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# Leadership Roles and Core Competencies for Driving Digital Transformation

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### Abstract:

The role of leadership in enabling digital transformation has attracted considerable interest from researchers and practitioners in the swiftly changing digital economy. This study examines the essential role of leadership in adopting digital transformation in organisations, focusing on the necessary skills, challenges, and strategies for its implementation. The study employs qualitative research methods and adopts Rogers' Diffusion of Innovation Theory as its theoretical framework to investigate how leadership influences the adoption of new technologies and promotes organisational adaptability. Data was collected using comprehensive interviews, emphasising that effective leadership in the digital age requires a combination of technical expertise, strategic vision, and change management skills. The study comprised nine participants, primarily top managers from the insurance industry. The findings indicate that digital transformation encompasses a technological transition and a profound cultural and organisational revolution. Leaders must possess technical skills, such as data analytics and IoT proficiency, as well as interpersonal qualities, including adaptability and critical thinking, to effectively navigate the intricacies of the digital ecosystem. The research highlights the significance of encouraging employee engagement, reducing resistance to change, and cultivating a culture of trust and collaboration.

#### Keywords:

Digital Transformation, Leadership in the Digital Era, Change Management, Digital Leadership, Technical Skills for Leaders.

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## Background

The role of leadership in enabling digital transformation has attracted considerable interest from researchers and practitioners in the swiftly changing digital economy. As organisations endeavour to adjust to technological breakthroughs and evolving market conditions, effective leadership becomes crucial in navigating the complexities of digital transformation. This transformation is not only a technology enhancement; it entails a fundamental change in organisational strategies, processes, and culture, prompting a re-evaluation of leadership styles, competencies and styles. Digital transformation is characterised by incorporating digital technologies across all facets of a business, radically changing organisational operations and value delivery to customers (Cortellazzo et al., 2019; Senadjki, 2023). Such a shift needs leaders who can comprehend and employ technology while also motivating and directing their teams through the accompanying transformations. The notion of digital leadership evolved to include a combination of conventional leadership attributes and novel skills vital in a digital environment. Leaders are now expected to serve as change agents, proficient in promoting a culture of innovation and adaptability in their organizations (Dema et al., 2023; Musaigwa, 2024).

Recent literature stresses the significance of specific competencies that leaders should have to facilitate digital transformation successfully. The competencies encompass technical skills relevant to digital technology and soft skills, including emotional intelligence, communication, and teamwork (Edelmann et al., 2023; Wang, 2023). Transformational leadership, characterised by vision, inspiration, and support for innovation, has been proven to correlate with effective digital governance and employee engagement during transitional phases (Dema et al., 2023; Musaigwa, 2024). Moreover, leaders must effectively manage resistance to change, create a culture of trust and transparency, and align organisational objectives with digital efforts.

The barriers to digital transformation are complex, often stemming from organisational inertia and employee resistance to change. Leaders play a key role in tackling these difficulties by promoting an environment that encourages experimentation and learning (Cortellazzo et al., 2019; Zeike et al., 2019). Effectively articulating a coherent vision for digital transformation and engaging employees across every level is crucial for overcoming barriers and attaining sustainable change. As firms increasingly depend on data-driven decision-making, leaders must cultivate skills in data analytics and digital strategy to maintain competitiveness (Wang, 2023; Hung et al., 2023).

As organisations navigate the complicated dynamics of the digital ecosystem, a need for research examining the emerging competences essential for effective digital leadership becomes increasingly vital. This study seeks to enhance the discussion by analysing specific skills and strategies leaders must employ when leading their organisations through digital transformation. Leadership has a crucial role in the implementation of digital transformation. As organisations encounter unique challenges and

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opportunities in the digital era, leaders must nurture a wide range of talents that integrate technical proficiency with robust interpersonal skills. By doing so, they may effectively facilitate organisational transformation, foster a culture of innovation, and ultimately secure the long-term success of their organisations in a digital environment. This study seeks to analyse the crucial role of leadership in enabling digital transformation in organisations, focusing on the required leadership roles, competencies, and strategies important for effectively managing technological change. It aims to examine how leaders influence the adoption of digital technologies, promote organisational agility, and cultivate a culture that encourages innovation and continuous learning in the digital age.

### **Research Problem**

The study examines the crucial role of leadership in adopting digital transformation in organisations, focusing on the skills, barriers, and strategies that leaders employ to achieve successful implementation. Although digital transformation is acknowledged as an essential driver for organisational competitiveness, ambiguity around the required leadership competencies and cultural shifts has created substantial barriers to its implementation. The research question for this study is: How do leadership roles, strategies and skills influence the adoption and effectiveness of digital transformation efforts in organisations? The findings demonstrate that leadership is pivotal in guiding the sophisticated digital transformation processes. Effective leaders must function as change agents, harmonising the organisation's culture with technological advancements. Leadership's strategic vision is highlighted as a crucial factor for successful digital efforts, allowing leaders to create a compelling organisational roadmap for transformation. Leaders must possess a combination of technical skills (e.g., IoT, data analytics) and soft skills (e.g., adaptability, critical thinking) to navigate technological changes and promote innovation. Enhancing staff skills across all organisational levels proved essential, with leadership driving this cultural transformation and assuring workforce readiness.

### **Theoretical Framework**

This study is grounded in Rogers' (1995) Diffusion of Innovation Theory (DOI), which provides a robust lens for understanding the adoption of digital transformation in organisations. DOI explains the process by which innovations are defined as ideas, practices, or objects perceived as new are communicated through certain channels over time among the members of a social system (Sahin, 2006). This framework is particularly relevant to the study as it highlights the factors influencing the adoption and diffusion of digital transformation initiatives, including leadership's pivotal role. DOI identifies five key characteristics of innovations that affect their rate of adoption: compatibility, complexity, observability, relative advantage, and trialability (Rogers, 2003). These characteristics are central to understanding how leaders perceive and drive digital transformation in their organisations. For instance, leaders must

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assess the compatibility of digital transformation initiatives with existing organisational processes and culture, address the complexity of new technologies through skill development and communication, and demonstrate the relative advantage of these initiatives to secure buy-in from employees.

DOI emphasises the role of communication and social influence in the adoption process. Leaders act as change agents who influence the perceptions of employees and stakeholders, thereby reducing uncertainty about the benefits and feasibility of digital transformation (Dearing, 2009). This aligns with the study's focus on how leaders promote employee engagement, manage resistance to change, and create a culture conducive to innovation.

The adoption of digital transformation requires more than just technological implementation; it necessitates a holistic approach that integrates leadership, organisational culture, and employee engagement. DOI provides a theoretical foundation for understanding how leaders guide their organisations through this complex process. Leaders play a crucial role in influencing employees' perceptions of digital transformation. By communicating the benefits (relative advantage) and aligning new initiatives with organisational values (compatibility), leaders can drive the adoption process. The findings of this study highlight that leaders with strong interpersonal and technical skills are more effective in navigating the challenges of digital transformation, reinforcing the relevance of DOI's focus on social influence and communication.

DOI's emphasis on social systems and communication channels underscores the importance of employee engagement in the adoption process. Leaders who actively involve employees in the decision-making process and address their concerns help reduce resistance to change, a theme consistently reflected in the study findings. Digital transformation initiatives often involve complex technologies, which can hinder their adoption. DOI suggests that simplifying the innovation and providing opportunities for trial and experimentation can enhance adoption rates. This aligns with the study's findings on the need for upskilling employees and providing clear guidance on the use of digital tools and technologies. DOI highlights the importance of organisational culture in influencing the diffusion of innovation. Leaders must promote a culture of trust and openness to innovation to ensure successful adoption. The study's emphasis on trust-building, transparency, and strategic vision directly relates to DOI's insights on creating a supportive social system for innovation.

### **Literature Review**

### The Role of Leadership in Digital Transformation

There has been a fundamental change in leadership over the years, and new leadership skills are needed to mesh with the times (Mdluli and Makhupe, 2017). The rise of disruptive digitalisation as a fundamental force for change has made it significant to redefine leadership approaches (Mdluli and

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Makhupe, 2017). In the digital era CEOs are expected to be resilient, adaptive and transparent, and senior managers should acquire new competencies (Bennis, 2013). Bennis (2013) defines digital leadership as "doing the right things for the strategic success of the digitalisation for the enterprise and its business ecosystem". In addition, Mihardjo, Sasmoko, Alamsjah and Elidjen (2019) describe digital leadership as integrating digital competence and digital culture, which enable the introduction and use of new digital technologies and change. De Waal van Outvorst and Ravesteyn (2016) suggest that digital leadership is the combines a transformation leadership approach and new digital technology.

The senior executives should fully embrace technology and be competent and informed on the use big data, the internet and communication systems (Malloch and Melnyk, 2013). The executive managers create the culture and context of their firm whereby they encourage and support the workforce to be innovative and creative (Malloch and Melnyk, 2013). A digital leader is conscious of personal limitations and strength, hopeful, courageous, future-oriented, proactive, inquisitive, and has the ability to adjust as required by circumstances. The leadership behaviour of the past that no longer work in the digital age includes being proof-driven before taking action, focusing on sustaining the present, and analysing the root cause and blame placing (Malloch and Melnyk, 2013).

### Leadership Style and Competences Needed for Digital Transformation

Hüsing, Korte, Fonstad, Lanvin, Welsum, Cattaneo, Kolding and Lifonti (2013) explain that digital leaders include chief marketing officer, CIOs, and other new information technology and business management roles. Zupancic, Verbeke, Herneoja and Achten (2017) identified six digital leadership competencies essential in the digital organisation, and they include creativity, experimentation and knowledge processes; technological ecologies; design and research; leadership and human resources; collaborative and explorative environment; and impact of digital leadership. Digital leadership is replacing the old leadership model which is primarily based on imposed deadlines and commands by bringing in new models that require creativity and the conceptualisation of a strategic view of cyberspace (Kwiotkowska et al., 2021).

Leadership is fundamental in guiding the people through the digital transformation journey and to manage their emotions during the dynamic process of continuous change (McCarthy et al., 2021). Leadership required to drive a digital transformation programme is perhaps complex than expected due to the high volumes of change within the business, and making right decisions can also be a difficult task (McCarthy et al., 2021). Without the competencies mentioned above, it would be challenging for leaders to lead employees through a digital transformation process that requires fundamental changes (Kwiotkowska et al., 2021). In addition, leaders in the digital economy need to have the ability to analyse data, good leaders should be able to obtain, verify, and use data in the organisation (Kwiotkowska et al., 2021).

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Moreover, good digital leaders should possess soft skills such as assertiveness, creativity, ability to selforganising, influence and self-navigating, thinking analytically, coping with unpredictable circumstance, and overcoming challenges emanating from unforeseeable situations (Kwiotkowska et al., 2021). Donate and de Pablo (2015) argue that combining the transformational and transactional leadership styles enables leaders to lead as digital leaders since the two leadership traits are suitable for a transformation process. There are still some similarities if a parallel is drawn between the digital leader, which the new form of leadership being proposed for the digital age, and other traditional types of leadership such as transformational leader. For instance, as indicated, studies show that digital leaders are visionaries, should have the capacity to create a compelling vision, possess learning capability, and are able to transform organisations. Transformational leaders also possess these types of capabilities.

Therefore, some of the characteristics of traditional leadership remain relevant in the digital age. According to Yopan, Kasali, Balqiah and Pasaribu (2022); Eberl and Drews (2021), the scope of a digital leader should cover a wide range of elements such as skills and roles and leadership style of the leader, human resource development, customer experience and technology. Notwithstanding the growing evidence that the CDO's position is of increasing importance, strategic management literature has largely ignored the role of a CDO in the organisation's transformation activities, with only publications from practitioners writing about it (Becker, Schmid and Botzkowski, 2018). However, some studies have begun to discuss interactions between senior managers such as CIOs and CDOs and how their responsibilities are related (Venkatakrishnaiah and Ramanathan, 2019).

The studies indicate that the two top managers may work closely during the digital transformation process to bring information technology and business functions closer to develop the organisations' digital capabilities (Haffke et al., 2016). Recent studies have indicated that creating a CDO position is an essential step as it demonstrates the commitment of top management to drive the organisational digital transformation and ensure its sustainability and success. Research has shown that firms with high leadership capabilities outperform those which do not invest in digital leadership (Westerman, Bonnet and McAfee, 2014).

The study by Zeike, Bradbury, Lindert and Pfaff (2019) in German revealed that senior managers with lower digital leadership competencies have a high probability of experiencing low psychological wellbeing. Hadad and Bratianu (2019) argue that digital literacy is mandatory for digital leaders as they are role models for the workforce and partners. Through leading by example digital leaders encourage learning and comprehension of new digital technologies. Digital leaders also need mental agility, which is a state-of-the-art capability that requires high-quality elements such as thinking critically, solving problems, and being agile (Băeşu and Bejinaru, 2020). It is still unclear whether the traditional leadership

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styles are relevant in the digital era to lead a digital transformation programme or if new leadership approaches are needed to manage new digital technologies.

In the digital age, data is always available for leaders, and digital leaders need to be data-driven as they are expected to use data effectively to make improved decisions and enhance business performance (Băeşu and Bejinaru, 2020). Moreover, considering that the digital environment is also virtual, digital leaders should have a cultural dexterity capability, enabling them to manage a multicultural environment. It is because employee teams are intercultural, and they are in different locations of the world. Digital transformation also needs leaders to have personal competencies such as the ability to use new methods and instruments like design thinking. Design thinking is a set of procedures used by designers to solve sophisticated problems and find preferable solutions (Oberer and Erkollar, 2018). This view is supported by Larjovuori, Bordi and Heikkilä-Tammi (2018) who explain that as the work is increasingly becoming virtual due to digitalisation, leadership need new skills to be able to communicate with teams in real-time through social media, video and instant messaging, and to lead operations and people in virtual environments.

### Role of Chief Digital Officer (CDO) and Chief Information Officer (CIO)

Digital transformation is a complex process, that requires leadership to create and encourage a databased culture, and it starts at the strategic leadership level where the planning of a digital strategy is done (Cichosz, Wallenburg and Knemeyer, 2020). As more organisations embark on digital transformation, new executive positions are being created, one of them is a chief digital officer, an individual whose role is to drive and oversee the digital transformation process. It was found that certain organisational characteristics determine the need for a CDO, including digitalisation experience, company size, organisational culture, cross-functional cooperation, and the extent of a firm's fragmentation (Venkatakrishnaiah and Ramanathan, 2019).

It is essential to ensure a close alignment between the CIO and the CDO as a mutual understanding is required for each individual's responsibilities (Osmundse et al., 2018). The introduction of the CDO position is believed to have some implications in the business, and the most common one is the fact that the CDO acts as an ambassador for the information system working closely with the business, therefore, strengthening the role of the CIO in the entire organisation (Haffke et al., 2016). Moreover, the other implication is that the CDO also assumes some of the CIO's roles, which may cause tension between the two positions and duplication of duties (Venkatakrishnaiah and Ramanathan, 2019).

The CIOs act as functional heads for the information technology department and are responsible for the traditional information technology role of formulating and implementing information technology strategy. On the other hand, a CDO assumes a business role that addresses the outbound-facing use of digital

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technologies normally involving the firm's products and services and working as a link between partners and customers (Hess et al., 2020). The responsibility of a CDO depends on the company. They include refinement, development, and the implementation of a comprehensive digital strategy for the firm, resulting in the desired change to prepare the company for the digital era (Haffke et at., 2016).

Therefore, it is evident that digital transformation needs a strong coordination of various organisational departments to avoid silo mentalities and approaches (Singh and Hess, 2017). However, the challenge is that department managers usually want to focus on their functional areas and are often unwilling to corporate. In response, the CDO needs to find a way to pull together everyone from top executive level to bottom. In addition, Nicoletti (2016) also emphasises that staff engagement and top management support are widely regarded as crucial steps in different initiatives taken by insurers especially for a digital transformation program.

## Methodology

This study adopts a qualitative research approach, which is well-suited to exploring the complex and nuanced role of leadership in the adoption of digital transformation. Qualitative research allows for an in-depth understanding of participants' perspectives, enabling the researcher to capture the subtleties of leadership dynamics, skill requirements, and organisational challenges during digital transformation (Yilmaz, 2013; Yates & Leggett, 2016). By employing this approach, the study investigated the lived experiences of organisational leaders, providing a rich narrative on how they navigate digital change.

### **Research Design**

A descriptive single-case study design was employed to provide a comprehensive examination of the phenomenon within its real-world context. Case study research design is particularly appropriate for this research because it answers the "how" and "why" questions (Yin, 2003), which are central to understanding the processes and strategies leaders adopt during digital transformation. This design also facilitates an in-depth exploration of the organisational culture, leadership styles, and employee engagement strategies relevant to the study's objectives (Saunders, Lewis & Thornhill, 2016).

### **Data Collection**

Primary data were collected through semi-structured interviews, allowing for flexibility to probe deeper into the participants' responses while maintaining focus on the study's key themes. Semi-structured interviews are ideal for capturing detailed and context-specific insights, which are critical for understanding leadership roles in digital transformation (Merriam & Tisdell, 2015). Telephone interviews were chosen as the primary data collection method due to their ability to create a distraction-free environment, ensuring high-quality responses (Sweet, 2002). Nine participants took part in the study.

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## Sampling

A purposive sampling technique was employed to select participants who possess the necessary expertise and experience relevant to the study. This approach ensures that the data gathered is rich and directly aligned with the research objectives, as it focuses on individuals with firsthand experience in leading digital transformation initiatives (Etikan, Musa & Alkassim, 2016). Participants included senior managers and executives responsible for strategic decision-making and digital transformation processes in their organisations.

## **Data Analysis**

Thematic analysis was used to identify, analyse, and interpret patterns in the data. This method aligns with the study's qualitative nature and allows for a systematic examination of key themes, such as leadership strategies, skill requirements, and challenges in digital transformation (Braun & Clarke, 2006). Thematic analysis provides the flexibility to capture both explicit and implicit meanings in participants' narratives, ensuring a comprehensive understanding of the phenomenon.

The chosen methodology is particularly relevant to this study as it aligns with the research's focus on leadership's role in adopting digital transformation. By using qualitative methods and a case study approach, the research captured the contextual and relational aspects of leadership that quantitative methods might overlook. The purposive sampling and in-depth interviews provide rich, context-specific insights into how leaders navigate digital transformation, addressing challenges such as skill gaps, resistance to change, and fostering employee buy-in. Thematic analysis ensured that the findings are rooted in the data, offering robust and actionable insights for both academia and practice.

## **Findings**

The participant indicated in her views below that there is need for technical skills and change management skills to thrive in the digital transformation era. The following are his views:

As far as management is concerned and the skills required to manage digitalisation, I think managers need to be prepared and skilled for the digital world as some of them lack the skills. I think they really need technical skills for manoeuvring themselves through the digital transformation journey to understand the customer's needs and what this journey means.

Technical skills are essential for managers to proficiently exploit digital tools and technology. Verhoef et al. (2021) assert that digital transformation demands a multidisciplinary strategy, which require managers to comprehend several digital technologies and their consequences for company processes. Liu et al. (2024) corroborates this by identifying competencies like data analytics and digital content management as highly valued in job postings, signifying a distinct demand for technical proficiency in

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the labour market. Khoeini (2024) argues that university library managers must have skills in coding and database management to enable digital transformation. This technical expertise is essential for operational efficiency and strategic decision-making in a data-driven environment. Notwithstanding technical competencies, interpersonal skills are essential in overseeing digital transformation. Obermayer (2023) stresses the significance of soft skills, such as adaptability and critical thinking, which are essential for addressing the problems presented by digital transformation. Moreover, Varenyk (2024) articulates that the growing domain of digitalisation needs that managers acquire a combination of soft, hard, and digital competencies to address the increasing requirements of their positions. The integration of soft skills and technical expertise is essential for creating a robust and innovative organisational culture. The literature shows the importance of continuous learning and development for managers to adapt to the swift technological advancements.

The participant suggested that since they have the information technology department to support them, not many digital skills are required as indicated in her own words below:

So, when it comes to digital transformation, if we get stuck and something goes wrong along the way as I said, we have our technical team to provide that additional support, and they are highly skilled professionals with the required knowledge of new digital technologies. It doesn't have to be management that deals with technical issues. So, there is no problem that cannot be solved. So, while management is accountable, they delegate technical issues related to digital transformation to IT experts; however, it remains important for management and staff to have some digital skills or literacy that allows them to carry out their day-to-day duties without having to heavily rely on the IT team.

Uzule and Budanceva (2023) examine the essential importance of identifying digital barriers and the necessary competencies of personnel in the context of digital transformation strategies. The authors propose that organisations should incorporate these talents into their digital transformation strategies to ensure successful implementation. This confirms the participant's claim that knowledgeable technical staff is crucial for overcoming challenges in the digital transformation process. Furthermore, Lee et al. (2023) stress the need for continuous staff development in higher education institutions, especially in improving digital literacy skills. They assert that the successful implementation of digital transformation relies on staff's ability to adapt to and successfully employ digital technologies, which are becoming increasingly incorporated into administrative and instructional responsibilities. This reinforces the notion that organisations should not solely depend on technical teams but also allocate resources towards training their entire staff to engage in the digital transformation. Zulu et al. (2023) further explain the interplay between organisational structure, culture, and leadership in promoting digitisation.

Their findings demonstrate that good leadership and a supportive organisational culture are crucial for improving internal processes and leveraging digital tools. This correlates with the participant's viewpoint

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that a strong support structure is essential when challenges arise during the digital transformation process.

The participant elaborated on the skills required in the digital transformation era, pointing to the need for managers to be open and receptive to innovation as well as the ability to create a vision for digital transformation. The following are views in her own words:

The CEO and top management team need to have a strategic direction for digital transformation and provide a clear direction. They should drive the process and provide the vision for digital transformation. When it comes to the requirements for a new set of leadership skills, I think managers should be innovative leaders; they need to be accepting of innovation because you do not have to do the job yourself. The CEO needs to hire people with digital expertise, like myself, and be willing to spend on digital initiatives.

Liu (2024) emphasises the significance of strategic direction in digital transformation, asserting that CEOs are pivotal in formulating their companies' digital strategy. The study highlights that successful digital transformation requires CEOs to have a vision and to effectively exploit digital knowledge in their organisations. This corresponds with the participant's claim that CEOs ought to employ digital specialists to oversee the transformation process instead of trying to manage every aspect themselves. The research of Yin et al. (2022) substantiates the premise that transformational leadership is crucial for promoting creativity in organisations. Research reveals that transformational leadership significantly impacts a firm's strategic flexibility and innovation capabilities, essential for successful digital transformation. This reinforces the notion that CEOs must be innovative and receptive to change, as emphasised by the participant. Furthermore, Ridha (2024) emphasises the attributes of digital leadership essential for successful digital transformation.

The participant emphasised the importance of change management skills when implementing digital transformation and further stressed the significance of communication and upskilling of staff and leadership. The following are his own words:

Now change management becomes a very important factor because the implementation of digital transformation requires change management competencies, so there is a need for leadership to be able to lead the change process as a transformational leader, and that applies to the staff members as well because they will need to do things differently from the old way of doing things, but it requires new skills.

Henderikx's (2023) research highlights the importance of leadership competencies in effectively managing digital transformation. The research identifies essential leadership behaviours vital for middle managers to assist people during the transition process, emphasising that effective change management is critical for successful digital efforts. This correlates with the participant's viewpoint that

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leadership is essential for managing the complexities of digital transformation. Furthermore, Türk's (2023) research demonstrates the substantial influence of leadership styles on organisational development throughout digital transformation. The study reveals that leaders must possess a combination of strategic vision and agility to create an environment conducive to change, which is crucial for implementing new technologies and procedures. This corroborates the participant's assertion that leadership is essential to enable a transition from traditional approaches to creative ones. Karaköse and Tülübaş (2023) engage in this discourse by examining the function of digital leadership in fostering sustainable advancements in organisations. Their research indicates that digital leaders must facilitate technical adoption and promote a culture that encourages change and innovation among employees. This aligns with the participant's assertion on the need for leadership to oversee the change process effectively.

The participant explained that the upskilling of employees is important considering the fact that 4th Industrial Revolution has begun. She suggests that all employees at all levels must be able to use the technology as it is introduced in the organisation.

One has to realise that in this digital era, it does not matter at what level you are in an organisation, we all do not have a choice but to be techno-savvy, so at all levels, we should be in a position to use technology. For example, in the past, just a simple example, to complete your leave form used to be done in a manual way, but now one has to be able to know where to click to go there and fill out or complete their electronic form or access the information on the computer.

Karhapää (2024) examines how digital environments serve as essential venues for informal workplace learning, emphasising that the complexity provided by digital technologies require constant skill acquisition by employees at all levels. This correlates with the participant's perspective that all individuals should be effective in using technology, since digital tools are becoming increasingly integrated into daily activities. Furthermore, the study by Özkan-Özen and Kazançoğlu (2021) highlights the challenges of workforce development in the context of Industry 4.0, stressing that digitalisation requires employees to have a diverse set of skills, particularly in the effective use of technology. This supports the notion that technological proficiency is vital for all employees, since they must interact with new tools and systems to maintain competitiveness.

The participant supports the views of other participant on upskilling staff with the required digital skills that enable them and management to use new digital technologies. The following are his own words:

Management plays a fundamental role in leading the digital transformation process. I think we need new skills for management; in the past, it was only people management skills and personal skills that were important for management, but now that focus has shifted. There is an increasing need for technical skills like skills to make use of the IoT to be able to manage the new digital technologies.

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Gadzali (2023) asserts that organisations going through digital transformation must prioritise the improvement of digital competencies in their workforce. This encompasses both technological competencies and the cultural and leadership reforms essential for managing the digital landscape. This aligns with the participant's viewpoint that management now requires a new set of competencies, especially technological skills associated with digital technology. Furthermore, Wrede et al. (2020) analyse the role of senior executives in digital transformation, emphasising that effective leadership entails not just directing change but also possessing the technical acumen to comprehend and execute digital initiatives. This supports the participant's view that management must adjust to the requirements of digital technologies, especially the Internet of Things IoT. The research conducted by Zielinska (2022) on developing digital skills highlights the importance of a holistic skill set that integrates sophisticated technical skills with digital soft skills. The research indicates that as organisations adopt digital transformation, there is an increasing need for personnel, including managers, to be proficient in exploiting digital tools and technology (Zielinska, 2022). This supports the participant's view that the focus on management skills is shifting towards technological competencies.

The participants also shares similar views that staff needs to upskill to use new digital technologies that enable them to perform different duties. The following are his personal views:

With regard to skills in the new digital era, I think that the most important thing is definitely computer literacy, but when we are talking about computer literacy, we are not just talking about being able to open up an email or using one system. That is just one aspect; in our organisation, we have a customer care system that was implemented over 30 years ago. It is so old, but the problem is that you have people in business who are so used to that old way that they do not want anything outside that. They are not interested in learning new digital technologies.

The findings from the study's participants concerning the need for sophisticated digital abilities, especially computer literacy, in the realm of digital transformation are strongly corroborated by current literature. The focus on moving from fundamental computer skills to a more comprehensive understanding of digital tools and technology is a critical subject in contemporary discussions around employee readiness in the digital age. Ghufron and Mardiana (2020) emphasise the evolving definition of digital literacy, which now includes complex skills required to navigate the complexities of the digital environment. Their research suggests that organisations should promote the enhancement of employees' digital literacy to proficiently handle knowledge in a digital context. This aligns with the participant's perspective, who indicated that just proficiency in basic systems is inadequate in the contemporary digital environment. Kvirchishvili et al. (2022) argue that as digital technologies advance, the workforce's skills must also evolve, transcending fundamental competencies to encompass increasingly sophisticated digital capabilities.

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This corroborates the participant's assertion that organisations must invest in training that transcends traditional skills. Furthermore, the study by Çoklar and Tatlı (2020) examines the importance of information literacy and self-efficacy within the framework of digital citizenship. Their findings indicate that both managers and employees must cultivate a comprehensive set of digital competencies to interact proficiently with contemporary technology and information systems. This aligns with the participant's viewpoint that the workforce must adapt to emerging digital tools and methodologies.

The participant expressed his views on the issue of providing employees with skills that enable them to recognise and avoid such things as phishing and data breaches which may jeopardise the company.

With regards to digital skills, because we are going digital now, employees need to know the risks of using technology, for example opening files sometimes that people send to their work emails, I mean phishing emails. They need to know the risk of clicking or opening those types of suspicious emails. They need to be educated on the risks of technology and need new digital or technological skills.

The views of the research participants on how vital it is for employees to be informed about technological skills and the importance of digital skills are well supported by recent literature. Understanding digital risks, including phishing and malware, is essential in the context of digital transformation. Nikou et al. (2022) examine the critical importance of information and digital literacy in the integration of digital technologies. They emphasise how crucial it is for organisations to identify personnel in need of literacy training to improve their skills, as lack of digital literacy may result in deficiencies, including susceptibility to cyber threats. This correlates with the participant's view that staff must be informed about the dangers of technology use, especially in identifying suspicious emails. Marsh's (2021) research highlights the significance of digital literacy in affecting employee performance and their intentions to persist in using digital workplaces. The findings indicate that employees with strong digital skills are more effective in managing potential technological skills, therefore improving their overall effectiveness in a digital context. This corroborates the finding that training in digital competencies is essential for risk mitigation. Crovini et al. (2020) further illustrate the connection between risk management and organisational decision-making. They argue that effective risk management requires employees to have a comprehensive understanding of the technology they use, which encompasses awareness of potential risks and appropriate responses. This supports the participant's viewpoint that employees should be informed about the risks linked to technology.

## Discussion

This study's findings highlight the critical importance of leadership in the implementation of digital transformation, aligning closely with the theoretical framework based on Rogers' (1995) DOI theory. The theory emphasises that the acceptance of innovation depends on the perceived attributes of the

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technology and the users' willingness to adopt it. This viewpoint is reflected in the participants' focus on leadership's capacity to promote strategic vision, technical expertise, and change management skills to navigate the intricacies of digital transformation. The findings indicate that competent leadership is essential for digital transformation efforts. Participants frequently emphasised the need for leaders to possess both technical and interpersonal abilities, in accordance with Kwiotkowska et al. (2021), who argue for a balanced leadership strategy that incorporates interpersonal competencies and critical thinking. Leaders are accountable for establishing the strategic direction and creating a culture that promotes innovation, adaptation, and continuous learning. This emphasises the pivotal role of transformational leadership, which, as observed by Donate and de Pablo (2015), facilitates the effective alignment of organisational vision with digital transformation objectives. A recurring theme in the findings was the need for enhancing the skills of employees and management to address the requirements of emerging digital technology. Schwarsmuller et al. (2017) highlight the dynamic nature of digital transformation and the pressure it places on employees to adapt swiftly. The findings indicated the imperative for technical competencies, including data analytics and IoT proficiency, with soft skills such as adaptability and problem-solving. The combination of these skills is crucial for fostering a resilient workforce competent at navigating the barriers presented by digital transformation. The research emphasises the importance of addressing organisational culture and overcoming resistance to change. The findings indicate that employees' readiness to adopt digital transformation is often influenced by their understanding of its benefits and the support they get from leadership. This correlates with Nicoletti's (2016) findings, which emphasise the significance of employee engagement and leadership support in digital efforts. Furthermore, the focus on trust and transparent communication as an essential components for effective change management aligns with the current literature, which emphasises these factors as vital for fostering employee commitment and reducing resistance. The findings indicate that traditional leadership methods may be inadequate in the digital age. Leaders should embrace a more collaborative and inclusive methodology, as emphasised by Kwiotkowska et al. (2021), where leadership duties are distributed across teams with varied competencies. The findings stress the significance for leadership training programs that emphasise the development of digital literacy, strategic vision, and the capacity to manage virtual teams. The findings of this study have considerable practical implications for organisations experiencing digital transformation. Leadership must first prioritise the establishment of a clear and compelling digital vision that is effectively communicated throughout all organisational levels. Secondly, investing in extensive training programs that encompass both technical and interpersonal skills is essential for equipping employees and management to meet the challenges posed by digital technology. Ultimately, fostering a culture of trust, collaboration, and continuous learning will improve organisational readiness for digital transformation. This study enhances the existing body of knowledge on digital transformation by offering empirical data about the essential role of leadership in this process.

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The findings emphasise the interaction between technical skills, organisational culture, and leadership approaches, providing significant insights for both scholars and professionals. Future study may investigate the distinct problems encountered by various industries in implementing digital transformation, along with the influence of future technologies like AI and blockchain on leadership techniques.

## Conclusion

This study highlights the crucial role of leadership in effectively managing and executing digital transformation in organisations. Applying Rogers' Diffusion of Innovation Theory, the research confirms that digital transformation transcends a simply technology transition; it represents a significant organisational and cultural change demanding creative, flexible, and technically skilled leadership. The findings indicate that effective digital leaders must harmonise technical skills such as data analytics and IoT expertise with interpersonal talents like adaptability, critical thinking, and change management.

Leaders act as catalysts for transformation by cultivating a culture of creativity, managing resistance to change, and guiding people through continuous learning. This study highlights the growing significance of digital literacy across all organisational levels, emphasising the need to upskill people to improve readiness and resilience amid swift technological progress.

The creation of positions like Chief Digital Officers CDOs exemplifies the organisational reconfiguration necessary to advance digital strategy. Ultimately, effective digital transformation depends on a holistic and inclusive leadership strategy that harmonises personnel, processes, and technology. Future study should further examine how emerging technologies, such as artificial intelligence and blockchain, will redefine leadership roles and capabilities in digitally evolving contexts.

- Leadership Development: Organisations ought to allocate resources to leadership development initiatives that integrate digital literacy with interpersonal abilities such as strategic thinking, change management, and communication.
- Upskilling and Reskilling: Structured training programs are necessary to enhance technical competencies (e.g., data analytics, IoT) and digital awareness at all organisational levels.
- Change Management Emphasis: Leaders must prioritise change management tactics that cultivate trust, reduce resistance, and actively include employees in the digital transformation process.
- Strategic Vision and Communication: Senior executives must formulate and convey a coherent, persuasive digital vision that matches organisational objectives with digital efforts.

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- Promotion of a Continuous Learning Culture: A culture that promotes experimentation, derives lessons from failure, and fosters adaptation must be cultivated to maintain transformational momentu
- Cybersecurity and Risk Awareness: Digital literacy training should encompass awareness
  of digital threats, including phishing and data breaches, to foster responsible technology
  usage.

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