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# Importance of Leadership in the Effective Implementation of Digital Transformation

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**Abstract**

In order to enable the digitalization of work environments and to develop a culture of continuous learning inside an organization, digital leadership is a leadership framework that facilitates the implementation of digital transformation. That's why it is such an important part of the literary canon; it's what keeps businesses competitive and going strong in the modern world. Therefore, it is crucial to investigate the numerous factors that contribute to the efficient adoption of digital transformation within institutional frameworks. By conducting a thorough examination of relevant secondary materials produced between 2013 and 2023, this study intends to give a conceptual framework on the topic of digital leadership. The importance of digital leadership and the existing literature on digital leader's skills and implementation strategies for digital transformation are discussed in this study. A total of 69 articles were thoroughly studied for a systematic literature review. Descriptive and content analysis is done and themes were created for the important digital leader's skills which are vision and collaboration, Communication, agility, digital literacy, data skills, risk-taking and customer focus. If used, these skills can help a digital leader effectively implement digital transformation using different strategies in any business organization.

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# 1 Introduction

## 1.1 Background for the study

Since the advent of digitalization has become essential to an organization's long-term success and competitiveness, the topic of digital transformation has gained a lot of attention. It is a major factor in the development and progress of numerous fields. Organisations need to digitise if they want to thrive in the current and future economic environments (Jestine Philip, 2021). The rise in digitally executed corporate tasks suggests that the much-discussed digital era has indeed arrived. Digital media's widespread use is one factor in this. Digital transformation is now taking place in a wide range of businesses, according to the International Data Group (IDG). These industries include IT, banking, the fashion industry, travel, operations, and websites/e-commerce (Porfirio et al., 2021). When it comes to streamlining corporate operations, the IT industry is light years ahead of its rivals.

A firm must modify its systems, structures, processes, procedures, and management to adapt to new circumstances. Digital transformation is causing a pervasive shift that is challenging established norms and ways of thinking. It substitutes dependable digitally based work practises with ineffective bureaucracy. Widespread changes implemented by a company may negatively impact the mental and emotional health of its staff. Leyer et al. (2020) state that the primary goal is to appropriately utilise this phenomenon as a source of positive energy while simultaneously preserving the mental health of employees to enable them to offer significant words of support during the transitional period (Winasis, 2020).

This topic is currently at the forefront of contemporary discussions due to the exponential increase in the use of digital technologies. Digital transformation has a broad influence, according to Schwaezmuller et al. (2018), because digital technology may be employed in any sector of an organisation. Due to the dynamic nature of the digital transformation landscape, businesses need to adapt their methods to new technologies like artificial intelligence (AI), blockchain, and the internet of things (IoT). All sizes of businesses, including government organisations, need to embrace digital transformation to stay

competitive. The digital revolution is having an impact on every industry, and this trend is expected to continue. This change is something that emerging economies need to be aware of and adapt to (Winasis et al., 2021).

The shift to digital is being hailed as a revolutionary development. While some writers avoid taking a stance, others contend that the use of cutting-edge management techniques and the use of new digital technology are inexorably linked to digital transformation. They also stress how crucial it is to cultivate fresh concepts and enhance one's skills both at work and at home to effectively manage this transition. Growing levels of digitization have brought significant changes in the economy (Prebanic & Vukomanovic, 2021). Digital technologies are now widely available, which has had a significant impact on how businesses function, the products and services they provide, and the networks they use. If businesses want to survive, they must fundamentally alter their concepts and methods. This applies to all kinds of companies. It will be necessary to look into other structural changes and the composition of the executive team.

Significant changes are required in investment, production, and company operations due to the fundamental requirements imposed by digital technology, intelligent networking, and technological advancements in the field of digital transformation. Any attempt at digital transformation must be successful in large part due to the workforce's digital competencies. Rethinking the leader's position to better align it with the objectives of the digital transformation project is one approach (Matt et al., 2015). It might be simpler to list the requirements for every open position in the company using this approach.

Leaders need to instill a sense of urgency in their companies if they hope to have a major impact. To evaluate their existing level of digital competency and the kinds of skills needed to meet their future objectives, businesses need to create clear workforce strategies (Ezeokoli et al., 2016). To successfully execute digital change within their organisations and safeguard the mental health of their staff, executives need to possess these competencies. They also need to be equipped with the skills necessary to handle problems that could arise naturally as a result of the digital transition.

Only a robust leadership approach can enable a long-term, sustainable shift from a largely manual process to an all-encompassing digital platform. Most company executives at the top do not have the skills needed to oversee a change this significant. On the other hand,

it's imperative that you modify in response to their recommendations. If new tasks and abilities are not picked up, this shift may result in expensive overruns and subpar performance (Matt et al., 2015). Owing to the possibility of inconsistent performance, companies that appoint managers devoid of the specific leadership skills needed for a particular project or assignment want to scrutinise the most effective leadership attributes and their impact on decision-making during the digital transformation phase. Digital leaders utilise communication as a means to motivate their teams, make their teams more clear on important topics, and build awareness of the organization's vision, targets, and principles. People in the real world can be coaxed into accepting a shared vision through the use of clear and convincing communication.

## 1.2 Research gap

To emphasise the significance of factors other than technology and strategy that propel an organisation towards the effective adoption of emerging digital technologies, more study and a new evaluation of scholarly discourse are required. Academics stress that factors other than the application of state-of-the-art technologies must be taken into account when assessing the success of digital transformation in businesses. Frankiewicz and Chamorro-Premuzic (2020) claim that the success of digital transformation initiatives is contingent upon both technology advancement and the acknowledgement of the significance of leadership traits in nurturing human potential.

For the past several years, a significant amount of research has been conducted to investigate the relationship between leadership and the digital transformation of businesses. In spite of the expanding significance of digital commerce and management, there has not been enough research conducted on the implications of digital leadership within the context of digital business. The purpose of this investigation is to provide a summary of the most recent empirical investigations that have been conducted on the traits of digital leaders. The dearth of previous meta-analyses that investigated the connection between digital leadership and digital transformation served as a driving force behind the creation of this work (Freour et al., 2021). One cannot perform their job as an academic researcher without conducting a comprehensive literature review. This tendency can be explained by the emergence of an online community where leading

scholars in a particular discipline can debate and analyse the most recent research in their field.

## 1.3 Research Question

Because of the possibility of inconsistent performance, businesses that appoint managers who lack the specific leadership skills required for a particular project or assignment want to investigate the most effective leadership characteristics and the impact those characteristics have on decision-making during the phase of digital transformation in which these characteristics are most relevant. The purpose of this study is to determine the extent to which strong leadership has a role in the digitalization of an organization's day-to-day operations in a way that is both efficient and effective.

Therefore, this research puts forth a major research question which is as follows:

How important are digital leader’s skills in the effective implementation of digital transformation?

## 1.4 Objectives

Digital leadership is a concept which was already in literature discussions but it needs to be reconnoitered from the perspective of different researchers. So, the first objective of this study is to investigate the concept of digital leadership from previously conducted research.

The most important lesson for any organisation thinking about implementing a digital transformation is that it needs to be viewed as a methodical undertaking that calls for a change in the organization's culture. Without digital leaders, who are masters at strategic thinking and using the latest developments in every wave of digital technology to create new business opportunities that benefit their clients, this adaptation would not be possible. Understanding the role of digital leadership in ensuring the successful implementation of digital transformation is the second purpose of this research.

In addition, businesses in today's digital environment are always evolving and adapting, necessitating the acquisition of new skill sets including high-tech management and optimisation. Research on the skills needed by digital leaders to execute digital

transformation successfully is essential to achieving that goal. This is the secondary focus of the inquiry.

For businesses to stay competitive and take advantage of opportunities, they need to implement new digital components and engage in digital transformation. It is recommended that leaders devise tactics for overseeing digital transformation processes and fostering enhanced operational efficiency. Subsequently, they should ensure that the digitalization transformation process is carried out effectively across the entire organisation. This study aims to investigate the tactics that global digital pioneers may employ to initiate digital transformation.

## 1.5 Scope of study

This study fills the literature gap of digital leadership in digital transformation by outlining the core competency areas that can be used for digital transformation and organizational success to be achieved. The findings of the study can be used as a yardstick against which other leadership and management philosophies can be measured, giving business owners a better basis for making decisions. The goal of this study is to examine all of the articles written about digital leadership, digital leadership capabilities, and the strategies used by digital leaders throughout digital transformation from 2013 to 2023. The objective of this research is to examine and synthesize the existing literature on this subject.

# 2 Literature Review

## 2.1 Definition of important concepts

### 2.1.1 Digital transformation

Experts generally concur that digital transformation entails a substantial change in an organization's operations and culture brought about by new public technologies, even though a precise definition of the term is still difficult to come by (Sainger, 2018). (Mugge et al., 2020). According to Osmundsen et al. (2018), digital transformation is a process that mixes digital technology with physical elements or in novel ways to facilitate social change and generate new user values. However, the term needs to be used consistently because it is commonly used synonymously with terms like digitization and digital innovation. Additionally highlighted are the team business model's adaptability to digital disruption and the power of digital transformation to enhance current procedures (Singh and Hess, 2020).

The term "digital transformation" is used to describe the process by which a company updates and improves its many operational facets by adopting and implementing cutting-edge digital technology and tools. Nadkarni and Prugl, (2021) stress that meeting and exceeding new business demands is the holy grail of digital transformation. The number of companies implementing digital transformation initiatives has grown in the last few years. Several people have taken the initiative to alter their practices by shifting their focus to the client in an effort to revamp their businesses with the use of cutting-edge digital resources such as interactive websites, mobile technology, and social media platforms.

Different persons may have different interpretations of "digitalization" or "digital transformation" when used in a commercial setting. Digital transformation strategies are being implemented by organisations and industries; the technique selected depends on factors like the industry and maturity of the organisation (Saarikko et al., 2020). Companies implement different transformational strategies according to the objectives of their organisations, the characteristics of the market, and the demands of their customers. Businesses with a high degree of digital maturity can use various cutting-edge,

emerging digital transformation technologies to address business challenges (Kiron et al., 2016). Conversely, companies that are not as far along in their digital transformation process typically use stand-alone digital solutions, including mobile apps, social media analytics software, and e-commerce websites, to address tactical issues (Kane et al., 2015).

Digital technology needs to be integrated in novel ways and linked with physical components to facilitate social transformation and the creation of new value propositions for customers (Osmundsen et al., 2018). The capacity of digital transformation to enhance current procedures and alter the team's business model best illustrates its significance.

### 2.1.2 Digital Leadership

A leader is someone who can inspire people to work together to achieve a common objective (Budur, 2020). Project leaders are defined by Lahtero et al. (2019) as "being present and going through a process within an organisational role that assumes responsibility for the needs and rights of those who choose to follow the leader in accomplishing the project's results." The personality of the leader, the ability of the team they oversee, and the situation all influence the best management style, according to leadership literature. A good leader should be able to transition between several approaches.

Guiding a team towards goals and creating a long-lasting competitive advantage are the fundamental components of leadership. Companies need to make investments in technological products and systems that boost productivity in areas like production, communication, and cost control if they are to maintain a sustained competitive advantage. Moreover, these companies need expertise to successfully incorporate these technologies (Bonanomi et al., 2020). In conclusion, digital methods are here to stay and shouldn't be ignored by any firm. It takes competent leaders who can successfully mentor others through the digitalization process to achieve a condition of sustainable, effective, and efficient digitalization through the implementation of a comprehensive digitalization plan. The notion of a digital leader has grown in significance when evaluating a business's capacity to meet its digital transformation objective.

Peter Fisk (2002) introduced the term "digital leadership" to investigate the influence of e-leadership on other aspects of organisational growth, in contrast to the previous focus on e-leadership. Digital leaders need to be visionaries who can inspire their staff and advance the organisation. Their proficiency lies in obtaining data from various departments inside the company to effectively strategize and carry out projects. They're also very good at networking and setting up the groundwork for successful business partnerships. This theory suggests that a few traits of successful managers could help predict an organization's performance and strategic decision-making.

Therefore, it is thought that organisations led by individuals qualified to take on leadership roles in the digital era have characteristics unique to digital enterprises. Avolio (2000) states that research on "e-leadership" is a subset of "digital leadership." The process of societal change known as "digital leadership" is made possible by modern information and communication technologies. This strategy aims to alter the behaviour or thought processes of individuals or groups. The study looks on the connection between management techniques and creative digital leadership.

Sow and Aborbie (2018) define a digital leader as someone who can create connections between businesses through outsourcing, mergers, and acquisitions as well as someone who can drive innovation within an organisation. These CEOs are best at generating new possibilities and seizing them. Data processing, media and social networking, content creation, and dissemination are skills that the digital leader will possess (Kokot et al., 2021). They provide a significant contribution to the development of the information society and the digital age.

Digital youth leadership is defined by Kurubacak (2006) as "vigorously preserving the power partnerships necessary for their purposes, respecting democratic practises that include citizens, appearing consistent in order for their policies to be represented, and playing autonomous roles for the purposes of their own online interactions." According to Sheninger (2019), The digital leadership approach that the educational field needs to adopt is "capable of determining the direction, influencing others, and initiating sustainable change through information gatheSring and networking to anticipate the necessary changes for the school's future success."

Digital leadership, according to Altnay et al. (2016), is the ability to reassemble information based on the tenets of developing technologies and adjust to them. Specifically, this skill entails the ability to reassemble information based on the principles of artificial intelligence. In contrast, Narbona (2016) described digital leadership as a leadership style that is applied through digital means in the virtual world in his examination of Pope Francis's usage of social media. He said that digital leadership is a leadership style that is applied through digital means in the virtual world. According to Van Wart et al. (2019), digital leadership is defined as the ability to pick and employ information and communication technologies to meet personal and organisational goals. According to Larjovuori et al. (2016), digital leadership is the ability to recognise and foster the competencies needed to involve each person in a business's digital transformation. This skill is necessary in order for a company to successfully undergo digital transformation. In their study of LEGO's digital transformation, El Sawy et al. (2016) classified digital leadership as proving the right behaviours of companies and business ecosystems to strategically digitalize." In other words, digital leadership is the demonstration of "appropriate behaviours for companies and business ecosystems to effectively digitalize." According to Zhong (2017), digital administration involves guiding others through digital transition, directing an effective digital operation, and making use of technology to promote enhanced professional development. In addition to this, it requires developing and upholding a culture of digital education.

The practise of having an agile IT and business architecture to quickly implement ideas to sustain and enhance an innovation culture is known as digital leadership Tanniru (2018). "The process of influencing others through the strategic use of digital technologies to effect desired changes in their norms, values, commitments, practises, or outcomes" (p. 7) is what Stana et al. (2018) define as digital leadership. Contrary to popular assumption, digital leadership results from a combination of digital competency and literacy, according to Mihardjo et al. (2019). A feature of digital leadership, according to Antonopoulou (2019), is accomplishing an ICT-related goal while optimising both human and ICT resources.

Even competitors in the same industry have very different business models and strategies. Studying the phenomenon of digital leadership is challenging due to the expansion of digital business models. In the last ten years, a lot of things related to

digitization have altered at previously unheard-of speeds. It is challenging to define digitalization since businesses require many forms of digitization (Gong & Ribiere, 2021). Comparably, the metrics used to evaluate digital leaders need to change in the rapidly growing digital economy of today. In digital business models, possibilities that impact a company's competitive advantages define the roles of leaders. It is recommended that leaders leverage the opportunities presented by digitization to enhance workforce productivity (Sainger, 2018). New "value-producing opportunities" arise with the use of these technologies, but it is up to leaders to take the right actions and advance the company (Hesse, 2018). However, effective digital leadership goes beyond simply using technology to support strategy or discovery; it also entails a shift from an IT viewpoint to a digital mindset. When it comes to the digital mentality, there isn't a single set of standards that can be applied to describe the role of digital leaders (Valentine & Stewart, 2015). Because of their authority, leaders with a digital mentality are held responsible for any changes made to the leader function as a result of the digitization process, which affects the organization's organisational structure and all employee responsibilities (Larjovuori et al., 2016). Depending on the organization's size, industry, level of competition, and several other aspects, digital leaders play different roles. Increased organisational complexity in terms of workload, staff motivation, or financial circumstances is another alternative brought about by technology and digital transformation. It is possible to hold leaders entirely responsible for the complexity that comes with digitization (Larjovuori et al., 2016). On the other hand, the idea of a digital leader's competencies has drawn a lot more discussion and comparison.

## 2.2 Role of digital leadership in implementing digital transformation

Previous studies have shown that digital leaders are capable of developing digital strategies and interacting with their employees in a sustainable manner in the digital sphere (Lindawati & Parwoto, 2021). As we look at how research is categorised in the corpus of literature that is already available, we can see that the idea is split into two different causes and goals. The publications described above look at digital transformation (Antonopoulou et al., 2021), digital leadership (Tuschner et al., 2022), and the kind of leadership needed to accomplish ICT-related objectives. Since these issues are

connected to ICT (information and communication technology), they were all considered for inclusion.

Many businesses have to exercise caution when it comes to how much money they spend on different types of technology because of their precarious financial situations. Consequently, businesses are utilising NIT in a manner that aligns with their own business and strategic objectives, especially with their marketing and sales activities. Businesses that do not change to reflect new ideas run the risk of becoming outdated and going out of business. Leaders need to understand that technology innovation can increase production and provide a competitive advantage, according to SAGBAS and ERDOGAN (2022). The most important lesson learned is that a major change in organisational culture is required for digital transformation to be effectively addressed. This requires a coordinated, cross-departmental effort. The most crucial piece of information to possess is this one. Corporate executives lose out on chances to boost employee morale and productivity when they do not embrace digital tools for internal communication, claims Klein (2020). Klein feels that this has been a wasted opportunity.

Most of the world's competitors these days are digital companies. The emergence of online discussion forums and new digital technologies have forced changes in business practises and procedures. The boundaries that companies and their goals encounter are changing as a result of digital technology (Tuschner et al., 2022). To succeed in today's world, businesses need to be able to adjust to shifting circumstances. Without digital leaders who are adept at strategic thinking and capable of leveraging the advancements brought about by each wave of digital technology to open up new markets and provide greater value to their customers, this transformation will not be able to be fully realised. For organisations to thrive in the new digital era by adjusting and enhancing business strategies, digital leadership is essential. Organisational success has been associated with having a strong digital leader (de Araujo et al., 2021). In recent times, companies have endeavoured to enhance their organisational structures by implementing contemporary management and leadership approaches that better align with the demands of the contemporary workplace.

The majority of firms today are creating digital business plans, but occasionally there is misunderstanding about the role that digital leadership plays in this process (de Araujo et al., 2021). Businesses that lack digital leaders have poor performance. Although there are

large gaps in both technology dominance and process management, digital leaders are expected to have the tools necessary to oversee the process of digital transformation. To better understand the transformation brought about by this process, global industrial strategies are redefining the behaviour of digital leaders while accounting for the unique characteristics, skills, and experiences of each sector.

Organisations and people can accomplish their business goals with the aid of digital leadership (Cortellazzo et al., 2019). New digital technology is causing widespread changes in job definitions, workplace arrangements, and the competitive landscape for many organisations. Organisational responsibilities, corporate culture, and technology must all change to accommodate these new circumstances. Programmes for transformation propel change by meeting pressing needs and laying the foundation for an uncertain future.

In order to achieve a more representative sampling of the leadership population, Klein (2020) argued that leadership classifications based on traits thought to define the best leaders must minimise biases associated with gender, social status, education, and other demographics. Sow and Aborbie (2018) assert that a leader's style affects how an organisation responds to the intricacy of digital transformation. They continued by saying that a leader's approach has a significant influence on how their team members engage and adjust to change. It is possible to implement organisational standards, expectations, and planned objectives using a variety of leadership philosophies, especially when working on large-scale, intricate transformational projects. According to El Sawy et al. (2016), leaders that adapt their perspective across the complexities of business strategies, business models, enterprise platforms, attitudes, skills, IT, and the workplace do the correct thing for the strategic success of digitalization. This level of complexity and change necessitates a radical rethinking of how we manage our teams, ourselves, and our organisations as a whole. This puts a strain on our human resources while simultaneously creating exciting new opportunities (Lohrmann, 2017). In addition to capabilities, leaders need to be aware of emerging competences and styles of leadership to comprehend the implications for their workforce (Bock & Lange, 2018).

## 2.3 Required skills of digital leaders in implementing digital transformation

Identifying necessary digital changes in response to changing customer expectations and demands (Leipzig et al., 2017), implementing new technologies within an organisation (Sainger, 2018), and providing digital competency training for current staff members are just a few of the interconnected tasks that leadership in the digital age typically entails. Organisations may be better equipped to react to market developments and digital disruptions with the help of data analysis and direct stakeholder relationships made possible by digital literacy and fluency (Li et al., 2016).

In the current digital era, leaders can come from anyone within an organization (Mugge et al., 2021). Adaptability, involvement, reliability, networking abilities, and an open mindset are essential qualities for a successful digital leader. According to Tanniru (2018), digital leaders enable company-wide transformations through the usage of four key platforms. This is carried out to increase the approach's potency. The learning platform helps teams explore ideas that provide value, while the innovation platform supports reflective conversations and the development of organisational capacities. They provide a structure for adopting new technologies, which is essential for organising digital transitions effectively.

Successful digital transformation is fueled by the vision and ambition of digital leaders (Mihardjo et al., 2019). Top leadership support for the plan is crucial for a digital transformation to be effective (Promsri, 2019). In order to do this, digital leaders need to set clear, attainable goals for their organisations and provide incentives for them to be met. They also need to develop a plan and follow it. In the digital age, effective leadership requires not only technical expertise but also the capacity to inculcate the advantages of digital technologies across the entire organisation (Sainger, 2018). A well-articulated, complete, inspiring, and captivating vision should elucidate the values and goals of an organisation (Eberl and Drews, 2021).

It is the duty of digital leaders to keep the lines of communication open between staff, management, and IT staff. To speed up software innovation and digital transformation, they are also in charge of coordinating amongst the three divisions. This is something they ought to address. Good digital leaders need to have qualities like objectivity, empathy, and transparency (Klein, 2020). These qualities are crucial for fostering open

channels of communication and easing departmental conflicts. The policies and initiatives of the digital leader will have a higher chance of success due to their knowledge of management science, digital literacy, and commercial acumen.

Due to a lack of understanding of the needs and preferences of their customers, many organisations fail in their attempts to employ digital technology to enhance the customer experience (Piccinini et al., 2015). Organisations need to learn more about how client wants and customer relationships are changing to foster value exchange (Piccinini et al., 2015). Digital leaders need to understand how the digital transformation process impacts customers in addition to keeping their requests and expectations in mind to deliver market-leading products, services, and values (Promsri, 2019).

McLeod (2015) asserts that innovation management is less effective than digital leadership at mitigating the effects of digital disruption. Businesses that use technology and digitalization to their advantage can stay one step ahead of their rivals by focusing on a specific goal for digitalization and developing methods to reach it. Consequently, businesses enjoy a perpetual edge over their clientele. Zeike et al. (2019) looked into the difficulties in promoting digital transformation and offered solutions. The primary objective of this study is to determine the qualities that make a leader effective and the steps a person needs to take to assist an organisation in making the shift to a digital workforce.

Businesses and their CEOs need to be more agile to compete successfully in the current global market. Agile leaders are capable of overcome many obstacles, which is particularly necessary while leading change and digital transformation processes (Akkaya & Tabak, 2020).

Companies that have finished their digital transformations in compliance with ERDOGAN (2022) and SAGBAS (2022) need to create digitally ready strategies. Employees think they need help to use and understand these virtual work environments. Others are wondering what, in light of what has happened, the proper response from those in positions of authority should be. Within Industry 4.0, Figueiredo (2021) provides some useful leadership strategies.

Adaptability and teamwork, leadership in networks built on mutual trust, leadership in the community, leadership made possible by contemporary technological advancements,

and openness to new knowledge and ideas are just a few examples. In the era of Industry 4.0, there is a rising recognition of the disruptive effects of digital platforms and digitalization on organisations, particularly in academia and industry, which has led to an increased focus on digital leadership. Owing to this consciousness, a growing number of companies are placing a strong emphasis on digital leadership.

To accomplish organisational and individual business objectives, digital leaders must efficiently utilise their company's digital assets (Dimitrov, 2018). The advent of new digital technologies has resulted in changes to the job descriptions, organisational structures, and competitive landscapes of many businesses. Organisational responsibilities, corporate culture, and technology must all change to accommodate these new circumstances. Programmes for transformation push adjustments to meet pressing needs while also clearing the way for uncharted territory. To successfully navigate these obstacles and steer their companies through the transition, digital executives need to be ready (Somerville, 2013).

These variations result in an additional duty for managers: bridging gaps across departments and systems. For a digital transformation to be effective, international digital partnerships are necessary (Promsri, 2019). The digital transformation strategies employed by digital leaders promote cooperative learning (Harris et al., 2013).

The good news is that a growing number of leaders are starting to acquire the abilities needed to lead effectively in the digital sphere (Katsos & Fort, 2016). The following abilities are necessary for effective digital leaders, according to Sousa and Rocha (2019). 5 Encouraging efficient communication both inside and outside of groups and establishments 1 Outlining a purpose and a vision 2. Establishing avenues for experimentation 3. Providing chances for individuals to think creatively 4 Facilitating vertical and horizontal communication across teams and groups The creation of corporate strategies, teamwork, and leadership are covered in numbers six and seven.

According to Oberer ve Erkollar (2018), in the context of the Industry 4.0 age, "digital leaders" are those who are "agile, cross-hierarchical, team-oriented, embrace a collaborative approach, and place a strong emphasis on innovation". Schiuma (2021) looked into the technological fluency that future digital age leaders must possess. Peng (2021) draws the conclusion that, by employing digital insight, digital decision making,

digital implementation, and digital mentorship, individuals or organisations may fully transform teams, entire enterprises, and employees into digital thinkers in the modern day. Digital leadership, according to him, is "the ability to persuade people to literally embrace it."

According to McCarthy et al. (2022), agile leaders have the necessary skills, behaviours, and talents to succeed in leadership. They are modest, adaptable, visionary, and involved. They continued by characterising themselves as people who are receptive to criticism, flexible enough to adjust their opinions, cognizant of the bigger picture, and receptive to input from all stakeholders. McCarthy et al. (2022) made the case for agile leadership traits, contending that if traditional companies' leaders can adjust, they will be able to compete and thrive in this new, digitally disrupted environment. Parr et al. (2016) investigated the personalities of 2,461 top-level managers using a personality test. By employing a leader's distinct set of qualities, they were able to distinguish between various leadership profiles. According to their findings, "there is no 'one size fits all' personality model for leadership" and excellent leaders have high levels of conscientiousness, emotional stability, agreeableness, social creativity, and openness to new ideas. Leaders in the digital space who wish to take advantage of new opportunities should weigh the advantages and disadvantages. However, by deliberately leading digital transformation plans, these concerns can be lessened (Promsri, 2019). Workers need to be psychologically and intellectually prepared to handle the challenges of the digital transition. Great things happen when leaders encourage individuals to take chances (de Araujo et al., 2021).

Elite leaders, according to Kane et al. (2018), possess a set of common skills that allow them to direct DT initiatives across their businesses. These qualities included: direction (making clear where they're heading and why), innovation (fostering an atmosphere where people feel comfortable trying new things), execution (granting people the authority to get things done), collaboration (across organisational boundaries), inspirational leadership (leading others to follow you), business judgement (making decisions in the face of uncertainty), talent development (personal growth), and influence (persuading others). Effective leadership is correlated with a number of qualities, including perseverance, the ability to tolerate ambiguity, self-assurance, drive, honesty,

and integrity as well as an internal centre of control, accomplishment motivation, and cognitive capability (Sow & Aorbie, 2018).

As contemporary organisations quickly transition to the digital era, high-tech management and optimisation abilities are in high demand (Temelkova, 2018). The dynamic nature of the digital business environment necessitates that leaders in this domain possess a distinct set of skills (Kunaka, 2019). As per Kunaka's (2019) assertion, possessing forward-thinking skills and a strong degree of digital literacy are essential for any leader operating in the digital economy. Guaranteeing that the company's ongoing digital tools and abilities are provided based on business needs is a strategic issue that requires a leader to have digital expertise and vision (Katsoulis, 2017).

With an emphasis on retailing business and market, Osborn and Fukuzawa (2016) identified seven key traits of digital leaders for digital transformation: vision, influence, education, and collaboration; traditional business acumen; Omni-channel evangelist; nurturing talents for transformation; agility; and market knowledge. The aforementioned qualities underscored the significance of digital leaders in the business domain and the vital skills that these leaders need to possess to adjust to a constantly evolving corporate environment. Respondents listed items such as "vision and purpose provision," "creation experiment conditions for people," "empowerment to think differently," and "encouraging collaborations across boundaries" when questioned "what would you like your leaders to have more of to navigate digital trends." Based on the most recent results of MIT's digital business research, these are all suggested as essential characteristics of digital leaders in a recent article (Kane et al, 2015).

Sullivan (2017) outlined eight characteristics that any digital leader should possess, including digital literacy, digital vision, advocacy, presence, communication, adaptability, self-awareness, and cultural awareness. These characteristics are in line with the Digital Workplace Group's analysis of digital leadership abilities. Four traits of digital leaders, according to a recent article on Linkeit.com, are adopting bimodal architecture, investing in HR processes for digital talent workforces, focusing on digital transformation, and transforming customers' digital experiences first—all while keeping the business environment in mind.

Businesses need to be online at all times due to the digital age. Thus, in order to effectively manage a workforce that spans a wider range of generations, cultures, and skill levels, managers need to demonstrate higher emotional intelligence (Klein, 2020). Additionally, managers now have the added responsibility of improving communication between their companies and their workforces as a result of globalisation, which has allowed many organisations to grow internationally.

Zeike et al. (2019) identified a number of critical competencies for a digital leader in a successful company, including intellectual curiosity, comprehension of human and consumer nature, a clear vision, passion, and purpose, the ability to leverage analytics, communicate, and delegate. The six requirements of digital leadership were defined (Gorton, 2018). These included a comprehension of digital transformation, the growth of digital competencies across the entire organisation, the application of digital technologies and processes in the development of strategies, the provision of resources for digital technology experimentation, the project design that takes user needs into account, and the encouragement of staff members to embrace digital transformation.

Furthermore, Newman et al. (2018) identified five leadership traits that are required for a successful digital transformation: taking risks, being willing to cooperate, having a clear goal, thinking forward and preparing, fixing what's broken and looking for what's wrong. McCarthy et al. (2022) claim that exceptional digital leaders have both soft qualities that foster teamwork and deep technical understanding, which ultimately contribute to the success of the digital transformation they are leading. The authors list five characteristics—vision, curiosity, experimentation, teamwork, and effective networking—that make up a great digital leader. According to Schwertner (2017), prioritising people, creating a collaborative and trustworthy atmosphere, and delegating leadership responsibilities are essential elements of digital leadership.

Effective digital leaders have been found to possess six traits in the context of digital transformation: a readiness to accept change, an understanding that customers should be at the centre of decision-making, an emphasis on cooperation and teamwork, the acquisition of new vernacular skills, and an acceptance of shared responsibility (Henderikx & Stoffers, 2023). In the digital era, leaders need to be quick thinkers, stay up to date on developments in their field, be receptive to new ideas and perspectives, perform well under pressure, be agile, and have a firm grasp of data (Gong & Ribiere, 2021). Hearsum

(2015) underlined that essential traits for digital leaders include technological vision, creativity, analytical proficiency, organisational management, collaboration, and empathy.

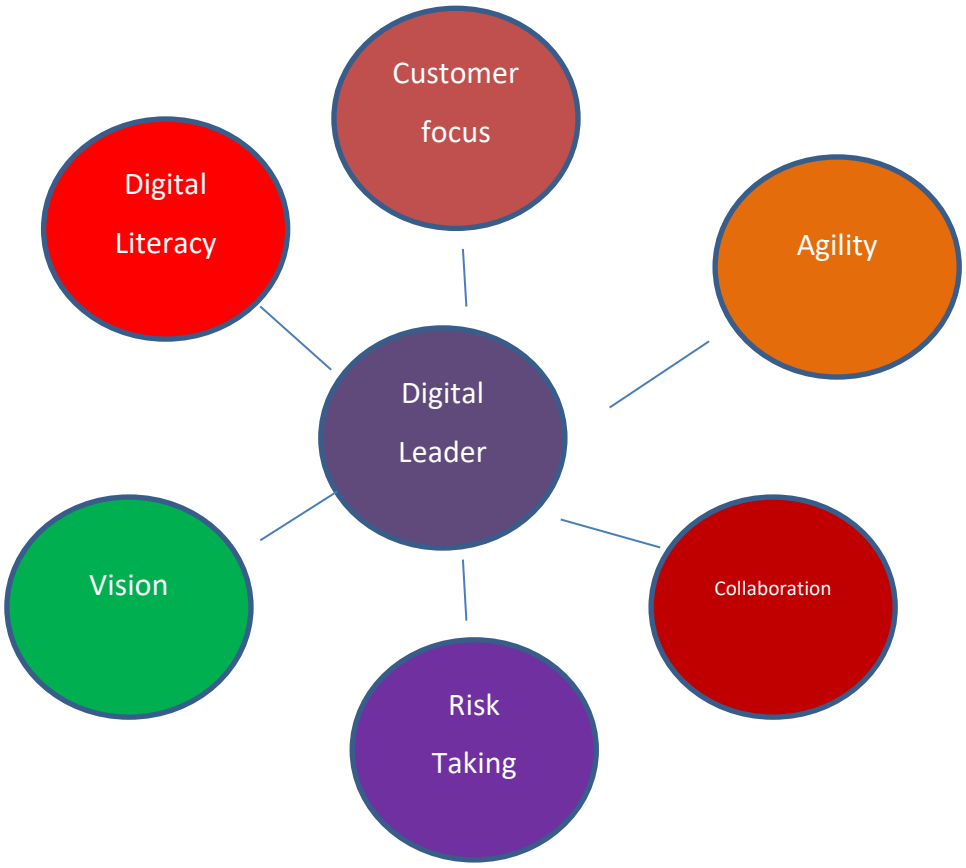


**Figure 1: Skills of a digital leader (Promsri, 2019)**

## 2.4 Strategies for implementing digital transformation

A strategy is considered as a plan of action which is designed to accomplish a long-term or overall goal. Designing a strategy for accomplishing certain tasks is of utmost importance in business organizations. It helps in seizing opportunities and knowing which not to pursue, all while mitigating risk. Also, managers use strategies to prioritize efforts, effectively allocate resources, align shareholders and employees with the organization's goals, and ensure those goals are backed by data and sound reasoning. The ever-evolving landscape has made digital transformation a crucial strategy that businesses must take into account (Shaughnessy, 2018). Many businesses find it difficult to compete because they fail to see the value of digital transformation and the possibilities presented by recent developments (Vey et al., 2019). To digitally transform their business, stay competitive in the market, and take advantage of the opportunity, organisations need to

adopt new digital components (Vial, 2019). Leaders must create plans that address the stages of digital transformation to improve operational performance (Vial, 2019).

Organisations need a plan to deal with the digital transformation brought about by advancements in technology, shifting consumer preferences, and other factors (Matt et al., 2015; Bashir & Verma, 2017). When it comes to organising, setting priorities, and carrying out digital changes inside an organisation, the design of digital strategies ought to serve as the overarching concept (Matt et al., 2015). Academics are still unable to provide organisations with clear guidelines on how to create digital transformation strategies, even with the recent focus on digital transformation (Matt et al., 2015). A complete awareness of all internal and external factors pertaining to the environment and digital change is necessary before starting the digital transformation process. Some firms find it difficult to innovate and digitally change their business models, even when they have a clear goal (Vey et al., 2017). Businesses must identify both the internal and external forces driving digital transformation (Verhoef et al., 2021) to digitally transform their businesses (Martinez, 2019).

Plans for digital transformation that are successful must gather and evaluate pertinent data. Therefore, in order for businesses to succeed in the current online economy, they need to have digital assets (Verhoef et al., 2021). Because digital learning makes information and knowledge more accessible, it can help businesses increase their workforce's skill set (Sousa et al., 2017). Using digital learning, employees can take part in training and practise sessions tailored to their individual needs (Moldoveanu & Narayandas, 2019).

According to Vey et al. (2017), effective digital transformation requires knowledgeable people who are aware of the challenges and opportunities it presents. It is uncommon for management to fail to see the benefits of digital transformation; instead, employees often find it difficult to grasp its significance and possibilities (Vial, 2019). Organisational identity, culture, and structure all function as formidable roadblocks to the expansion of businesses. Some companies are unable to grow because of their rich past and distinctive identities (Bharadwaj et al., 2013). This emphasises how crucial it is to create an organisational transformation strategy and a learning culture in the wake of the digital revolution.

To reduce resistance and foster greater collaboration, employees who may be impacted by digital transitions might take part in instructional sessions (Svahn et al., 2017). Moreover, to overcome resistance, businesses need to modify the procedure to provide for flexibility before making changes (Schmid et al., 2017).

Once a digital transformation strategy has been created and put into action, it needs to be evaluated for efficacy. Because of the constantly shifting landscape, rapid advancements in technology, and rising customer expectations, businesses need to regularly review their strategy (Chanias et al., 2019). Businesses are increasingly using consumer feedback and other data collected through digital channels to evaluate the success of their projects (Nylén & Holmström, 2015). Additionally, businesses should evaluate how they currently support ongoing education to gauge the need for fresh abilities and skills (Schuchmann & Seufert, 2015).

Regular modifications are necessary to the digital transformation's services, products, and procedures (Mergel et al., 2019; Iwao & Marinov., 2018). A company's culture has a big impact on how open it is to innovation and change (Trushkina et al., 2020; Martinez, 2019). The company's culture is centred on competence and adaptability, which lays the groundwork for ongoing progress (Martinez, 2019). For the digital transformation to be effective, adaptability is needed, especially during the implementation phase (Shaughnessy, 2018). Additionally, companies want to create training programmes to ensure that employees stay current with evolving practises (Verhoef et al., 2021). This is due to the fact that acquiring digital skills and competencies is necessary for ongoing advancements (Nylén & Holmström, 2015).

## 2.5 Summary

A leader must be able to use digital talents in the ever-evolving corporate world of today. A tech-savvy leader can help their company navigate the challenges of today's digital environment. Digitally savvy leaders are able to take advantage of new technologies, quickly adjust to shifting business conditions, and make data-driven decisions. Leaders should concentrate on creating a comprehensive strategy if they wish to see digital transformation through to success. This calls for funding for state-of-the-art technologies, interdisciplinary cooperation, and the development of a lifelong learning culture.

Moreover, it is vital to propagate knowledge regarding the advantages of digital transformation and furnish individuals with the necessary resources to enhance their competencies. Effective digital leaders help their companies stay competitive, increase productivity, and adjust to the changing needs of the modern business environment. The following is the synthesis of literature on the skills of digital leaders which are important for digitally transforming organizations or projects.

**Table 1: Skills of leaders in selected papers**

| | |
|---|---|
| Mugge et al., 2021 | Adaptability, Involvement, Reliability, Networking Abilities, Open Mindset |
| Promsri, 2019 | Top Leadership Support, Goal Setting, Customer Understanding, International Digital Partnerships, Clear, Attainable Goals, Leadership Support, International Digital Partnerships, Customer Understanding |
| Sow & Aorbie, 2018 | Perseverance, Drive, Honesty, Integrity, Effective leadership, the ability to tolerate ambiguity, self-assurance, drive, honesty, and integrity, internal center of control, accomplishment motivation, and cognitive capability |
| Sullivan, 2017 | Innovation, Vision and Ambition, digital literacy, digital vision, advocacy, presence, communication, adaptability, self-awareness, and cultural awareness |
| Peng, 2021 | Digital Insight, Digital Decision Makin, Digital Implementation, Digital Mentorship |
| Mihardjo et al., 2019 | Vision, ambition, motivatio |
| (Sainger, 2018) | Ethical Decision-Making |

| | |
|---|---|
| (Akkaya & Tabak, 2020) | Agile Leadership, Adaptability |
| (McCarthy et al., 2022) | Effective Networking, team building, technical understanding, soft skills, Adaptability, vision, curiosity, experimentation, teamwork |
| (Hearsum, 2015) | Technological vision, creativity, analytical proficiency, organisational management, collaboration, and empathy, Empathy, Adaptability |
| (Newman et al., 2018) | Taking risks, being willing to cooperate, Collaboration and Teamwork, Vision and Ambition, having a clear goal, thinking forward and preparing, fixing what's broken |
| (Gong & Ribiere, 2021) | Quick thinkers, updated, innovative, technological vision, creative, analytically proficient, collaborative, empath |
| (Zeike et al., 2019) | Critical competencies, Effective, Vision and Ambition, intellectual curiosity, comprehension of human and consumer nature, a clear vision, passion, and purpose, the ability to leverage analytics, communicating, and delegating |
| (Dimitrov, 2018) | Continuous Learning, Digital Asset Utilization |
| (Figueiredo, 2021) | Leadership in Networks |
| (Klein, 2020) | Objectivity, Empathy, and Transparency, Effective Communication |
| (Li et al., 2016) | Digital Literacy and Fluency |

| | |
|---|---|
| Tanniru, 2018. | Open Mindset, Networking Abilities, Innovation |
| Sousa and Rocha, 2019 | Effective Communication, Adaptability |
| Harris et al., 2013 | Digital Transformation Strategies |
| SAGBAS, 2022 | Agility, Digital Strategy Development |
| ERDOGAN, 2022; | Agility, Digital Strategy Development |
| Parr et al., 2016 | Agility |
| Piccinini et al., 2015 | Customer Understanding, customer focus, digital technology knowledge |
| McLeod, 2015 | Innovation Management, critical thinker, strategic mindset |
| Kane et al., 2015 | Digital Literacy, Innovation, Vision and Ambition, direction, innovation, execution, collaboration, inspirational leadership, business judgement, talent development, and influence |
| (Henderikx & Stoffers, 2023). | Adaptable, customer focused, decision-maker, cooperative and team-work, responsible |
| Schwertner (2017), | Prioritising people, creating a collaborative and trustworthy atmosphere, and delegating leadership responsibilities |
| (Gorton, 2018). | Comprehension of digital transformation, the growth of digital competencies, data skills, strategic mindset, digital technology experimentation, motivation |

| | |
|---|---|
| Osborn and Fukuzawa (2016) | Vision, influence, education, and collaboration; traditional business acumen; Omni-channel evangelist; nurturing talents for transformation; agility; and market knowledge |
| (Katsoulis, 2017). | Digital expertise and vision |
| (Kunaka, 2019). | Forward-thinking, digital literacy |
| (Temelkova, 2018) | Optimization abilities, high tech management, tech savvy |
| de Araujo et al., 2021 | Encouragement, intellectually prepare for transition |
| Schiuma (2021) | Technological fluency |
| Oberer ve Erkollar (2018) | Agile, cross-hierarchical, team-oriented, embrace a collaborative approach, and place a strong emphasis on innovation |
| Eberl and Drews, 2021 | Inspiring, vision holder |
| (Leipzig et al., 2017), | Digital understanding, customer focus |

# 3 Research Methodology

In this section, this study will explain the methodology that the researchers in this study utilised to assess the influence that leadership has on the successful adoption of digital transformation. In this section, the conceptual foundations upon which the research methodology is built are explained. In this chapter, this study will investigate the logic that underpins a variety of strategies, as well as the methods that can be used to put these strategies into action.

## 3.1 Research philosophy

When analysing the data that was obtained for this study, the researchers employed a combination of logical reasoning and qualitative research methods. The approach that was taken in the investigation was influenced by interpretivism, which is a method that depends on the individual accounts of events provided by people. This is a secondary study, which means that it looks at other studies that have been done on the same topic. Due to the fact that the included publications have already been made public, a comprehensive review of the relevant literature is going to be carried out. The term "systematic literature review" was first used in connection with the fields of medicine and public health. It has evolved into a rigorous evaluation procedure that is based on evidence in the field of management science. The primary goals of the SLR are to incentivize in-depth investigation of the data that is now accessible and to present distinctive points of view on potential research avenues for the foreseeable future.

## 3.2 Systematic Literature Review (SLR) Approach

The present study employed the systematic literature review (SLR) technique to gain a deeper understanding of the function of leadership talents in the successful implementation of digital transformation. The SLR method entails looking for, picking out, and evaluating pertinent material from a range of academic journals, books, and conference proceedings. This tactic reduces the possibility of bias and improves the trustworthiness of the results by making sure the evaluation is thorough and open. Creating research questions, creating search criteria, starting the search, utilising

inclusion and exclusion criteria to screen and choose papers, gathering pertinent data, and synthesising the results are all processes in a systematic literature review. This study used the SLR technique to investigate the significance of leaders' competences in the successful implementation of digital transformation. It expands on existing knowledge about business management and accomplishes its research goals by referencing a wide range of literary works.

## 3.3 The Stages of the SLR Approach

The following stages of SLR approach were followed in this dissertation:

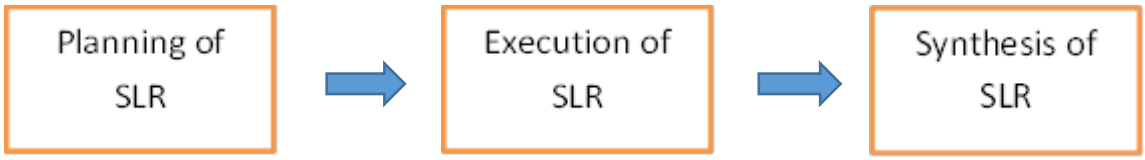


**Figure 2: Stages of SLR**

### 3.3.1 Generating Research investigations

The research topic is formulated to provide a focused and comprehensive examination of how leadership influences project management that advances the SLR strategy. The primary research query is to what extent do Leaders' skills matter for successful Digital Transformation implementation. Research objectives which need to be fulfilled are given below so that the major research question can be answered to its full extent.

- To investigate what is the concept of digital leadership
- To investigate the impact of digital leadership in the effective implementation of digital transformation
- To investigate the skills that are required of digital leaders for effective implementation of digital transformation
- To investigate the strategies can digital leaders use while implementing digital transformation

These inquiries aid in defining the study's parameters and providing direction for the literature review. In keeping with the overarching objectives of the study, the questions

were designed to help close any knowledge gaps that were introduced in earlier chapters. The study aims to investigate the distinctive skills of leaders in the context of implementing digital transformation, analyse the tactics employed to adjust to novel circumstances, evaluate the effectiveness of these tactics in maintaining project momentum, pinpoint the influence of leadership on digital transformation methodologies, and suggest methods for enhancing leadership capacities for digital transformation and resilience against possible setbacks. The purpose of these research objectives was to guarantee a thorough and exhaustive assessment of the literature, considering the study's focus on the leadership's involvement in successful digital transformation.

### 3.3.2 Identification of Relevant Databases

Using databases such as Scopus, Google Scholar, the Web of Science, and others, a comprehensive literature search was carried out for this investigation. Journal articles and conference papers, among other scientific materials, are easily accessible through these databases. This study's objective is to search these sources for the most recent theoretical justifications and factual data regarding the contribution of leadership to the realisation of digital transformation. The following were combined: industry-specific statistics, web resources, scholarly papers, and expert opinions. In contrast, the systematic review employed solely previously released scientific publications. Among the 289 publications produced in the first phase, only 69 were truly evaluated because of problems like duplicate content and non-English content.

### 3.3.3 Literature Search

This study used a cutting-edge approach to find the best literature on the subject of leadership's involvement in carrying out digital transformation successfully. Developing search queries that accurately reflected the research topic was part of the search strategy. The study's objectives and questions shaped the initial search terms. Semantically related terms like "digital transformation," "digital leadership," and "digital leader's skills" are often employed to expedite search inquiries. Every database and website that was chosen was subjected to the search method, and the results were improved by using inclusion and exclusion criteria (Okoli, 2015). This criterion took into

account various factors, including language, paper quality, country of publishing, time frame, article focus, and so on, to ensure that only studies of the highest caliber were included. It used an iterative search strategy to refine the keywords and concepts based on preliminary results. To reduce the number of results to 69, more keywords such as "effective digital transformation" and "leadership and digitization" were added. By employing an iterative approach, we managed to include every pertinent and comprehensive study available without leaving out any crucial ones. This study seeks to contribute to the body of information in the disciplines of digital leadership and digital transformation by conducting a thorough literature review and offering a thorough and persuasive overview of the role of digital leadership in the carrying out of digital transformation.

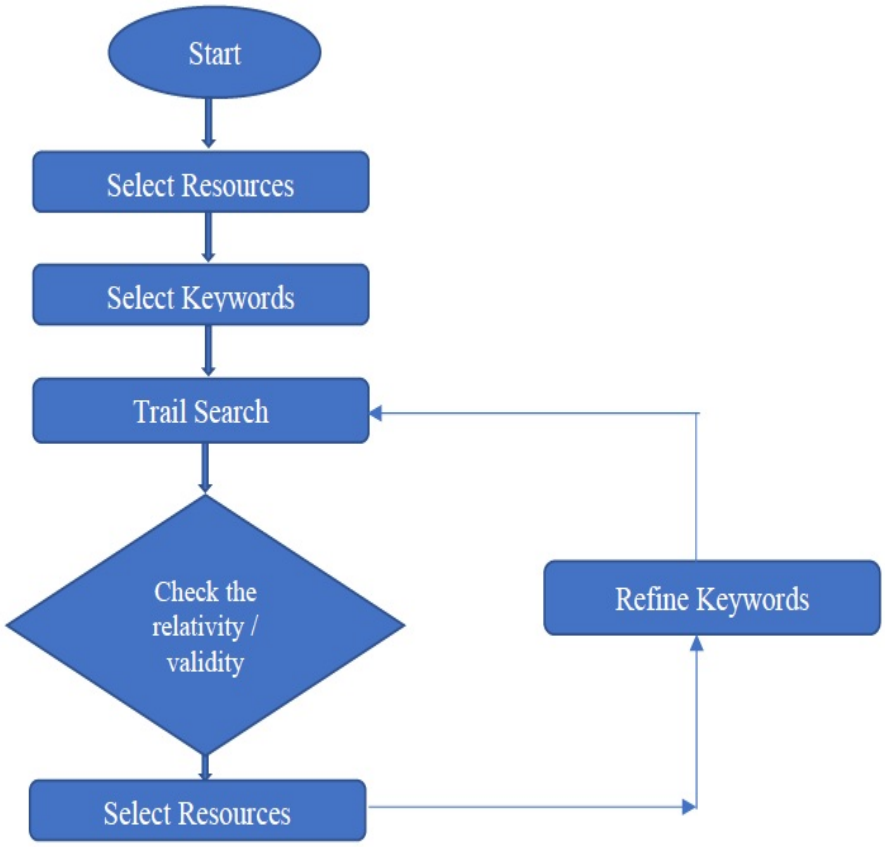


**Figure 3: Literature search process**

### 3.3.4 Screening and Selection

The articles were carefully reviewed before being selected for this review. The results of the literature search are subjected to a two-stage screening procedure to eliminate any unnecessary data. First, a review of the abstracts and titles of the papers led to the

discovery of studies that did not meet the requirements. The inclusion and exclusion criteria were determined based on the research topic and study objectives. Articles were now removed if it turned out they had nothing at all to do with the study's topic. Getting full-text research publications and comparing them to the specified criteria was the second step. The study methods, paper scope, and relevance to the studies were all taken into consideration while choosing which full-text papers to read. The selected papers significantly advance the goals of digital leadership in implementing digital transformation. The results of this study may be more reliable due to the thorough screening and selection procedure that was used to ensure the inclusion of high-quality and pertinent studies. After a final screening, 69 studies and publications were included in the review. The quality controls that were used to determine which samples met the requirements for inclusion and which did not are shown in the table below.

**Table 2: Inclusion Exclusion Criteria**

| | Inclusion criteria | Exclusion criteria |
|---|---|---|
| 1 | Papers in English language | Papers in other languages |
| 2 | Peer reviewed articles | Non peer reviewed |
| 3 | 2013-2023 | Before 2013 |
| 4 | Academic journal papers | Reports, conference proceedings etc. |

### 3.3.5 Data Extraction

This thesis employed a thorough and complete strategy to data extraction to retrieve the pertinent information from the listed references. The authors, publication dates, study methodology, and significant findings are all included in the pre-made data extraction form. To ensure consistency and standardisation, data from each of the chosen articles was gathered using this template. As part of the data extraction process, we carefully examined each item to decide what information to gather. We based this decision on the questions and objectives of our study. Because the data was organised and well-documented, comparisons and analysis were straightforward.

### 3.3.6 Data analysis and synthesis

The essential themes, patterns, and trends supporting the significance of digital leadership in the successful execution of digital transformation were made evident by the data analytic approach used in the dissertation. Hooks, which are recurrent themes, ideas, or perspectives, were used to organise and categorise the data. The nature of digital leadership and the strategies employed by digital leaders have become clearer as a result of this topic analysis. The results are comprehensive, emphasising the key deductions and conclusions. This thesis makes an effort to illustrate the significance of digital leadership in the execution of digital transformation by carefully reviewing and synthesising the body of existing literature.

### 3.3.7 Critical Evaluation

The included papers need to be thoroughly assessed to guarantee that the study's conclusions are valid and credible (Xiao & Watson, 2019). The relevance and reliability of the chosen research can be assessed based on its methodological rigour and quality. The standard of the accepted papers was decided by evaluating their data, applying their technique, and effectively communicating their conclusions. A study's limitations, potential sources of bias, and methodological problems are all identified through critical analysis (Xiao & Watson, 2019).

This tactic increases the research's validity and reliability, producing more reliable results. The synthesis and analysis of research findings are made more credible by the critical assessment approach, which makes sure that only credible publications are included.

### 3.3.8 Reporting and documentation

A systematic literature review's (SLR) quality is determined by how thoroughly it reports and documents its findings. A comprehensive assessment of the state of the field was made possible by the meticulous collection and arrangement of noteworthy findings, patterns, and gaps in the body of literature. The research's conclusions regarding the critical role that leadership plays in facilitating the successful adoption of digital transformation were carefully scrutinised in accordance with the goals and objectives of the study. The results were presented and arranged neatly. Maintaining precise

documentation of research outcomes promotes openness, facilitates study replication and validation, and enables subsequent investigations to expand upon preliminary results. This dissertation expands the corpus of research and highlights the significance of digital leadership in the successful execution of digital transformation by closely examining the SLR findings. To raise awareness and direct future research and practises, the SLR methodically reviewed the literature on the subject of the importance of digital leadership in digital transformation.

### 3.3.9 Summary

The methodology portion of this study offers a thorough explanation of the methods and techniques employed. The first topic covered was interpretivism, a research paradigm that emphasises the researcher's biases and uses qualitative data. This intellectual perspective was used in the creation of the investigation's methodology.

The Systematic Literature Review (SLR), the recommended research technique, was then covered in detail. The SLR methodology was selected due to its ability to offer a comprehensive and organised examination of pertinent literature, theory, and data about effective leadership in digital transformation (Xiao & Watson, 2019). The SLR lessens the chance of bias while enabling the utilisation of several reliable academic resources.

The description of the various SLR processes is provided here. It offered guidance on where to locate pertinent materials, including online databases and reading lists tailored to particular industries. The retrieved articles' titles, abstracts, and full texts are assessed in relation to a set of inclusion and exclusion criteria.

A predetermined form (Dziopa and Ahern, 2011) was used to search the literature and gather data on authors, publication year, study methodologies, noteworthy findings, and leadership implications. To identify important themes, patterns, and trends in successful leadership for digital transformation, the data was reviewed thematically. To guarantee the validity and trustworthiness of the results, the included studies' quality and applicability underwent a rigorous evaluation process. A critical evaluation aims to evaluate the overall quality of the research as well as particular aspects like methodology and the reliability of its data sources.

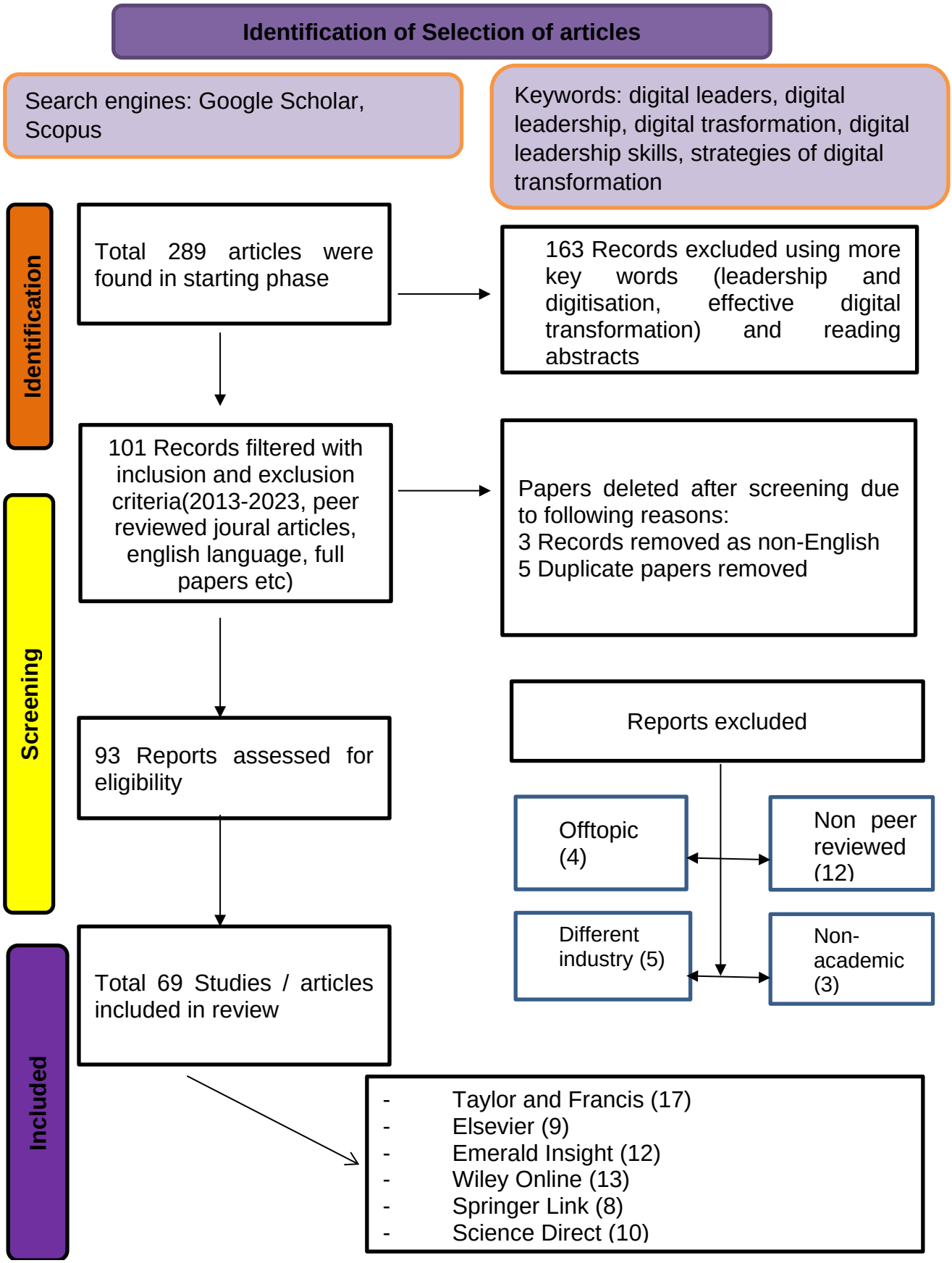


**Figure 4: Selection process for review**

# 4 Analysis and results discussion

## 4.1 Introduction

This section includes a descriptive analysis as well as a breakdown of the total number of papers by several different criteria. A detailed list of the papers that were reviewed for the SLR process is included in this chapter. The individuals and resources utilised during the investigation will influence the project's results.

## 4.2 Data analysis

Using descriptive analysis, large amounts of data, such as test results or user interaction patterns inside an application, can be better comprehended. This is possible thanks to the usage of this technique. The purpose of descriptive analysis is to provide an explanation for various sets of numbers that can be reported along a scale. According to Staples and Niazi (2007), the term "data sets" refers to material that can be tabulated numerically and contains numerical data. The outcomes of tests and the frequency with which users interact with a particular app feature are two examples of quantifiable data sets.

## 4.3 Year-wise analysis

The graph below shows the number of papers published annually from 2013 to 2023. The report's data indicates that, with 16, publications, 2021 was the year with the highest number. Ten publications were released in 2018 and seven in 2020; twelve were released in 2019. Seven publications from 2016, six from 2015, five from 2017, two from 2023, and one from 2022 are available

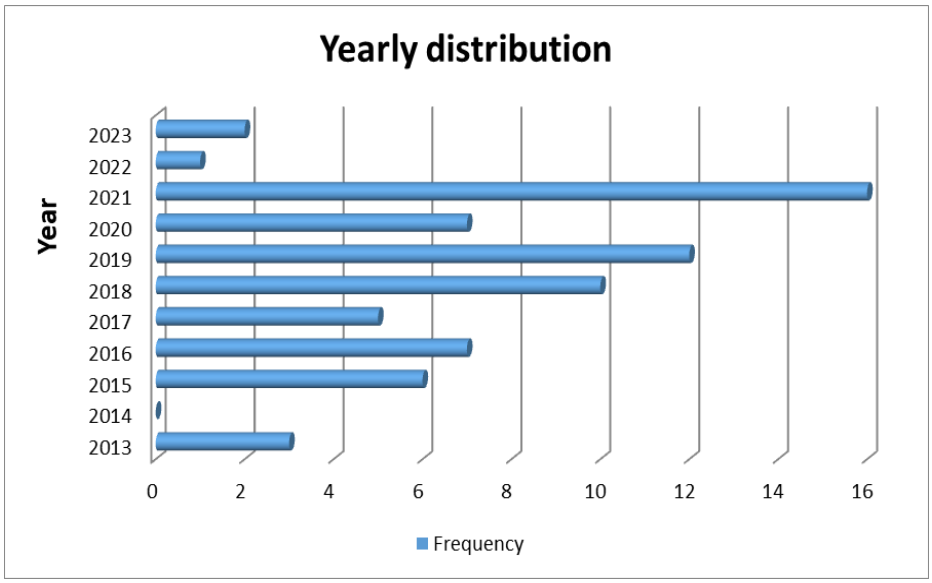


**Figure 5: Yearly distribution**

## 4.4 Methodology-type analysis

This study aims to identify the most widely used techniques by examining the research practises of selected publications. 33 studies employed qualitative techniques, while only 16 used quantitative methods of inquiry. Only three of the studies included case studies, demonstrating the method's narrow application. Five researches employed a mixed-methods approach, while twelve used perspectives to generate theoretical knowledge and a conceptual procedure. Qualitative and quantitative methodologies are combined in mixed-methods research to investigate a project.

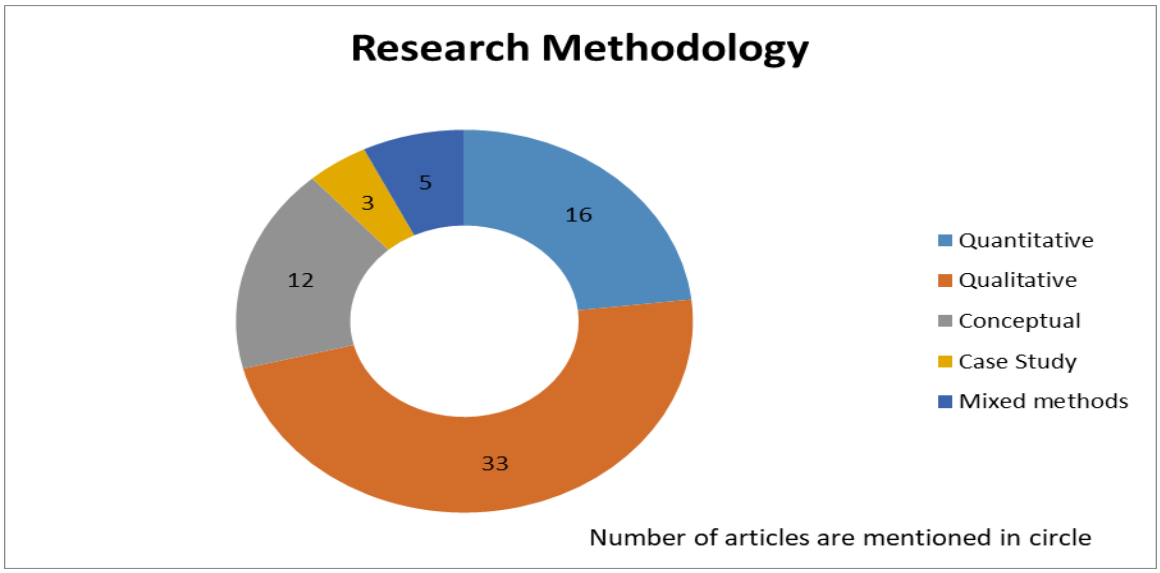


**Figure 6: Methodology type analysis**

## 4.5 Main topic-wise analysis

The following broad subject areas are covered by the publications. The study's central concept is reflected in the eighteen papers that address digital leadership. Twenty-seven publications focus mostly on digital transformation. Important competencies that digital leaders should possess in order to see digital transformation carried out are discussed in 16 different articles. Eight articles looked at the strategies digital leaders employed for digital transformation.

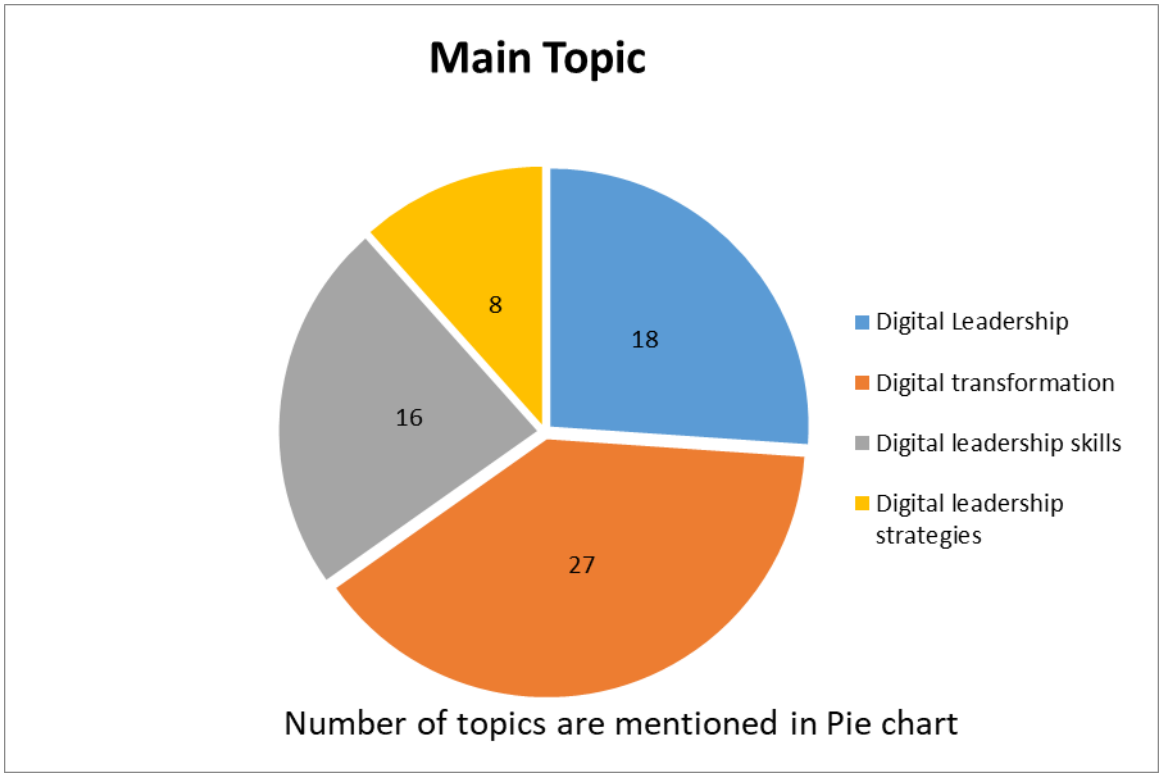


**Figure 7: Topic wise analysis**

## 4.6 Journal-wise analysis

The total number of papers published in the aforementioned periodicals is displayed in the following table. This demonstrates how every paper uses a different set of sources.

**Table 3: Journal wise analysis**

| | |
|---|---|
| 1 | *Academy of Strategic Management Journal* |
| 1 | *International Journal of Learning, Teaching and Educational Research* |
| 2 | Emerging Science Journal |
| 1 | *Engineering, Construction and Architectural Management* |
| 2 | *Frontiers in psychology* |
| 1 | *International Journal of Educational Administration, Management, and Leadership* |
| 1 | *Journal of leadership studies* |
| 1 | *World Journal of Computer Application and Technology* |
| 1 | *The Spanish journal of psychology* |
| 1 | *Technological Forecasting and Social Change* |
| 1 | *British Journal of Educational Technology* |
| 1 | Journal of Organizational Computing and Electronic Commerce |
| 3 | *MIT Sloan Management Review*. |
| 3 | *Business Horizons* |
| 1 | *The ISM journal of international business* |
| 1 | *Journal on School Educational Technology* |
| 1 | *International Journal of Innovation Management* |
| 1 | *Journal of Information Technology* |
| 1 | *Journal of Industrial Engineering & Management Research*, |
| 1 | *Business & information systems engineering* |
| 1 | *Journal of Decision Systems* |

| | |
|---|---|
| 1 | *Management Science Letters* |
| 1 | *ERIC* |
| 1 | *Research-Technology Management* |
| 1 | *Management Review Quarterly* |
| 1 | *Church, Communication and Culture*, |
| 1 | *International journal of organizational leadership*. |
| 1 | *Human performance* |
| 1 | *Journal of Library and Information Sciences in Agriculture* |
| 2 | *Journal of Business Research* |
| 1 | *Sustainability* |
| 1 | *International Journal of Business Management* |
| 1 | *International Journal on Leadership* |
| 1 | *Journal of Open Innovation: Technology, Market, and Complexity* |
| 1 | *Management Revue* |
| 1 | *Serials Review* |
| 1 | *Future Generation Computer Systems* |
| 1 | *Business and Economic Research* |
| 1 | *International Journal of Advanced Research in Management and Social Sciences* |
| 1 | *International review of administrative sciences* |
| 1 | *Procedia Manufacturing* |
| 1 | *International Journal of Data and Network Science* |
| 1 | PalArch's Journal of Archaeology of Egypt/Egyptology |

| | |
|---|---|
| 1 | *International journal of environmental research and public health* |
| 1 | *Journal of Educational Technology Development and Exchange* |
| 1 | *Trakia Journal of Sciences* |
| 1 | *Technovation* |
| 1 | *Strategic HR Review* |
| 2 | *Strategy & Leadership* |
| 2 | *The Journal of Strategic Information Systems* |
| 1 | *It Professional* |
| 2 | *MIS quarterly* |
| 1 | *IUP Journal of Business Strategy* |
| 1 | *Business Process Management Journal* |
| 2 | *International Journal of Advanced Corporate Learning* |
| 1 | *Virtual Economics* |
| 1 | *Benchmarking: An International Journal* |
| 1 | *Government information quarterly* |

## 4.7 Database-wise analysis

Article counts from these various databases are listed below. The most number of papers was found in Taylor and Fracis.

**Table 4: Database wise analysis**

| Data bases | Number of papers |
|---|---|
| Wiley Online | 13 |

| | |
|---|---|
| Elsevier | 9 |
| Taylor & Francis | 17 |
| Emerald insight | 12 |
| Springer link | 8 |
| Science direct | 10 |

## 4.8 Content analysis

A study method called content analysis involves carefully assessing and comprehending the content of several kinds of media, including text, images, and audio. To find themes, patterns, and trends, the data must be thoroughly and carefully examined. Research on digital leader's skills in the implementation of digital transformation is one literature study that can profit from content analysis; it comprises reading and coding pertinent articles to extract key concepts and themes. This method often consists of reviewing and correctly categorising the recurring and repeated data, creating categories or codes which are often seen to represent themes, and then methodically arranging these codes. In order to fully comprehend the problem and derive valuable conclusions from the data that have been examined, it is important to extract significant information from the material.

To improve performance and outcomes throughout the digital transformation implementation, eight themes are developed on digital leaders' skills. The following table displays the eight topics identified after reviewing 69 papers.

**Table 5: Themes of digital leader's skills**

| **Themes** | **Description** |
|---|---|
| Agility | Because of the threats they face, businesses today need digital leaders with an agile mindset who can adapt quickly and continuously (Akkaya & Tabak, 2020) |

| | |
|---|---|
| Digital literacy | Anticipating the need for technological advancements, adjusting to new systems, and training staff members to become proficient in their use are all part of the responsibilities of the digital leader (Vey et al., 2017) |
| Risk-taking | Taking chances does not equate to having an agile mentality because the approaches are determined by the risks rather than the obstacles (Temelkova, 2018) |
| Customer focus | Digital leaders need to put their consumers' needs and wants first if they are to create exceptional goods, services, and values (von Leipzig et al., 2017). |
| Data skills | Data should be the foundation for decision-making for digital executives because it provides insights into customer behaviour and areas for future improvement (Verhoef et al., 2021) |
| Vision | Leaders in the field of technology must design a direction for the organisation and provide employees with a tangible goal to strive towards (Mihardjo et al., 2019; Promsri, 2019) |
| Collaboration | It is the responsibility of digital leaders to coordinate the work of their teams in order to implement digital advancements. These leaders must ensure that all parties involved share a common goal and work together to overcome obstacles |

| | |
|---|---|
| | (Cortellazzo et al., 2019; Promsri, 2019). |
| Communication skills | Digital leaders utilise communication to inspire their staff, clarify the organization's mission, values, and principles, and increase public understanding of these issues. In the actual world, persuasive communication is utilised to win people around to a shared vision (Klein, 2020). |

## 4.9 Digital leader's skills required in the effective implementation of digital transformation

Leaders and managers share similar experiences, backgrounds, and skill sets. Traditional management duties and responsibilities can be researched to acquire the managerial traits and skills needed for digital leadership. Based on the studies cited, the following are the most crucial elements of digital leadership that lead to increased workplace productivity which are mostly discussed in the selected studies of SLR. These themes are derived from the selected studies based on content analysis.

**Table 6: Synthesis for digital leader's skills**

| **Digital leader's skills** | **Authors** |
|---|---|
| Agility | (Akkaya & Tabak, 2020). (Osborn and Fukuzawa, 2016) (Ebert & Drews, 2021). (Gong & Ribiere, 2021). |
| Digital literacy | (Klein, 2020) (Kunaka, 2019) (Katsoulis, 2017) (Sullivan, 2017) (Sainger, 2018) (Li et al., 2016) (Peng and Qingxiang, 2021) (McCarthy et al., 2022) |
| Risk-taking | (Temelkova, 2018) (de Araujo et al., 2021). |

| | |
|---|---|
| | (Promsri, 2019). (Newman et al., 2018) |
| Customer focus | (von Leipzig et al., 2017) (Piccinini et al., 2015) (Henderikx & Stoffers, 2023) |
| Data skills | (Katsoulis, 2017). (Gong & Ribiere, 2021). (Sousa et al., 2017). |
| Vision | (Mihardjo et al., 2019) (Promsri, 2019). (Eberl & Drews, 2021) (Sousa & Rocha, 2019) (McCarthy et al., 2022) (Katsoulis, 2017). (Kane et al.,2018) (Sullivan, 2017) (Osborn and Fukuzawa, 2016) (Zeike et al., 2019) (Hearsum, 2015) |
| Collaboration | (Promsri, 2019). (Sousa & Rocha, 2019) (Schwertner, 2017) (Harris et al., 2013) (Hearsum, 2015) (Henderikx & Stoffers, 2023) (Kane et al., 2018) |
| Communication skills | (Klein, 2020) (Sousa & Rocha, 2019) (Zeike et al., 2019) (Sullivan, 2017) |

### 4.9.1 Vision

A digital transformation that is successful requires a top-down strategy plan. The ability and initiative of digital leaders to propel the digital revolution are based on their vision and ambition (Mihardjo et al., 2019). A corporation can successfully migrate to digital when all employees are working towards the same objective (Zeike et al., 2019). Consequently, digital leaders need to have a clear vision to communicate to their team members, establish and adhere to a plan, and provide their companies with measurable objectives and rewards for achievement (Promsri, 2019).

A vision statement should be succinct, comprehensive, inspiring, and captivating, and it should outline the goals and guiding principles of the company, according to Eberl and Drews (2021). Digital development is supported at all organisational levels by a clear,

compelling vision that is shared by the whole company ) (Osborn and Fukuzawa, 2016). Digital leaders also need to steer the organization's digital operations in the direction of the established vision in order for it to have any significance (Sousa & Rocha, 2019). Therefore, a digital leader needs to have a vision and be able to articulate it through their choices and actions (Sullivan, 2017).

### 4.9.2 Digital literacy

How well top executives use digital tools to support their companies' growth will determine if the digital transformation process is effective or not. The dissemination of digital tools depends on digital leaders (Peng and Qingxiang, 2021)/ Digital executives need to grasp the dynamic nature of digital technologies in order to transform the business. In the digital age, effective leadership requires not only technical expertise but also the capacity to inculcate the advantages of digital technologies across the entire organisation (Sainger, 2018). Digital leaders need to build a digital mentality in their employees through their own training and experience to help their companies adapt to emerging technology (McCarthy et al., 2022). Organisations can better react to market developments and digital disruptions when staff members are knowledgeable about digital technologies, have the ability to assess the market, and have direct communication with stakeholders (Li et al., 2016). Ultimately, to effectively transform their company into a digital enterprise and adjust to rapidly changing digital landscapes, digital executives need to possess a high degree of digital proficiency and literacy (Katsoulis, 2017).

### 4.9.3 Customer focus

Due to shifts in consumer expectations and behavior brought about by digital development, businesses have had to adapt if they want to draw in and keep clients. Consumers are more discerning than ever, and they expect unique experiences in addition to tailored offers and services (Vey et al., 2017). Consumers want businesses to not only fulfil their immediate needs, but also anticipate and cater to their needs before they ever realise they exist. Despite the fact that a lot of businesses use digital technology to enhance customer experiences, they still fall short because they do not fully understand the demands and habits of their customers. Gaining a deeper grasp of the changing nature of customer relationships and consumer demand is essential to

improving value exchange (Piccinini et al., 2015). However, digital leaders need to understand how the digital transformation affects customers in addition to taking customer wants and expectations into account during the process to deliver commanding goods, services, and values to customers (von Leipzig et al., 2017).

### 4.9.4 Agility

As digital technology has advanced, businesses have become much more flexible. Based on an analysis of the most successful IT businesses, we can see that the intense competition they have faced has made their strategies more flexible and adaptable (Akkaya & Tabak, 2020). Businesses and their CEOs need to be more agile in order to compete successfully in the current global market. In particular, leading change and digital transformation processes presents a number of difficulties that only exceptionally agile executives can successfully navigate. Though decision-making is delegated to top management, leaders have the last say in matters of policy. Digital leaders can perform thorough research in this situation while still being adaptable (Ebert & Drews, 2021). One of the main objectives of businesses built on digital models is the adoption of new technology. It's getting harder for businesses to stay away from modifying their tactics to take advantage of emerging technologies. More data, especially real-time data, is a great tool for agility because of the clarity it provides.

### 4.9.5 Collaborative

Digital executives need to be more than simply technically knowledgeable to lead a company through a digital transformation; they also need to possess the soft skills needed to work on several projects (Promsri, 2019). Leaders now have the additional responsibility of bridging the gaps between various teams and operational systems as a result of the variety of their staff. To steer the digital transformation, this requires cross-border digital cooperation. According to Bharadwaj et al. (2013), cooperative teams and workers have shifted their responsibilities to include themselves in the ecosystem platforms, creating new digital business models and adding value to digital strategies that combine goods and services. It is imperative that all employees acknowledge and participate in the digital revolution, which is why fostering a collaborative learning environment is essential. The digital transformation initiatives of the digital leaders drive

collaborative learning (Harris et al., 2013). However, collaboration isn't just restricted to interactions that take place inside a company; rather, businesses that use digital business models heavily depend on their surroundings.

### 4.9.6 Risk-taking

Digital leaders need to be adept at managing the risks associated with every decision they make in order to prevent failures in their digital transformation efforts (Temelkova, 2018). Digital leaders need to be risk-averse and acknowledge that mistakes are inevitable if they are to seize new opportunities (Newman et al., 2018). Nonetheless, those in charge of carrying out digital transformation initiatives might steer clear of these risks. Building dynamic trial methods could be a terrific way to contribute to future discoveries, and it's important to have a testing environment for new approaches. As industries continue to demand more from enterprises, emerging technology innovations present risks. The repercussions of the digital transition are being felt by employees, and they need to be prepared to deal with them on an emotional and cultural level. Leaders who inspire others to take risks make a significant difference (de Araujo et al., 2021).

### 4.9.7 Data skills

Based on the data at their disposal, leaders make decisions, and this evolution depends on the use of digital tools enabled by artificial intelligence (AI) and machine learning (Cortellazzo et al., 2019). Academic inquiry understands digital knowledge to be the capacity to adjust to a dynamic digital environment as well as the array of informational and analytical instruments at one's disposal. Collaborations with organisations like Nielsen and Bloomberg have made data resources more accessible, which can help in decision-making (Katsoulis, 2017). Better internal data scientists and analysts or higher-quality data sets do not guarantee effective decision making, but big data and nearly all data sources do benefit upper management teams by generating leads. Successful leaders set clear long-term objectives for the organisation and nudge it in the right direction by posing insightful questions (Hearsum, 2015). Because the evaluation of newly additional data has been automated, businesses may keep making data-driven decisions. The fact that leaders are trusted to manage and effectively communicate with those responsible for processing this data increases the value of the data. Large-scale data analysis and

interpretation require a combination of mathematical and technological abilities, which data scientists must possess. To coordinate management analysis, leaders need to understand the power of data (Schwertner, 2017).

### 4.9.8 Communication skills

Successful communication, according to Sullivan (2017), is the capacity to exchange ideas and viewpoints with an individual or group. If not, the degree of communication among digital leaders will decide the team's ability to finish the required construction activities. For example, a manager's leadership at the project's genesis phase requires a thorough discussion regarding sustainability goals with the project's stakeholders. This is because the initial meetings are scheduled by the digital leader to make sure that everyone is in agreement. Therefore, balancing the needs of the project team and stakeholders may require a digital leader to have strong communication skills (Zeike et al., 2019).

For every organisation to succeed, employee communication is essential. The best team leaders are able to communicate their vision in a way that is understandable to all members (Klein, 2020). A breakdown in communication can lead to an increase in work-related stress, absenteeism, and employee turnover. Two-way conversation is necessary for effective communication. Rather than just informing people about the latest business events, communication should be a multi-step process that involves sharing information between two or more stakeholders at different levels of an organisation (Sousa & Rocha, 2019). This debate should also include facial expressions and body language in addition to words.

# 5 Conclusion, Recommendations, and Limitations

## 5.1 Conclusion

This research aimed to answer the research question which is as follows:

1. **How important are digital leader's skills in the effective implementation of digital transformation?**

To summarise, the success of the digital economy is contingent on the interaction between digital transformation and digital leadership, which extends beyond the realm of basic academic theory. The fast-changing landscape of perpetual technological innovation, shifting consumer tastes, and higher expectations makes it abundantly clear that digital leaders need to possess a high level of digitization expertise. Considering the findings of this research, it is recommended that leaders should augment their existing skill set with digital skills. This is because traditional leadership abilities are no longer adequate in the digital economy.

The rate of expansion of the digital economy is directly proportional to the level of expertise possessed by individuals in charge of digital transformation. As technology permeates every aspect of our lives, the old limits that have been used to identify the leadership abilities required to navigate this digital landscape are no longer adequately adequate. A forceful proclamation that digital talents should be a part of a leader's everyday vocabulary, rather than merely a hope for change, is what the argument is all about. The development of leaders who are able to successfully manage the waves of digital transformation is essential to the success of organisations in the digital era.

Obtaining a competitive advantage is just one of the numerous motivating factors that make digital transformation an essential component of any strategic plan. It is a necessary lifeline for things that did not exist prior to the advent of the digital age but are battling to remain relevant and live in a culture where the ability to use technology is essential. Once it has been determined that businesses should embrace digital transformation, when and how should they move forward with this process? The "when" and "how" components have a significant influence on digital leadership, as indicated by the findings of this examination. The capability of an organization's digital leadership team to both lead and

carry out the digital transformation efforts that will progress the business is a critical factor in determining whether or not the organisation will be able to adapt to and prosper in the current digital economy.

This conclusion is a call to action for change in the realm of information technology, which moves at a breakneck rate. For organisations to continue existing, digital transformation is no longer an option; rather, it is a requirement at this point. Based on the findings, it is evident that any narrative concerning digital transformation requires chief executive officers and digital executives or leaders who are familiar with the subtleties of existing digital environments. As we traverse the ever-changing landscape of information technology, this research serves as a reminder to companies that they should embrace digital transformation and take the lead in it. It gives the impression that adaptability will be a defining characteristic of success in the years to come.

## 5.2 Recommendations

The scholarly literature on the subject of managers' digital leadership competencies is the only material covered in this SLR. Future research should examine digital leadership traits in settings other than corporate management in order to fully demonstrate the value of the SLR method. Comprehensive leadership development activities ought to be a part of every organisational training programme. Offering foundational leadership education through online courses covering topics like developing emotional intelligence and contrasting different leadership philosophies is one way to go about it. Professionals can acquire practical training and access to subject-matter experts through mentoring programmes and leadership labs, which aid in the development of their digital leadership skills.

Opportunities for practical learning should be given top priority in the curriculum framework for digital leadership. Through internships, real-world case studies, and project-based learning, staff members can put their academic knowledge to use. A project manager's ability to deal with the unexpected and make wise judgements is aided by their ability to draw from both theoretical knowledge and practical experience. Schools are required to give their kids a diverse range of learning options due to the variety of management. Every student receives tailored feedback that identifies areas for

improvement in addition to praise. Tailored training sessions that impart new skills and broaden managers' horizons could be very beneficial.

Aspiring managers can learn from a digital leader who shares their knowledge and experience and acquire an edge over their rivals by interacting with team members and organisations that function in diverse marketplaces. By making investments in a variety of leadership training, managers can broaden their perspectives. Companies in the technology, healthcare, and environmental sectors, among others, stand to gain from the application of digital leadership principles. Investing in the development of marketable digital leadership abilities will enable managers to adapt more effectively to changing circumstances. Being able to inspire confidence in others is essential for success in business management. Only through formal education programmes that incorporate ethical decision-making components will future managers be instilled with a strong sense of ethics and integrity. The management of a company should always act in a way that upholds industry norms and reflects well on the business.

It is essential to establish programmes for managers' ongoing professional development. Organisational learning frameworks should incorporate regular training sessions, workshops, and seminars that address industry-specific difficulties, technology breakthroughs, and the newest trends in digital leadership. Organisations should create multidisciplinary training programmes since digital leadership is not limited to a single industry. With the help of this strategy, managers can learn from a variety of industries, which promotes innovative problem-solving and environment adaptation. Encourage managers to collaborate with teams from different departments in order to foster cross-functional collaboration. This broadens their understanding of digital leadership within a larger organisational framework by exposing them to various viewpoints and fostering an interchange of ideas. Connect the results of leadership development to performance indicators. Acknowledging and compensating managers who successfully use digital leadership to accomplish company objectives starts a positive feedback loop that promotes ongoing development. Provide managers with opportunities to experience global leadership.

The ability to negotiate complexities and obstacles in an interconnected world is enhanced through exposure to foreign marketplaces, varied cultural contexts, and global business practises. Incorporate ethical decision-making processes into programmes that

teach leadership. This preserves the organization's general integrity and reputation by guaranteeing that aspiring managers uphold moral principles in addition to having technical expertise. Make diversity and inclusion training a top priority in order to promote an inclusive culture in digital leadership. This involves training on unconscious biases, managing diverse teams, and fostering an atmosphere that recognises and capitalises on each team member's unique abilities. Create programmes that help people accept developing technologies. To promote innovation and efficiency in their positions, managers need possess the knowledge and abilities to take use of technology like cybersecurity, data analytics, and artificial intelligence.

Establish programmes for mentorship and coaching of emerging managers by seasoned leaders. This one-on-one session speeds up skill development, offers tailored advice, and shares real-world knowledge from seasoned experts. Managers should have their learning paths customised to their own strengths, areas for growth, and career objectives. By tailoring training to each manager's specific needs, this individualised approach improves overall effectiveness. Encourage the development of strategic alliances with outside groups and trade associations. Managers can increase their industry connections and broaden their knowledge by taking part in conferences, networking events, and joint projects. Provide supervisors with regular feedback channels that offer insightful commentary. This encourages a culture of continual improvement and makes it easier for managers to monitor their advancement in acquiring digital leadership skills.

Through the implementation of these principles, organisations may provide a dynamic learning environment that fosters creativity, adaptation, and ethical leadership, so enabling managers to prosper in the digital age.

## 5.3 Limitations

It is imperative to acknowledge that the study has constraints that need to be adhered to. Because the study only included 69 articles, its conclusions are unlikely to apply to the whole field of business management. One major shortcoming of the inquiry was its limited schedule. Regretfully, time constraints hindered us from conducting an exhaustive study of literature. Due to time constraints, we were unable to integrate a number of relevant extra sources that could have affected the outcomes. The university's IT

problems prevented us from using some tools, such as databases and web-based platforms, which would have enabled us to carry out a more thorough investigation. Furthermore, our sample size is probably too small to draw any clear conclusions about the industry in its entirety. Due to its reliance on previously published research, the study might have missed certain important details that were industry-specific or not disclosed. Expert interviews, for instance, were not as frequently used as primary data collection techniques. Two problems with this study include the small sample size and the data's low generalizability (Northouse, 2020). Self-reported data in multiple studies may have been biased as a result of research misconduct. To provide solutions, further research is required, ideally with bigger sample sizes and more intricate standards for evaluating the performance of digital leaders. A Likert scale and a cross-sectional approach have been used in most empirical studies on digital leadership to measure qualities and styles; thus, it is difficult to draw firm conclusions about the relationship between these factors and successful project outcomes. Future research ought to examine the relationship between leadership and project outcomes like safety, innovation, and resilience. Lastly, future studies in the information field might examine how different digital leadership development initiatives and interventions affect project outcomes and employee satisfaction. Because the systematic literature review depends on previously published research, it is prone to publication bias. Since positive outcomes are more likely to be publicised, studies with neutral or negative results may be overlooked and specific trends or discoveries may be overemphasised. Restricting the review to works written in a particular language could lead to prejudice because important contributions written in other languages might go unnoticed. This can lead to a biased portrayal of the body of research that is currently available and possibly obscure pertinent studies carried out in non-English speaking areas. Practical factors may force the examination to be limited to a particular period of time. Due to this restriction, more current discoveries that occur outside of the allotted time range may be missed, as well as more traditional yet important investigations. The global diversity of ideas and practises in the field of business management may not be fully captured in a literature review if its main focus is on studies from a particular area or nation. This might restrict how broadly the results can be used in an international setting. Because of quality problems, grey literature—such as reports, working papers, and conference proceedings—is frequently left out of systematic reviews. Nevertheless, this exclusion could lead to the missing of important discoveries,

creative solutions, or other viewpoints that aren't written about in scholarly publications. The precision and breadth of the search string employed have a significant impact on how successful a systematic literature review is. Due to limitations in creating an entirely comprehensive search string, relevant studies using alternate terms or keywords may be missed. Numerous academic fields, including economics, sociology, and psychology, frequently converge with business management. The comprehensive comprehension of the topic matter may be limited if pertinent works from these multidisciplinary domains are unintentionally left out of the review. There may be subjectivity in the criteria used to evaluate the quality of the included research, and there may be some degree of uncertainty in the findings drawn from the evaluation due to differences in quality assessment techniques between studies. The discipline of business management is dynamic, being influenced by swift changes in technology, industry standards, and world events. Because the review is static, it can miss new developments in the field, innovative studies, or evolving theoretical frameworks. The idea that all of the included studies have comparable demographics, approaches, and settings could oversimplify how intricate and varied business management is. The conclusions of the review may not be applicable in a variety of organisational situations due to this homogeneity assumption.

Transparently acknowledging these shortcomings helps the systematic literature review gain credibility overall and motivates subsequent researchers to fill in these gaps in their study.

## 5.4 Future Implications

The importance of digital leadership is emphasised in this study, not just in relation to digital transformation. In the face of rapid technological change, leaders must develop and refine their skills in order to maintain the successful operation of their organisations. Because it defines digital leadership and outlines the skills needed for it, the thesis is also directed towards upcoming digital leaders. Both present and prospective leaders can use our thesis to evaluate what competencies they now lack and how best to address those deficiencies.

The thesis also adds to the body of knowledge on digital leadership. Scholars studying the subject disagree about what constitutes digital leadership (e.g., Klein, 2020) and often

argue about which competencies are most important. In light of this ambiguity, the goal of the current study was to define digital leadership and identify competencies that help define the field of study. This will benefit future scholars by expanding the scope of their research because they won't have to start from scratch when defining digital leadership. Academics studying digital transformation note that there is a dearth of well-defined recommendations for businesses concerning digital strategy (e.g., Matt et al., 2015; Verhoef et al., 2021).

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