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## Digital Leadership in the Public Sector-Systematic Literature Review

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### ABSTRACT

This paper examines digital leadership in the public sector which is one of the challenges faced by many government organizations in adopting and managing information and communication technology effectively, the use of ICT changes the way of working and business operations of an organization both in the public and private sectors. Digital transformation opens up opportunities and challenges to create business advantage by using the concept of digital capability as the ability of an organization to understand digital technology and use it to create business value, digital transformation is not only about implementing new technology, but also about changing the way of thinking and managing the business as a whole. Digitalisation and e-leadership can help improve transparency, accountability and public participation in decision-making processes in local government. In addition, local leaders are also using digital technology to improve communication with the public and get useful feedback in public policy making. In conclusion, digital leadership in the public sector is essential for governments and public sector organizations to keep pace with the rapid changes brought about by digital transformation. Effective digital leadership can help improve the efficiency, quality, transparency, participation and accessibility of public services, ultimately delivering better outcomes for citizens.

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### A. INTRODUCTION

The purpose of this article is to provide a comprehensive review of research studies conducted on digital leadership in the public sector. This study presents a deeper understanding of digital leadership in the public sector, presents valuable findings and provides new insights into how leadership can play a role in meeting the challenges of digital transformation, the findings also emphasise the importance of good governance, effective leadership, interdependence and relational capital in achieving successful collaboration outcomes. The study highlights that national cultures can influence views and responses to digital leadership, also providing a better understanding of the cultural contexts that need to be considered in developing effective digital leadership strategies in different countries. Overall, the literature review of previous research makes an important contribution to enriching our understanding of the role and importance of digital leadership in the public sector. It provides new insights into the factors that influence digital leadership, its impact on employees and organizations, and the challenges and opportunities faced in the face of digital transformation.

The focus scope of the study discussed in the provided articles revolves around the concept of digital leadership and its significance in the public sector. The articles delve into the challenges faced by government organizations in adopting and effectively managing digital technologies. They

emphasize the need for leaders who possess a deep understanding of digital technologies and their impact on government operations.

Digital transformation and its impact on organizations are key areas of focus. The articles highlight the adoption of innovative digital technologies, such as big data analytics, artificial intelligence, cloud computing, Internet of Things, and blockchain, as means to improve efficiency, productivity, innovation, customer experiences, and community participation. They emphasize that digital transformation requires a holistic approach, extending beyond the implementation of new technology, and necessitates a change in the organization's mindset and management practices.

The articles also shed light on the characteristics and skills essential for effective digital leadership. Adaptability to change, the ability to motivate and inspire teams, leveraging technology for improved organizational effectiveness, building strong relationships with employees and customers, and possessing a human-centered approach are highlighted as critical traits. The focus is on leaders who can effectively lead virtual teams, communicate proficiently, and possess technological expertise.

Specific attention is given to the challenges and opportunities encountered in the public sector. Some articles specifically discuss digital leadership in the public sector, exploring the impact of e-government, citizen participation, and collaboration on public management reform. They analyze the factors that influence collaboration outcomes, the role of normative public values, and the competencies required for public sector managers in the digital government context. The aim is to enhance service delivery, transparency, accountability, public participation, and efficiency in public administration.

Digital leadership in the public sector is one of the challenges faced by many government organizations adopting and effectively managing information and communication technologies, many leaders in the public sector lack an adequate understanding of digital technologies and their impact on government operations. This can be a barrier to making informed decisions regarding technology investments, security policies, and digital strategy development. Rigid and hierarchical organizational structures are often incompatible with the flexible and collaborative nature of digital technologies. This can hinder the government's ability to adopt technological changes and integrate them into existing work processes, in addition, rigid and hierarchical organizational structures are often incompatible with the characteristics of digital technologies that tend to be flexible and collaborative. This can hinder the government's ability to adopt technological change and integrate it into existing work processes. Existing policies and regulations are also sometimes not aligned with the development of digital technology, hindering innovation and technology adoption in the public sector. The need for up-to-date and flexible policies to accommodate technological advancements is a necessary

Digital transformation is the process of using information and communication technologies to change the way an organization works and operates its business, both in the public and private sectors. Digital transformation includes the adoption of innovative digital technologies, such as big data analytics, artificial intelligence, cloud computing, Internet of Things, and blockchain, to improve efficiency, productivity, and innovation in organizations. Digital transformation also includes using digital technologies to create better customer experiences, increase community participation, and create added value for organizations. Digital transformation not only changes the way organizations operate, but also creates the potential to change the way people interact and communicate with the world.

Westerman and Bonnet (Westerman et al., 2014) argued about the importance of digital transformation in creating business advantage by using the concept of digital capability as the ability of an organization to understand digital technology and use it to create business value, digital transformation is not only about implementing new technology, but also changing the way of thinking and managing the business as a whole.

Vom Brocke (vom Brocke et al., 2021) conducted a structured literature review on IT-enabled organizational transformation, there are four types of transformation that allow for the use of IT: process, structural, cultural, strategic. They also argue that successful transformation requires a holistic approach involving leadership, culture, and technology.

Meanwhile, according to Majchrzak (Majchrzak et al., 2016), digital transformation is a business transformation driven by digital technology. This transformation includes changes to business models, processes, products, and services. Digital transformation also requires a deep understanding of digital technologies, such as big data, cloud computing and the Internet of Things (IoT), and the ability to use them effectively to make informed business decisions.

Bharadwaj (Bharadwaj et al., 2013) argues that businesses need to embrace digital technology and develop digital business strategies to remain competitive in the digital age. Digital business strategies

should be customer-centric, data-driven, and focused on delivering value to customers. Companies should also invest in digital capabilities, such as analytics, social media and mobile technology, to gain a competitive advantage. The author proposes a framework for developing a digital business strategy that includes three key elements: understanding the digital landscape, identifying opportunities and threats, and developing an action plan. Ultimately, businesses need to continuously adapt their digital business strategies to keep up with the rapidly evolving digital landscape.

### **The concept of digital leadership**

The concept of digital leadership began in the 1990s when the internet began to grow rapidly and many organizations turned to digital technologies to speed up operations and increase productivity. However, it was not until the 2000s that digital leadership became increasingly important as information and communication technology (ICT) progressed at an accelerated pace.

Initially, digital leadership focused on using technology to improve efficiency and reduce costs, especially in business operations and supply chain management. However, as the digital business environment becomes more complex, the role of digital leadership becomes more important in creating sustainable value and innovation.

At the same time, digital leadership is also beginning to involve the ability to manage increasingly complex risks and data security, including protection against cyberattacks and consumer privacy.

Over the past few years, digital leadership has come under increasing scrutiny as a key factor in organizational success in the digital age. Many companies are looking for leaders who are able to understand technology and lead their organizations in adapting to ongoing change and innovation.

E-leadership involves the ability to lead virtually, motivate and inspire teams online, and leverage technology to create an innovative and customer-oriented work environment (Avolio et al., 2014), also emphasising the importance of building strong relationships with employees and customers in an increasingly connected digital environment.

Cortelazzo (Cortelazzo et al., 2019) outlines several characteristics that are essential for leadership in the digital age, such as the ability to adapt to change, motivate and inspire teams, and leverage technology to improve organizational effectiveness and efficiency. He also emphasised the importance of building strong relationships with employees and customers in an increasingly connected digital environment.

There are several key factors that influence the adoption of Industry 4.0, such as government support, skilled human resources, and adequate technology infrastructure. It also discusses the impact of industry 4.0 adoption on sustainable production and circular economy, including waste reduction, energy saving, and efficiency improvement (Bag et al., 2021).

E-leadership is a different form of leadership and is necessary for effective management in today's digital age. Four core elements of e-leadership are critical for leaders to successfully manage complex and rapidly evolving digital technologies and communications in modern organizations (Van Wart et al., 2017). The four core elements are (1) vision and strategy, (2) communication, (3) collaboration, and (4) technological expertise. e-leadership is a different form of leadership and is necessary for effective management in today's digital age. The four core elements of e-leadership are critical for leaders to successfully manage complex and fast-evolving digital technologies and communications in modern organizations.

Klein (Klein, 2020) explains that leadership in the era of digital transformation requires different characteristics from traditional leadership. In the digital era, leadership must promote innovation, creativity, and collaboration. In addition, leadership must also be able to lead diverse teams and be accustomed to change. Other characteristics of leadership in the digital era are the ability to adapt quickly, flexibility in decision-making, ability to communicate effectively, and focus on long-term goals. Leadership in the digital age must also understand technology and use it effectively to achieve organizational goals. In the article, Klein also explains that leadership in the digital age should adopt a human-centred approach and prioritise employee engagement in the digital transformation process.

Digital leadership must be able to lead the company to adopt new technologies and accelerate innovation in the company. Digital leadership must be able to shape a culture of innovation in the company and motivate employees to continue developing new ideas. In addition, innovation management is also important in developing effective innovation strategies and processes in the company. Innovation management must be able to identify innovation opportunities, develop new ideas, and implement innovations in the company quickly.

In addition, leadership must be able to communicate clearly and effectively about the vision of digital transformation and motivate employees to participate in the transformation process. They must also be able to form and lead diverse teams and collaborate to achieve digital transformation goals. In conclusion, strong and visionary leadership is a key factor to achieve success in digital transformation.

Jakubik and Berazhny's (2017) article explores the changing leadership landscape in the digital age where traditional leadership practices may no longer be effective in the face of rapidly evolving technology and increasing globalisation. The article suggests that leaders must adapt to new digital tools and implement a more collaborative leadership approach. The author also highlights the importance of ethical considerations in digital leadership, as the speed and scale of technological change can create ethical dilemmas. Overall, the article provides a thoughtful analysis of the challenges and opportunities facing leaders in the digital age.

### **Digital leadership in the public sector**

According to David (David & Nguar, 2022) e-government and technological innovation have a positive impact on public management reform in developing countries. In particular, e-government can improve service delivery, enhance transparency and accountability, increase public participation, and result in cost savings and increased efficiency in public administration, despite the challenges and limitations of implementing e-government in developing countries, such as inadequate infrastructure and resources, low levels of digital literacy, lack of political will, and insufficient stakeholder engagement.

Transformational leadership based on normative public values can influence employee attitudes and behaviour. Transformational leadership encourages employees to view their duties as part of a larger mission, which is to provide quality public services that meet the needs of the community (Pandey et al., 2015).

Transformational leadership that successfully harnesses normative public values must be accompanied by increased employee participation in decision-making and programme implementation. Effective transformational leadership allows employees to feel they have a role in the organization, so they feel motivated to achieve organizational goals. Leaders who are able to articulate and implement normative public values can motivate employees to work for the greater public good. This study provides useful insights for practitioners and researchers in the field of public management and leadership.

Maxwell (Maxwell, 1999) views that leadership is not just about a particular position or title, but rather about the influence that one person exerts on others. He also pointed out that leadership can be learnt and improved, and everyone can be a successful leader if they understand and implement the right leadership principles.

Ramadass (Ramadass et al., 2018) discusses the factors that influence collaboration outcomes in the public sector, such as governance, leadership, dependency and relational capital. The success of collaboration in the public sector depends not only on internal organizational factors, such as good governance and strong leadership, but also on external factors, such as dependency and relational capital with other organizations.

Toleikienė (Toleikienė et al., 2020) explored how the COVID-19 pandemic affected e-leadership in the public sector in Lithuania. Findings revealed that the crisis situation created a significant shift towards e-leadership, which involves more communication, collaboration and coordination through digital technology. The study found that e-leadership is essential in the context of remote work and social distancing, as it allows the public sector to maintain its operations and deliver services to citizens effectively.

The study also found that crisis-triggered situations impact e-leadership competencies, such as digital literacy, communication, and adaptability. In particular, managers and leaders who are more digitally literate and have better communication skills are better equipped to lead their teams during a crisis. Public sector managers and leaders need to be prepared to adapt to crisis situations and develop the necessary e-leadership skills to ensure effective communication and collaboration with their teams. This study can be useful for policy makers and public sector organizations as they plan for future crises and develop strategies for e-leadership development.

Fung (Fung, 2015) argues that citizen participation is essential for democratic governance, as it can help improve transparency, accountability and responsiveness. However, he notes that there are several challenges to effective citizen participation, including a lack of resources and expertise among

citizens, the influence of special interests, and the difficulty of coordinating multiple viewpoints and interests. To address these challenges, Fung proposed several strategies to enhance citizen participation, including the use of new technologies to increase engagement and transparency, the establishment of deliberative forums that enable informed discussion and debate, and the cultivation of a culture of participation that values citizens' contributions.

An exploratory study conducted by Rybnikova (Rybnikova et al., 2022) discusses digitalisation and e-leadership in local governments before the COVID-19 pandemic, the research was conducted using interview techniques with 5 regional heads in Russia, the research was conducted to find out the e-leadership practices they carried out to improve the quality of public services and bureaucratic efficiency.

The results show that digitalisation and e-leadership can help improve transparency, accountability, and public participation in the decision-making process in local government. In addition, local leaders also use digital technology to improve communication with the public and get useful feedback in public policy making.

However, there are also some obstacles faced by local governments in implementing digitalisation and e-leadership, such as the lack of human resources skilled in digital technologies, unsupportive policies, and concerns over data security.

Al-Mahrezi (Al-Mahrezi et al., 2021) presents a conceptual framework on digital government competencies for public sector managers in Oman. The article outlines that achieving digital government success requires public sector managers who are competent in information and communication technologies and capable of leading digital transformation. The article discusses in detail the various competencies required, including: digital literacy, information technology strategy development, change management, leadership, collaboration and innovation.

Al-Mahrezi explains the importance of building the competencies of public sector managers in the context of digital government, as they play a central role in developing strategies, leading transformation and creating an enabling environment for the use of information technology. This is important because information technology is key in delivering more effective, efficient and responsive public services.

An article written by Jonathan (Jonathan et al., 2021) discusses the challenges faced by information technology (IT) leaders in public sector digital transformation. The authors discuss the potential benefits of digital transformation and the need for effective IT leadership to achieve successful transformation. However, the article highlights some of the challenges faced by IT leaders within the public sector, including budget constraints, lack of skilled personnel, resistance to change, and inadequate IT infrastructure. The author argues that IT leaders must overcome these challenges to ensure successful digital transformation in the public sector.

This article contributes to the literature on digital transformation in the public sector by identifying the challenges faced by IT leaders and emphasising the importance of effective leadership in overcoming these challenges. The findings from this study can be useful for policymakers and IT leaders in the public sector involved in digital transformation initiatives. Overall, this article provides valuable insights into the challenges of digital transformation in the public sector and the role of IT leadership in overcoming them.

Anwaruddin (2013) explored the role of e-leadership in promoting effective e-government initiatives in Indonesia, Anwarudin defined e-leadership as a leadership style that is "oriented towards the use of information and communication technology (ICT) to facilitate the achievement of organizational goals". Anwaruddin argues that e-leadership is necessary for e-government initiatives to be successful, as it enables leaders to effectively manage change, build partnerships, and promote innovation.

E-government refers to the use of information technology by governments, which has the ability to transform relationships with citizens, businesses, and other government bodies. The implementation of e-government can serve different purposes, aiming for better governance, effective public services and better business interaction services, through access to information or more efficient government management. The resulting benefits may include reduced corruption, increased transparency, benefits, revenue growth and/or reduced costs.

## B. METHOD

The method used is SLR (Systematic Literature Review) which is a research method used to collect, evaluate, and synthesise the results of research that has been done previously in a particular field. This method is a systematic and transparent way to collect and present relevant scientific evidence on research topics.

SLR is conducted by following a series of structured steps, starting from determining the research question, searching for related articles, selecting studies that meet the inclusion and exclusion criteria, extracting relevant data, to synthesising the data found. The purpose of SLR is to generate a more complete and clear understanding of the research topic, as well as identify research gaps that need to be done in the future.

Liberati (Liberati et al., 2009) provides guidelines for standardised reporting of systematic reviews and meta-analyses in health intervention research. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement has been developed to improve transparency and quality of reporting in systematic reviews and meta-analyses (Moher et al., 2015).

The search terms were conducted using the Scopus database, the search included terms related to digital leadership that matched the requirements for the operation. For each construct multiple keywords were used to ensure a wide coverage of the study, indexing in the database was used to perform a Boolean search, the search sequence was as follows:

Tabel 1.1 Search terms

Database	Search String
Scopus	((“digital leadership” OR “technology leadership” OR “virtual leadership” OR “digital leader” OR “technology leader” OR “e-leader*” OR “leadership affect” OR “leadership influence”) AND (“publi* sector” OR “publi* service”))

Number of criteria were used to select the most relevant studies in the Scopus database, the limitations of the type of document being a journal, the language used being English and the time of publication between 1998 - 2023 have been added, to be included in this article, it must fulfil the four criteria listed below:

1. Focus on the digital leadership dimension, or on terms related to digital leadership.
2. Include conceptualisations of digital leadership or related terms, the criteria being chosen to create a digital leadership framework based on academic literature.
3. Cite terms in terms of the public sector or public service that are relevant to the current state of service delivery in the public sector.
4. Published in a peer-reviewed journal, the latter criterion was used as an included review.

Table 2 Selection Criteria

Criteria	Inclusion	Exclusion
Time Line	1998 - 2023	< 2013
Article type	Journal (Empirical Data)	Conference paper, book chapter, review, short survey, book and conference review
Language	English	Non English

Study selection was conducted in three steps. Firstly, the titles of all retrieved articles were screened for eligibility of the aforementioned inclusion criteria. Second, the abstracts of all initially relevant articles were screened for eligibility by applying uniform criteria. Finally, the full texts of all remaining publications were examined. All articles deemed relevant were coded in terms of: author name, year of publication, journal, title and then analysed for results and conclusions.

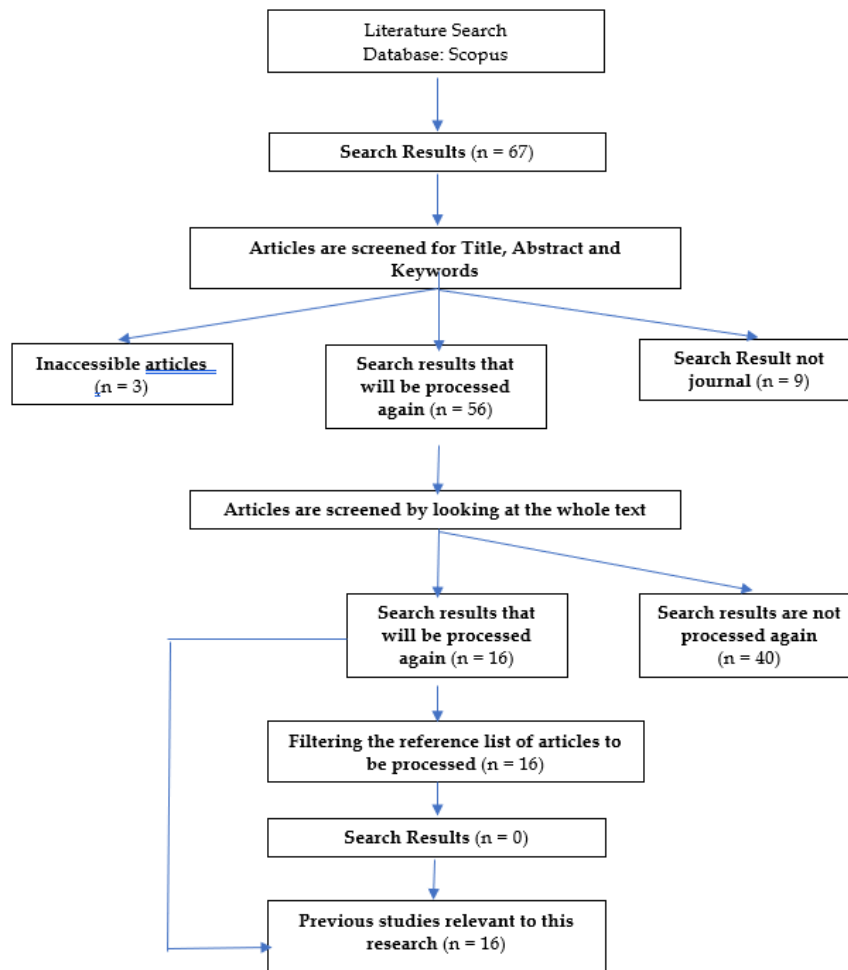


Figure 1. Prisma flowchart

Here is an inclusion of the research results in a table:

Table 3. Inclusion of the research results

No	Full Name	Title	Number of Citation	Sources
1	Qing Miao, 2014	SERVANT LEADERSHIP, TRUST, AND THE ORGANIZATIONAL COMMITMENT OF PUBLIC SECTOR EMPLOYEES IN CHINA	106	Public Administration
2	Lu, X., & Guy, M. E., 2014	How Emotional Labor and Ethical Leadership Affect Job Engagement for Chinese Public Servants	62	Public Personnel Management
3	Van Wart, D. W., 2017	Operationalizing the definition of e-leadership: identifying the elements of e-leadership	60	International Review of Administrative Sciences
4	Alnuaimi, 2022	Mastering digital transformation: The nexus between leadership, agility, and digital strategy.	43	Journal of Business Research
5	Sanjay K. Pandey, 2016	TRANSFORMATIONAL LEADERSHIP AND THE USE OF NORMATIVE PUBLIC VALUES: CAN	37	Public Administration

EMPLOYEES BE INSPIRED TO SERVE LARGER PUBLIC PURPOSES?				
6	Jin et al., 2017	Does leadership matter in diversity management? Assessing the relative impact of diversity policy and inclusive leadership in the public sector	33	Leadership and Organization Development
7	Demircioglu, M.A., Chowdhury, F., 2021	Entrepreneurship in public organizations: the role of leadership behavior.	23	Small Business Economics
8	Ramadass, S.D., Sambasivan, M. & Xavier, J.A., 2018	Collaboration outcomes in a public sector: impact of governance, leadership, interdependence and relational capital.	21	Journal of Management and Governance
9	Rita Toleikienė, 2020	Whether and how does the Crisis-Induced Situation Change e-Leadership in the Public Sector? Evidence from Lithuanian Public Administration	14	Administrative Sciences
10	Liu, C et al, 2020	The effects of national cultures on two technologically advanced countries: The case of e-leadership in South Korea and the United States	13	Australian Journal of Public Administration
11	Susilawati, D. M., Suryanto, & Windijarto., 2021	Transforming the digital leadership to improve public service performance in the COVID-19 outbreak	4	Economic Annals-XXI
12	Asdani Kindarto et al, 2020	Full Range Leadership Styles and Government IT Team Performance: The Critical Roles of Follower and Team Competence	4	Public Performance and Management Review
13	Irma Rybnikova et al, 2022	Digitalisation and e-leadership in local government before COVID-19: Results of an exploratory study. International Journal of Public Sector Performance	2	International Journal of Public Sector Performance Management
14	Rita Toleikienė, 2022	Electronic leadership at local self-government: conceptual analysis and literature review	2	Public Administration and Information Technology
15	Juma Al-Mahrezi, 2021	Digital Government Competency for Omani Public Sector Managers: A Conceptual Framework	2	International Journal of Public Administration in the Digital Age
16	Vilksite Neringa, 2022	E-Management as a Game Changer in Local Public Administration	1	Journal of Public Administration and Governance

Selection bias in a systematic literature review (SLR) on digital leadership in the public sector can occur when the sample of studies used does not accurately represent the population of interest. For example, if researchers only select studies conducted in developed countries or only studies conducted in certain public sectors, such as the central government, then the results of the review may not accurately represent the reality in other countries or public sectors.

In addition, selection bias may occur if researchers only select studies involving certain respondents or participants, such as senior managers or department heads, and do not consider the views and experiences of other groups in the public sector.

To avoid selection bias in an SLR on digital leadership in the public sector, it is important to have clear and detailed inclusion criteria, and include studies conducted across different countries, public sectors and management levels. Researchers can also use different search techniques to look for studies conducted within a specific region or country.

### C. RESEARCH FINDING AND DISCUSSION

The following are the steps in conducting a systematic literature review (SLR) in this study

1. Determine the research question: The researcher should clearly define the research question that the SLR seeks to answer. In this study, the research question may relate to the dimensions of digital leadership in the public sector and related terms.
2. Creating a list of search terms: The researcher needs to identify terms relevant to the research topic to use in the literature search. In this study, some of the terms used include "digital leadership," "technology leadership," "virtual leadership," "digital leader," and so on.
3. Conducting a literature search: The search was conducted using the Scopus database. The researcher used predefined search terms and applied Boolean search techniques to retrieve relevant articles. In this study, the search was restricted to the publication period between 1998 and 2023 and selected only English language journals
4. Study selection: This step consisted of several steps. First, we screened the titles of relevant articles based on the pre-defined inclusion criteria. Then, the abstracts of the remaining relevant articles were examined using uniform inclusion criteria. Finally, the full texts of the remaining publications were examined to determine which studies to include in the review. The relevant articles were then coded and analyzed for relevant results and conclusions.
5. Study selection: This step consisted of several steps. First, we screened the titles of relevant articles based on the pre-defined inclusion criteria. Then, the abstracts of the remaining relevant articles were examined using uniform inclusion criteria. Finally, the full texts of the remaining publications were examined to determine which studies to include in the review. The relevant articles were then coded and analyzed for relevant results and conclusions.
6. Data evaluation and extraction: In this stage, researchers evaluated the selected studies and extracted relevant data, such as information on authors, year of publication, journal, and article title. This data was used to analyze and present the findings in the study.
7. Data analysis and synthesis: Data from the selected studies were analyzed and synthesized to provide a more complete understanding of the research topic. This involves comparing findings, identifying patterns or trends, and presenting the information in a structured manner
8. Identifying research gaps: One of the objectives of SLR is to identify gaps in previously conducted research. In this stage, researchers try to identify areas of research that have not been extensively researched or require more research in the future.
9. Compiling the SLR report: The results of the SLR are organized and presented in a research report. The report should be transparent and follow reporting guidelines such as PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to improve the quality and transparency of the report.

In the above study, the SLR steps included determining the research question, searching the literature using predefined search terms, selecting studies based on inclusion and exclusion criteria, evaluating and extracting data, analyzing and synthesizing data, identifying research gaps, and preparing an SLR report.

## Content Analysis

Strong leadership, courageous skills, and a sound digital strategy can help organizations achieve the digital agility required for success in the digital age, Bader K. Alnuami (AlNuaimi et al., 2022) emphasised the important role of leadership in managing digital change and enhancing organizations' ability to adopt new technologies. AlNuaimi also discussed the critical role of leadership in mastering digital transformation, agility, and digital strategy in organizations. The study explores the reciprocal relationship between digital leadership, digital agility, and digital strategy, and how they affect organizational performance. The study also highlights the importance of leadership development programmes and fostering a digital culture to enable successful digital transformation. The research offers valuable insights for managers and executives looking to develop effective strategies for digital transformation in their organizations. The findings suggest that leadership plays a critical role in driving successful digital transformation and that organizations should prioritise developing and nurturing leadership capabilities to achieve their digital goals.

Qing Miao (MIAO et al., 2014) explored the relationship between servant leadership, trust, and organizational commitment among public sector employees in China. The study found that servant leadership positively influenced trust and organizational commitment, with trust partially mediating the relationship between servant leadership and organizational commitment. The authors conclude that the implementation of servant leadership in public sector organizations can increase employee trust and commitment, which can contribute to organizational effectiveness. There are two types of normative public values: those reflecting overall public values and those specific to public organizations. This research found that transformational leaders who emphasise both types of normative values are more likely to inspire employees to serve the larger public purpose (Pandey, 2015).

Lu and Guy (Lu & Guy, 2014) in the study stated that ethical leadership has a positive impact on employee work engagement in the public sector. Demircioglu (Demircioglu & Chowdhury, 2021) study investigated the role of leadership behaviour in promoting entrepreneurship in public organizations. Using survey data from public organizations in Turkey, the study found that transformational leadership positively influences entrepreneurial behaviour. In contrast, transactional leadership has a negative impact on entrepreneurship in public organizations.

In Shila Devi Ramadass (Ramadass et al., 2018) study, inter-agency collaboration in the public sector was the main focus to explore the influence of governance, leadership, dependency and relational capital on collaboration outcomes. The study found that good governance and effective leadership greatly contributed to better collaboration outcomes. In addition, high dependency and strong relational capital also have a positive impact on collaboration outcomes. This study provides new insights into the importance of factors influencing collaboration in the public sector and offers practical implications for leaders and managers in the public sector.

Liu (Liu et al., 2020) discussed the importance of developing e-leadership skills for leaders in the United States and South Korea in order to optimise the benefits of technology and maintain good relationships with subordinates. This study shows that national cultures influence the views and behaviours of leaders and subordinates regarding technology and e-leadership. The results show that South Korean leaders are more likely to make decisions faster by using technology, while US leaders are more likely to interact directly with their subordinates. In addition, national culture also influences the way subordinates respond to e-leadership, where South Korean subordinates are more likely to accept and obey leaders' decisions directly, whereas US subordinates are more likely to provide feedback and involve themselves in decision-making.

Susilawati (Susilawati et al., 2021) argues that changes in the way of working and interacting with the public through digital technology are very important in maintaining the performance of public services amid the pandemic. Through good leadership, public organizations can adapt to the changes needed in a fast-changing work environment. The author mentions that digital leadership is a new way of managing public organizations by utilising information technology. Digital leadership can speed up and improve decision-making, increase transparency, and facilitate public access to public services. In this article, the author points out that in Indonesia, the public sector still has challenges in implementing

effective digital leadership. Some of these challenges include a lack of digital knowledge and skills, lack of organizational support, and low levels of community participation in the use of digital public services.

Susilawati also provided some recommendations to improve digital leadership in the public sector. These recommendations include improving training and education for digital skills, improving organizational support and a culture of innovation, and increasing community participation in decision-making and the use of digital public services. There are also several areas that could be further developed, such as discussions on how to maintain data security in the use of digital public services, and how to address the digital divide among older communities or those with limited access to technology.

Liebermann (Liebermann et al., 2021) discusses the implementation of telework in the public sector during the COVID-19 pandemic. The article highlights the impact of such rapid and sudden changes on public sector employees and looks at the challenges faced and solutions found to ensure work effectiveness. The research focuses on employees' perceptions of teleworking, their well-being, and the organizational support provided during the COVID-19 crisis. The findings showed that many employees experienced difficulties in adjusting to the changes, especially with regard to the integration of work life and personal life. However, the support provided by supervisors and organizations can help improve employee well-being and ensure optimal work productivity. This research provides a useful insight into how sudden change can affect public sector employees and provides insights into actions organizations can take to help their employees cope with the challenges faced during a crisis.

Kindarto's (Kindarto, 2020) research findings, showed that transformational and transactional leadership styles had a positive effect on the performance of government IT teams, while the laissez-faire leadership style had a negative impact on performance. In addition, follower and team competencies also play an important role in the relationship between leadership style and team performance. This study suggests that leaders develop transformational and transactional leadership skills and pay attention to follower and team competencies to improve IT team performance in the government sector.

The study conducted by Rybnikova (Rybnikova et al., 2022) discussed digitalisation and e-leadership in local government before the COVID-19 pandemic. This research was conducted using structured interviews in six Baltic and Nordic countries. The study findings show that the adoption of digital technologies varies across regions, with some regions experiencing constraints in technology implementation. In addition, digital leadership in local government is an important concern for decision-makers. This study provides insights into the challenges and opportunities in strengthening digital leadership in local government. This study makes an important contribution to the literature on digitalisation and e-leadership in local government.

There are important issues related to e-leadership such as the use of information and communication technology, community participation, and organizational culture change (Toleikiene et al., 2020). The literature review suggests that e-leadership can improve local government performance and facilitate citizen participation in decision-making. Overall, this article provides a conceptual overview of e-leadership and its relevance in local government.

Information technology can be a game changer in local public management and help achieve public management objectives, some examples of the implementation of the use of information technology in local public management include the use of mobile applications for health services and the use of management information systems to monitor employee performance. These implementations have resulted in challenges emerging in the use of information technology in local public management, such as data security issues and a shortage of skilled human resources (Vilkaite-Vaitone & Povilaitiene, 2022).

The study titled "Does leadership matter in diversity management? Assessing the relative impact of diversity policy and inclusive leadership in the public sector" by Jin, Lee, and Lee (Jin et al., 2017) explores the role of leadership in diversity management within the public sector. The research aims to assess the relative impact of diversity policy and inclusive leadership on organizational outcomes.

The authors conducted an empirical study using survey data collected from public sector employees. They analyzed the data to examine the relationships between diversity policy, inclusive leadership behaviors, and organizational outcomes such as employee satisfaction, commitment, and performance.

The findings of the study indicate that both diversity policy and inclusive leadership have a significant impact on organizational outcomes. The study highlights the importance of having a supportive diversity policy in place to promote inclusivity and diversity within the organization. Additionally, the results emphasize the crucial role of leaders in fostering inclusive work environments and enhancing employee satisfaction, commitment, and performance.

The research contributes to the existing literature on diversity management and leadership by specifically focusing on the public sector context. It provides valuable insights for public sector organizations aiming to improve diversity and inclusion practices and enhance organizational outcomes. However, it's important to note that the review is based on the citation information provided, and I do not have access to the full text of the study. Therefore, the review is limited to the information provided in the citation.

The study found a research gap in the integration of digital leadership with the delivery of public services. Future research can explore how digital leadership practices and strategies can be effectively leveraged to improve the delivery of public services, enhance citizen engagement, and achieve organizational objectives.

The SLR highlighted the need for more research that examines digital leadership within specific public sector contexts, such as local government or specific policy domains. Understanding the nuances and variations in digital leadership across different public sector contexts can provide valuable insights for practitioners and policymakers.

### **Conceptual-digital leadership in Public Sector**

Digital leadership in the public sector refers to the ability of public sector leaders to effectively lead and leverage digital technologies to achieve their organizational goals, and ultimately deliver better services to citizens. It involves the use of digital technologies such as data analytics, artificial intelligence, cloud computing, and the internet of things (IoT) to improve government processes, increase transparency, and enhance citizen engagement.

Conceptually, digital leadership in the public sector involves several key elements, among others:

1. **Vision:** Public sector leaders need to have a clear vision of how digital technology can help their organization achieve its goals and objectives. This involves identifying the potential benefits and challenges of digital transformation, as well as establishing a long-term plan for implementation.
2. **Strategy:** Once the vision is set, leaders need to develop a comprehensive digital strategy that describes how digital technologies will be integrated into their organization's operations, and how they will be used to improve services and citizen engagement.
3. **Governance:** Effective digital leadership also requires strong governance structures and policies to ensure that digital technologies are used in a responsible and ethical manner. This involves establishing data privacy and security guidelines, as well as procurement and vendor management policies.
4. **Talent management:** Leaders need to attract, develop and retain talent with the necessary skills and expertise to successfully implement digital transformation initiatives. This involves investing in training and development programmes, and fostering a culture of innovation and collaboration.
5. **Collaboration:** Digital leadership also involves collaboration with stakeholders both inside and outside the organization, including other government agencies, private sector partners and citizens. This involves building partnerships and networks to share knowledge and resources, and to promote the development of innovative solutions to complex challenges

Overall, digital leadership in the public sector requires a strategic and holistic approach to digital transformation, as well as a commitment to continuous learning and improvement. Effective digital leadership can have a significant impact on public services. Some of these impacts include:

1. **Improved efficiency:** Digital leadership can help improve the efficiency of public services through the use of digital technology to speed up processes and reduce administrative costs.

2. Improved service quality: The application of digital technology can help improve the quality of public services by enabling governments to monitor and improve their performance continuously.
3. Increased transparency: Digital leadership can help improve the transparency of public services by making government-related data and information more accessible to the public.
4. Increased citizen participation: The use of digital technologies in public services can open up opportunities for wider and more active participation from citizens in government decision-making processes.
5. Improved accessibility: The application of digital technology can help improve the accessibility of public services by providing services through digital platforms, making it easier for people to access public information and services from remote places.

Thus, effective digital leadership can help improve public services by providing services that are more efficient, quality, transparent, participatory, and easily accessible to the public. The following is an overview of the concept of digital leadership in the public sector:

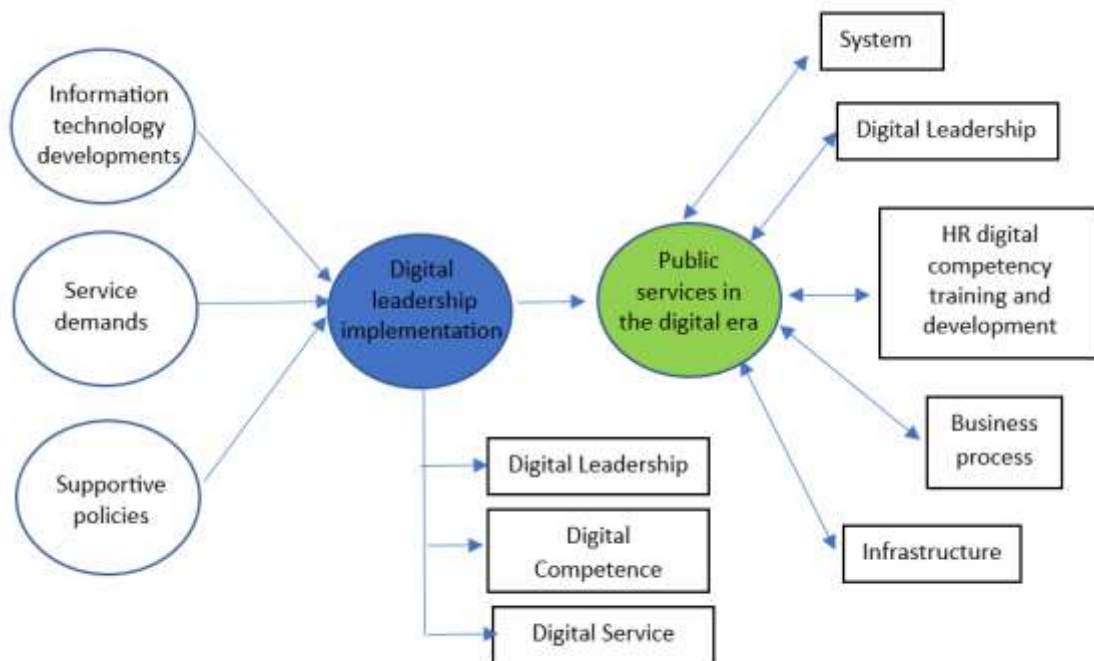


Figure 2. Digital leadership model in the public sector

## Discussion

Digital leadership is becoming increasingly important in the public sector as governments and public sector organizations around the world recognise the transformative power of digital technology. Digital leadership in the public sector involves the ability of leaders to effectively leverage digital technologies to achieve organizational goals and ultimately deliver better services to citizens.

There are several key benefits of digital leadership in the public sector. Firstly, it can improve the efficiency of government operations, thereby enabling service delivery faster and at a lower cost. Second, it can improve the quality of public services by allowing the government to monitor and improve its performance continuously. Third, digital leadership can increase transparency in governance by making data and information related to governance more accessible to the public. Fourth, it can encourage greater citizen participation in government decision-making processes by providing new opportunities for engagement. Finally, digital leadership can improve the accessibility of public services, especially for those living in remote or disadvantaged areas. However, achieving effective digital leadership in the public sector requires significant investment in skills development, talent recruitment and technology infrastructure. Leaders need to have a clear vision of how digital technologies can be leveraged to achieve organizational goals and a well-defined implementation

strategy. They also need to establish strong governance structures and policies to ensure that digital technologies are used responsibly and ethically, particularly with regard to data privacy and security. Furthermore, digital leadership in the public sector requires collaboration and partnership with stakeholders both within and outside the organization. This involves building networks and partnerships to share knowledge and resources and promote the development of innovative solutions to complex challenges.

While digital leadership can bring many benefits to the public sector, there are some drawbacks to be aware of, including:

1. **Inequality of Access:** One of the drawbacks of digital leadership in the public sector is the unequal access to digital technology among the public. Some groups of people, such as those who live in remote areas or are financially disadvantaged, may not have the access or skills to use digital technologies. This can lead to digital divides and inequalities in public services.
2. **Security Risks:** In adopting digital technology, security risks can be one of the significant drawbacks. There are potential security threats such as cyber-attacks, data breaches, and online fraud that can threaten the security of an organization's systems and data. Therefore, security and privacy policies must be well-regulated to minimise such risks.
3. **Budget Limitations:** Adopting digital technology can require significant investment, and limited budgets can be an obstacle to the implementation of digital technology in the public sector. Leaders in the public sector should consider how digital technologies can be adopted with limited budgets and prioritise investments that are most important and provide the greatest benefits.
4. **Cultural Change Challenges:** Digital technology adoption in the public sector can also face the challenge of cultural change. Strong and sometimes rigid organizational cultures can be an obstacle to introducing new digital technologies and changing ways of working. Therefore, cultural change must be managed well so as not to hinder the adoption of digital technology.

To overcome these weaknesses, leaders in the public sector should consider effective strategies and consider the implications of using digital technology in public services. In addition, collaboration and partnerships with various parties can help in overcoming the obstacles faced in adopting digital technology, all of these factors can be discussed for future research

## D. CONCLUSION AND RECOMMENDATION

### Conclusion

Leadership has a crucial role in facing digital challenges in the current era, especially in the public sector, several research findings show a positive relationship between servant leadership, transformational leadership, and ethical leadership with various aspects of organizational performance, such as trust, commitment, employee involvement, and inter-agency collaboration. Based on the research results above, emphasizes the importance of digital leadership in managing digital change, increasing organizational agility, and formulating effective digital strategies. Digital leadership involves using digital technology to improve governance processes, transparency, and citizen involvement in decision-making. Apart from that, there are also several important factors in digital leadership in the public sector, including developing a clear vision, developing a comprehensive digital strategy, implementing strong governance, good talent management, and effective collaboration with relevant stakeholders.

The results of the research show that strong leadership, whether in the form of servant, transformational, or ethical leadership, is very important in achieving organizational success in the digital age. Digital leadership is key to managing change, improving the quality of public services, increasing citizen engagement, and achieving organizational goals effectively. This article provides valuable insights for leaders and managers in the public sector who wish to develop effective strategies for dealing with digital transformation challenges and harnessing the potential of digital technologies for the good of their organizations and society.

Digital leadership in the public sector is essential for governments and public sector organizations to keep pace with the rapid changes brought about by digital transformation. Effective digital

leadership can help improve the efficiency, quality, transparency, participation and accessibility of public services, ultimately delivering better outcomes for citizens. However, achieving effective digital leadership requires significant investment and collaboration across multiple sectors and stakeholders. There are several things to consider in digital leadership in the public sector, including:

1. **Competency Development:** Leaders in the public sector need to have knowledge and skills in digital technologies, so that they can lead and develop effective digital strategies. Therefore, training and competency development should be provided to leaders in the public sector to ensure that they can make the right decisions in implementing digital technology.
2. **Digital Strategy:** Leaders in the public sector should have a clear and measurable digital strategy that is integrated with the organization's strategy. The digital strategy should be defined with the organization's short- and long-term goals in mind, as well as user needs and data-related policies.
3. **Privacy and Security Policies:** Leaders in the public sector need to consider the privacy and security aspects of implementing digital technology. Clear and appropriate policies should be implemented to ensure the protection of user data and the security of digital systems.
4. **Community Participation:** Leaders in the public sector should consider community participation in decision-making, especially those related to digital technology. Community involvement can help ensure that the policies and strategies adopted truly reflect their needs and expectations.
5. **Collaboration and Partnerships:** Leaders in the public sector should collaborate with relevant organizations and build partnerships with the private sector and academia to acquire the necessary resources and share knowledge and experience.
6. **Measurement and Evaluation:** Public sector leaders should monitor and evaluate the performance of the digital strategy to ensure its success and make adjustments where necessary.

With these in mind, leaders in the public sector can lead well in the digital era and ensure that digital technology can be utilised to improve effectiveness and efficiency in public service delivery.

### **Recommendation**

In the midst of an ever-evolving digital era, digital leadership is key to embracing change and realizing success in the public sector. To that end, a number of recommendations can be made to enhance digital leadership and deliver better public services. First, leaders in the public sector need to develop digital leadership through training and developing the necessary digital skills. They should understand the potential and challenges of digital technology and have a clear strategic plan for implementing digital transformation in their organizations.

Furthermore, leaders should also create a culture of innovation and collaboration in the organization. Encouraging employees to share ideas, try new things, and collaborate with external departments and partners can lead to innovative solutions to improve public services. It is also important to increase employee involvement in decision-making and provide career development opportunities. By creating a work environment that supports and empowers employees, leaders can motivate them to make their best contributions and improve organizational performance. In addition, leaders in the public sector should improve their own digital literacy and also facilitate increased digital literacy among employees. A good understanding of digital technology and current trends will enable leaders to make informed and relevant decisions in realizing digital transformation.

Another recommendation is to encourage public participation in decision-making and public service development. By utilizing digital technology to gather feedback and engage citizens in dialogue, leaders in the public sector can create services that are more responsive to people's needs and expectations.

Finally, leaders in the public sector need to find solutions to overcome the challenges and weaknesses of digital change. This includes improving the accessibility of digital training, establishing strong data security policies, and seeking innovative solutions to address technology gaps. By taking these recommendations, leaders in the public sector will be able to develop strong digital leadership, improve organizational effectiveness, and deliver better public services that are responsive to people's needs.

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