigorous approach to data analysis in this study, allowing for the identification of key categories and properties that may be impacted by the implementation of digital transformation initiatives. The use of multiple coding and analysis stages, combined with the use of tools such as memos and crossconcept matrix queries, has allowed for a deeper and more nuanced understanding of the data and its implications, providing valuable insights for future research and practice in the field of digital transformation.

Conceptual Model

In this section, we present the Conceptual Framework of Digital Transformation Impact on Organizations as depicted in Figure 1.



Figure 1. Conceptual Framework of Digital Transformation Impact on Organizations

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The figure illustrates that the successful implementation of digital transformation leads to a positive impact on an organization's business processes, which may subsequently result in a transformation of the entire business model. Furthermore, we observe that the introduction of digital transformation in an organization induces changes in the information technology department, leading to further changes that impact organizational innovation. These changes are brought about by the implementation of digital transformation, and are transitory in nature as they arise after changes to other organizational functions, such as business processes and information technology. The impact of digital transformation on organizations is a multifaceted and complex phenomenon that requires careful examination of the various factors involved. In the following section, we will explore in detail the changes that occur as a result of digital transformation.

Discussion

The Potential Impacts of Digital Transformation

Digital transformation impact is a complex and multifaceted phenomenon that requires careful consideration and analysis. By prioritizing value creation, adopting a holistic approach, and embracing a culture of collaboration and innovation. Research in the field of digital transformation highlights the importance of taking a holistic approach that encompasses both technological and organizational considerations. As such, organizations must strive to develop a comprehensive understanding of the potential impact of digital transformation across various domains, including operations, strategy, and customer experience. By doing so, they can more effectively navigate the challenges associated with digital transformation and realize its full potential as a source of competitive advantage.

It is important to recognize that the impact of digital transformation extends beyond the organization itself, as it can also have significant implications for external stakeholders, including suppliers, customers, and partners. In this context, it is critical for organizations to adopt a collaborative approach that engages all relevant parties in the digital transformation process and fosters a culture of innovation and experimentation.

This study posits that in order for organizations to fully leverage the potential benefits of digital transformation, they must prioritize value creation as a central objective. It is critical for organizations to recognize that digital transformation is an ongoing journey that does not occur instantaneously, and as such, requires a sustained commitment to continuous improvement and adaptation.

Digital Transformation and Business Process Optimization

The concept of business process is crucial in understanding the impact of digital transformation on organizations. In this study, the definition of business process adopted is based on the work of Davenport and Short, who define business process as "a set of logically related tasks performed to achieve a defined business outcome". Business processes are essential components of any organization's digital transformation operations. and implementation can have a significant impact on them. Digital transformation requires organizations to optimize and enhance their business processes to take advantage of its benefits. Consequently, organizations may need to modify their overall business model to align with the changes brought about by digital transformation.

In order for organizations to fully realize the potential of digital transformation, they must go beyond simple digitization and digitalization. To achieve this, organizations must undertake a significant overhaul of their business processes. One of the interviewees in this study highlighted how work tasks and processes had changed after the implementation of digital transformation.

"When we were using the old systems, we had to go through many steps to accomplish a task, it was time and effort consuming. Now everything is digitalized, no one need to interfere".

Furthermore, according to interviewees' the impact of digital transformation on business processes can be analyzed from multiple perspectives. One way is to consider how the implementation of digital transformation technologies affects the way business processes are executed. This may involve a shift in the way work is performed, with manual or repetitive tasks being automated, leading to increased efficiency and productivity. Additionally, the implementation of digital technologies may necessitate changes in the way people work together, with the adoption of new tools and processes that facilitate collaboration and communication.





"In my opinion, undergone the transformation process has benefited us significantly. It makes us more efficient, it is not only about removing steps along some processes, but it also removes the needs for additional resources. I can confidently say that it is entirely new.

"Looking backwards, we were not able to improve our daily work. However, after we went through the transformation, we were able to change and shift responsibilities from one team to another, hence, becoming more efficient"

Although, many interviewees' statements have confirmed that undergoing digital transformation has brought efficiency and effectiveness to the business processes, some has expressed that it has changed all aspect of the organization not only the processes. It can facilitate the transition in the organizations' business model which might affect how organizations operate. Also, it might affect the organizations' hierarchal structure to be able to accommodate the transformation and best utilize its benefits. This can involve fundamental changes in the way organizations operate, such as new revenue streams, value propositions, and customer segments. Furthermore, digital transformation can impact organizational culture, leading to changes in the way employees work and collaborate with each other.

"In our organization some departments' teams were terminated; we no longer need them as they become obsolete with the new business model"

"It helps the organization to become more agile, it introduces efficiency and effectiveness. The organization becomes less hierarchical, and the decision-making process delegated to the lower level, hence, empowering the employees"

"The information flow become seamless and in the real-time, thanks for the Digitization of the processes".

Based on the data collected from the participants in this study, it is evident that digital transformation has a significant impact on the organizational processes and the business model when implemented. This finding is in line with the existing literature on digital transformation, which emphasizes the importance of changes in processes and business models for organizations seeking to fully realize the benefits of digital transformation (Zhao et al., 2022).

The impact of digital transformation on organizational processes is particularly noteworthy, as it requires organizations to examine and potentially modify their existing processes to take full advantage of the digital tools and capabilities available. This includes rethinking and optimizing workflows. automating manual tasks, and leveraging datadriven insights to improve decision-making. These changes are critical for organizations seeking to increase efficiency, reduce costs, and improve customer experiences in today's digital economy.

In addition to the impact on processes, digital transformation also requires organizations to consider changes to their business models. The adoption of new technologies and digital tools can create new opportunities for revenue generation and may require a shift in how the organization operates and interacts with its customers. As noted by Zhao et al., (2022), successful digital transformation requires a comprehensive understanding of how the organization's business model may need to evolve to support new products and services, customer interactions, and competitive positioning in the digital marketplace.

Overall, the findings from this study support the growing recognition of digital transformation as a holistic process that involves changes to processes and business models, in addition to technology adoption. By embracing these changes and leveraging the potential benefits of digital transformation, organizations can position themselves for success in an increasingly digital and competitive business landscape.

Digital Transformation and Information Technology.

Digital transformation has a significant impact on the "Technology" domain and the units or departments that are strongly related to it, as digitalization is often associated with technological advancements. While many studies have claimed that digital transformation primarily concerns the introduction of cuttingedge technologies and innovations to businesses, this often leads to a domino effect on other business aspects. Furthermore, it has been noted in several studies that IT departments should act as enablers or facilitators of change, rather than simply supporters of business processes.

It is important to consider the perspectives of IT department personnel when implementing digital transformation, as this process can be highly

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disruptive to the IT department and the way in which they operate. As such, it is crucial for organizations to approach digital transformation as a holistic organizational change that involves all departments, rather than just a technological change that only affects the IT department.

"Our department has changed dramatically, we became more strategic, supervising not

performing processes, and became more agile".

"The information technology department has evolved to become more business oriented and

facilitator, we keep ourselves away from complicated and technical things, we focus now on how to develop the business and create value to our customers"

It is important to note that the impact of digital transformation on the IT department can be twofold: on one hand, it can result in increased efficiency and agility in IT operations, as well as the ability to provide better services to other departments within the organization. On the other hand, it can also create new challenges for IT personnel, such as increased complexity in managing and securing data and systems, and the need for continuous learning and upskilling in order to keep up with the rapidly changing technology landscape.

Digital Transformation and Organization innovation.

Digital transformation is not a one-time event or a mere adoption of new technologies, it requires a fundamental shift in the way organizations operate. This shift involves altering the existing paradigms and models to empower the organization and enhance its competitive position. The ultimate goal of digital transformation is to increase innovation within the organization. Through the implementation of digital transformation, organizations can shift their focus from daily processes and routines to more strategic goals.

Many participants have attested to the benefits of undergoing digital transformation, citing that it has allowed them to focus more on strategic goals. This shift in focus is made possible by the changes made to organizational processes and business models. The implementation of digital technologies and systems can lead to increased organizational flexibility and agility, making it easier for organizations to adapt to changes in the marketplace. In turn, this can lead to greater innovation and a competitive advantage. "It helped us to focus on our strategic goals, and to fulfil our promises with ease. no more interruption and distraction, we can safely claim

that we can improve our business without worrying about the limitation of the systems"

"The workload for our personnel is reduced compared to previous, I didn't mean that they have fewer working hours, no but in term of tasks handling and responsibilities, Now, everyone is engaging in their strategic area which in turn will be reflected on the overall organizational strategy and vision."

"It is clear for us that the innovation process is progressing more effectively and efficiently that before, all our employees now have their roles clear, and everyone knows exactly what is expected."

It is important to note that the success of digital transformation is not solely dependent on the adoption of new technologies. Rather, it requires a holistic approach that involves a shift in organizational culture, processes, and mindset. By embracing digital transformation and all that it entails, organizations can enhance their competitiveness, achieve greater innovation, and position themselves for success in the digital age.

Conclusions

The purpose of this paper was to explore the potential impact of digital transformation on organizations. While many studies in the existing literature have focused on defining and applying digital transformation, few have delved into the potential impacts and categorized them. Therefore, this paper adopted a qualitative case study method, using semi-structured interviews and Grounded Theory methodology to develop a model that comprehensively explores the impact of digital transformation on organizations.

The literature suggests that many organizations have failed to achieve true digital transformation despite their attempts to digitize some of their processes. As such, it is vital for organizations to understand the meaning and potential impacts of digital transformation. This study found that successful digital transformation positively influenced changes in business processes, business models, and information technology and systems, leading to increased organizational flexibility and innovation. Thus, the results of this study support the arguments that digital transformation is about both strategies and processes, as well as the paradigm shifts necessary to bring about real change.





The findings of this study have implications for practice, providing insights for practitioners dealing with digital transformation and highlighting how its implementation is likely to impact their organization. By identifying the most impacted areas on organizations, this study can guide practitioners to better navigate the transformation process and capitalize on its potential benefits. Further research is encouraged to validate and extend these findings, taking into account organizational size, culture, industry, and the organizations' perception of digital transformation.

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