A Social Science and Entrepreneurship Journal

ASSET A Social Science and Entrepreneurship Journal

Digital Leadership in the Indonesian Public Sector: A Literature Review

Riki Nuryadin[1], Marlina[2], Peri Herdiyana[3]*

[1*]Faculty of Economics and Business Eduation, Universitas Pendidikan Indonesia, Indonesia
[2]West Java Region 13 Education Service, West Java, Indonesia
[3]Universitas Pendidikan Kampus Tasikmalaya, Universitas Pendidikan Indonesia, Indonesia
*Correspondence e-mail: riki.nuryadin@upi.edu

A B S T R A C T

Digital leadership has become an important aspect in the transformation of the public sector in Indonesia. In the ever-growing digital era, leaders who are able to adopt and utilize information and communication technology effectively have the potential to achieve significant progress in public services. This abstract illustrates the importance of digital leadership in increasing the effectiveness of public services in Indonesia. This research involves literature study and data analysis related to digital leadership and the public sector in Indonesia. Research findings show that digital leadership can accelerate the digital transformation of the public sector and bring various benefits to society. Technology-oriented leaders are able to utilize digital tools to increase transparency, accountability, efficiency and public participation in the decision-making process. It is hoped that the results of this research will provide insight for public leaders, practitioners and academics to understand the important role of digital leadership in increasing the effectiveness of public services in Indonesia. By strengthening digital leadership, it is hoped that the public sector can adapt quickly to technological developments and provide public services that are more effective, efficient and responsive to community needs.

1. INTRODUCTION

Digital leadership has become one of the important aspects in the transformation of the public sector in Indonesia. In an ever-evolving digital age, leaders who are able to adopt and utilize information and communication technologies effectively have the potential to achieve significant advances in public services. This abstract illustrates the importance of digital leadership in improving the effectiveness of public services in Indonesia. This research involves literature study and data analysis related to digital leadership and the public sector in Indonesia. Research findings show that digital leadership can accelerate the digital transformation of the public sector and bring various benefits to society. Technology-oriented leaders are able to leverage digital tools to increase transparency, accountability, efficiency, and public participation in decision-making processes. It is hoped that the results of this study will provide insights for public leaders, practitioners, and academics to understand the important role of digital leadership in improving the effectiveness of public services in Indonesia. By strengthening digital leadership, it is expected that the public sector can adapt quickly to technological developments and provide public services that are more effective, efficient, and responsive to the needs of the community.

Through the use of online platforms, government agencies can provide easier access to public information, policies, and decision-making. This enables broader public participation, more effective oversight, and builds trust between government and society. Research conducted by Alnuaimi (AlNuaimi et al., 2022) highlights the importance of leadership in mastering an organization's digital transformation. Research findings show that strong and proactive leadership in adopting digital technologies has a positive relationship with digital transformation success. Leaders who demonstrate commitment, vision, and initiative in implementing digital strategies are able to steer the organization towards successful transformation.

In this era of change, leaders and agencies who are able to adapt quickly, master technology, and combine innovation with strong leadership values will be able to face the challenges of the digital age. Wise leadership, able to motivate and empower team members, build an innovative work culture, and provide better public services. Leadership and agencies that successfully address the challenges of the digital age will transform into resilient and sustainable forces amid increasingly complex competition in an increasingly digitally connected world.

Aliardo (Aliardo, 2022) believes that the digital transformation process of society must be followed by policies of government leaders to encourage and prioritize the development of digital communication technology infrastructure. In addition, Indonesia's future leaders must also set an example for the public to start using digital technology in daily activities that are currently available and make policies to change the work culture that is usually carried out offline to cultivate online work activities.

The internet penetration rate in Indonesia continues to increase in line with the growth of telecommunications infrastructure, technological developments, and increasingly affordable devices. In recent years, internet adoption has also accelerated thanks to the development of e-commerce, social media, and other online services. In January 2023, internet users in Indonesia will reach 212.9 million, which means that more than 76% of the population in Indonesia uses the internet and an increase of 3.85% from the previous year.
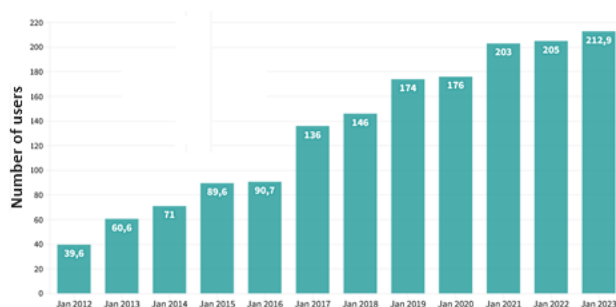
(Source: dataindonesia.id)
Figure 1. Number of internet users in Indonesia

Figure 1 shows that according to a statistical report issued by BPS in 2021, the number of people who use the internet has increased significantly, as shown by the increase in the number of people accessing the internet in 2017 by 32.34% to 62.10% in 2021, this is an indication that many people in Indonesia are accustomed to using internet services.

Amaliah & Sawitri (2023) discussed the public sector which faces several challenges in adapting to changing technological developments. These challenges include lack of administrative capabilities, data availability, and environmental uncertainty related to public management in the public sector. In addition, digital transformation must also deal with the existing organizational culture because the transformation process needs to involve every function and all members of the organization. From the external side of the organization, digital transformation needs to consider important aspects of change management such as successfully encouraging relevant stakeholders including customers to change the way they interact with the organization. Therefore, digital transformation requires the support of human resources both from internal and external organizations.

Although there are several articles that discuss digital leadership in the Indonesian public sector, such as Prasojo's article (Prasojo & Holidin, 2018), there is still a gap to more deeply understand how digital leadership can be implemented effectively in the context of the Indonesian government and how the role of digital leadership in driving the digital transformation of the Indonesian public sector. Based on the background above, this problem is interesting to research because it has a crucial role in helping leaders and public bodies face changes in the digital era, carry out effective digital transformation, and improve the quality of public services for an increasingly digitally connected society.

1.   Digital transformation

Digital transformation refers to the fundamental changes that occur in organizations or societies as a result of using digital technologies to change the way they operate, interact, and provide added value. It involves the adoption and integration of digital technologies in all aspects of an organization's activities, including business processes, operating models, work culture, and customer experience.

Digital transformation involves the widespread application of digital technologies, such as cloud computing, artificial intelligence (AI), Internet of Things (IoT), data analytics, and process automation. The goal is to increase efficiency, improve service quality, product innovation, and optimize user experience.These changes are not only related to technology implementation, but also involve changes in culture, skills, and organizational structure. Leaders and individuals at various levels of the organization need to adopt innovative

thinking, be open to change, and be proactive in utilizing digital technology to achieve organizational goals.

Digital transformation is a response to rapid technological developments and changes in an increasingly competitive business environment. Organizations that succeed in digital transformation can create competitive advantage, improve operational performance, better understand and respond to customer needs, and face the challenges and opportunities presented by the digital age. However, digital transformation also introduces new challenges, including data security issues, digital skills adequacy, change resistance, and evolving technological complexity. Therefore, digital transformation requires strong commitment, effective leadership, and a well-planned strategy to ensure success and the achievement of desired results.

Hinnings (Hinings et al., 2018) explained that digital innovation and digital transformation are important factors in institutional change. Vial (Vial, 2019) identifies that digital transformation is a complex and widespread phenomenon, involving changes in various aspects of organizations, technology, and culture. Vial presents a definition of digital transformation and dissects relevant dimensions, such as strategy, structure, processes, and organizational capabilities. In his article, Vial also discusses the factors driving digital transformation, including information technology, innovation, and market pressures. Vial explained that digital transformation can have a significant impact on organizational performance, business strategy, customer relationships, and product development. Digital transformation is a process that involves the use of digital technology to change fundamental aspects of an organization, including strategy, business processes, culture, and customer relationships, therefore it is important to

take a multidisciplinary approach in understanding and studying digital transformation (Verhoef et al., 2021) Digital transformation in government agencies refers to broad changes in government driven by the application of digital technology. They conducted an analysis using structural equation models to identify factors that drive and hinder the government's digital transformation (Tangi et al., 2021). Driving factors include technology adoption, supportive leaders, participation of related actors, and organizational support. Meanwhile, inhibiting factors include policy uncertainty, limited resources, cultural change, and lack of technical capabilities. This article provides important insights into the factors that contribute to the success or failure of government digital transformation. By understanding these factors, governments can identify challenges and opportunities in their digital transformation efforts. The study provides a solid knowledge base for government leaders to develop effective strategies and create an environment that supports successful digital transformation in the context of governance. Digital change not only involves the implementation of new technologies, but also requires changes in the way of thinking and adapting to changes caused by technology (Solberg et al., 2020). Solberg's article presents interesting findings showing that individuals with strong digital mindsets tend to be more adaptive to change, more open to new technologies, and have better abilities at integrating technology in their work. In addition, this article also identifies several factors that can influence the development of digital mindsets, including work experience, education, and leadership.

2. Digital leadership

Digital leadership is a leadership concept that utilizes digital technology to

encourage active community participation in decision-making processes and public services (Fung, 2015). By leveraging digital technologies such as participatory platforms, social media, and online-based applications, digital leadership enables easier interaction between government and society, and expands the accessibility and inclusivity of public participation. The concept of digital leadership also emphasizes the importance of building digital skills and competencies among public leaders. Public leaders must have a good understanding of digital technologies and effective online communication strategies to engage the public.

Digital leadership is a different form of leadership and is necessary for effective management in today's digital era. There are four core elements of e-leadership that are critical for leaders to successfully manage complex and rapidly evolving digital technologies and communications in modern organizations (Wart et al., 2019). The four core elements are (1) vision and strategy, (2) communication, (3) collaboration, and (4) technologist expertise, e-leadership is a different form of leadership and is necessary for effective management in today's digital era. Four core elements of e-leadership are critical for leaders to successfully manage complex and rapidly evolving digital technologies and communications in modern organizations.

Challenges in implementing digital leadership include the digital divide between people, privacy and data security, and ensuring fair representation of various groups in the process of public participation. Overall, digital leadership is a leadership approach that combines digital technology with the principles of public participation, transparency, and inclusivity. Through digital leadership, leaders can strengthen the relationship between government and society, improve the effectiveness of public services, and promote active citizen participation in more inclusive decision-making.

Digital leadership includes certain characteristics that are essential for digital transformation, some leadership characteristics that are important in the context of digital transformation, including openness to technological innovation, customer orientation, ability to adapt to change, information technology prowess, as well as the ability to motivate and inspire team members in the face of changes caused by digital transformation (Porfírio et al., 2021). The findings of research conducted by Porfírio show that effective digital leadership plays an important role in driving and facilitating digital transformation in organizations. Leadership that is able to adopt and leverage technological innovation, as well as direct organizational change by considering customer needs and optimizing information technology capabilities, can make a significant contribution to the success of digital transformation. This research provides a better understanding of the role of leadership in digital transformation, and can be the basis for organizations to develop and strengthen digital leadership in order to achieve success in the digital age.

Anwarudin (Anwaruddin, 2013) highlighted the importance of digital leadership in the transformation of electronic government in Indonesia. In this context, e-Leadership refers to the ability of leaders to direct and manage changes in the use of information and communication technology (ICT) in public service delivery and governance. The study found that there are several key factors influencing the success of e-Leadership in Indonesia. First, leaders' strong understanding and

commitment to digital change and its benefits to government and society. Second, there is clear policy support and adequate technology infrastructure. Third, active community involvement and public participation in designing and implementing e-Government initiatives.

Digital transformation involves the widespread application of digital technologies, such as cloud computing, artificial intelligence (AI), Internet of Things (IoT), data analytics, and process automation. The goal is to increase efficiency, improve service quality, product innovation, and optimize user experience.These changes are not only related to technology implementation, but also involve changes in culture, skills, and organizational structure. Leaders and individuals at various levels of the organization need to adopt innovative thinking, be open to change, and be proactive in utilizing digital technology to achieve organizational goals.

3.   Public sector services

The public sector is a collection of organizations and institutions financed by the government and responsible for the provision of public services, regulation, and implementation of public policies (Peters, 2002). The public sector refers to the part of the economy of a country consisting of government agencies and agencies funded by the government to provide public services to the people. The public sector is responsible for the regulation and implementation of public policies that cover various aspects of people's lives, such as education, health, transportation, infrastructure, security, and so on. In general, the public sector has different goals from the private sector. While the private sector is oriented towards profit and economic growth, the public sector aims to meet the needs of society, improve social welfare, and carry out government functions.

In many countries, the public sector works closely with the private sector and civil society in order to achieve broader development goals. This cooperation is known as a "public-private partnership" or "public-civil partnership" that aims to utilize diverse resources and expertise in order to improve the quality of life of the community. The roles and functions of the public sector may vary from country to country depending on the system of government and policies implemented.

Knies (Knies & Leisink, 2018) explained that strategic HR management in the public sector involves planning, developing, and implementing policies that support the achievement of organizational goals and quality public services. Knies described the importance of strategic HR management in the public sector to achieve organizational goals and meet public service objectives through good management from recruitment to employee development, as well as through effective leadership, the public sector so as to improve the quality of public services they provide

Public sector services in developing countries often face complex challenges, but they also offer opportunities to improve people's quality of life. Reform efforts, investment in infrastructure, improved governance, technological innovation, and civic participation are some of the important steps in improving public sector services in developing countries. Denhardt (Denhardt & Denhard, 2007) voiced the importance of integrity, fairness, collaboration, democracy, and quality public services in the context of new public service. Denhardt invites practitioners and academics in public administration to rethink their roles and responsibilities in serving society, and prioritize values and ethics in their actions. New public service (NPS) is a paradigm or approach in public administration that emphasizes ethical values, social responsibility, and services oriented to the

public interest. NPS emphasizes the importance of building strong relationships between government and society in the delivery of public services.

4.   Digital leadership in the public sector

Digital leadership in the public sector has become an increasingly relevant topic with the development of information and communication technology. Various studies have been conducted to explore understanding of how digital leadership can affect digital transformation and public services in Indonesia. Some of the important findings and aspects that are often discussed in this study include: the role of digital leadership, skills and competencies, digital transformation, and challenges and obstacles that may be found in implementing digital leadership in the public sector.

 One of the efforts made by the government to improve public services is to roll out bureaucratic reform programs. Bureaucratic reform refers to a set of efforts made by the government to change and improve the structure, processes, and culture in the bureaucracy or public administration. The goal is to increase bureaucratic efficiency, transparency, accountability, and responsiveness in providing services to the community. Bureaucratic reform aims to create a bureaucracy that is more efficient, transparent, and responsive to people's needs. By making changes and improvements in bureaucracy, the government hopes to increase public trust and satisfaction with public services provided by the public sector. The study of digital leadership in the public sector in Indonesia provides important insights into how leaders can play a key role

A conceptual framework is presented by Al-Mahrezi (Al-Mahrezi et al., 2021) on digital government competencies for public sector managers in Oman. This article outlines that to achieve the success of digital government, public sector managers who are competent in information and communication technology and capable of leading digital transformation are needed. This article discusses in detail the various competencies required, including: digital literacy, information technology strategy development, change management, leadership, collaboration and innovation. The competence of public sector managers in the context of digital government needs to be built, as they play a central role in developing strategies, leading transformation, and creating environments that support the use of information technology. This is important because information technology is key in providing more effective, efficient and responsive public services

Based on Kusanke's literature review (Kusanke et al., 2023) on building digital leadership in the public sector, the main competencies that digital leaders in the public sector must possess are social cooperation competence, management competence, political-administrative competence, socio-technical competence, social autonomy competence, organizational competence, and technical competence.

2. METHODS

This study used a qualitative approach, using a literature review method. This study aims to determine the role of digital leadership in the public sector in Indonesia, data is collected through literature derived from previous studies sourced from journals, books, and proceeding results relevant to research

problems. Literature review is a systematic, explicit and reproducible method by identifying, evaluating, and synthetizing previous research works (Okoli & Schabram, 2012), literature review is a summary of a subject area that supports the identification of specific research questions (Rowley & Slack, 2004).

Data collection techniques in this study were carried out in several stages, first determining topics and problems, second searching literature using Google Scholar with keywords digital leadership, public sector, and Indonesia. The next step is to analyze and interpret the data or literature.

Figure 2. Stages of research methods

Figure 2 shows the analyze and interpret the data or literature.Next, the table form, is a list of articles and research that are relevant to writing a literature review regarding digital leadership in the public sector in Indonesia:

Table 1. Relevant previous research

No.	Author	Title	Publisher	Research Result
1	Al-Mahrezi, Juma. (2021)	Digital Government Competency for Omani Public Sector Managers: A Conceptual Framework	International Journal of Public Administration in the Digital Age (IJPADA), 8(2), 1-16. DOI: 10.4018/IJPADA.2021070101	The importance of developing digital government competencies as a step towards successful digital transformation in the public sector in Oman.
2	Aminah, S. (2021)	Digital Transformation of the Government: A Case Study in Indonesia	Jurnal Komunikasi: Malaysian Journal of Communication, 37(2), 272-288.	This research shows that digital transformation has brought positive changes in public services and government governance in Indonesia. However, further efforts are still needed to overcome existing challenges and ensure inclusiveness in access and use of digital technology throughout Indonesia.
3	Anwaruddin, A. (2013)	e-Leadership for e-Government in Indonesia	Millennium Development Goals dan Community Initiatives di Asia Pasifik, 177-187. http://dx.doi.org/10.1007/978-81-322-0760-3_14	The conclusion of this research is that electronic leadership has a crucial role in driving digital transformation in the Indonesian public sector
4	AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022)	Mastering digital transformation: The nexus between leadership, agility, and digital strategy	Journal of Business Research, 145, 636-648. ISSN 0148-2963. https://doi.org/10.1016/j.jbusres.2022.03.038	The research results show that strong leadership and high commitment from the leadership towards digital transformation positively influences a successful digital strategy
5	Denhardt, J. V., & Denhardt, R. B. (2000)	The New Public Service: Serving, not Steering	M.E. Sharpe	This research discusses a new concept in public services known as "New Public Service" (NPS). This concept emphasizes the importance of public services that focus on serving the community rather than controlling or directing them
6	Fung, A. (2015)	Putting the Public Back into Governance: The Challenges of Citizen Participation and Its Future	Public Administration Review, 75(4), 513-522. https://doi.org/10.1111/puar.12361	The results of this research emphasize the need to strengthen citizen participation in government governance as an effort to restore the public's role in the decision-making process.
7	Hinings, B., Gegenhuber, T., & Greenwood, R. (2018).	Digital innovation and transformation: An institutional perspective	Information and Organization, 28(1), 52-61. https://doi.org/10.1016/j.infoandorg.2018.02.004	This research proposes an institutional perspective for understanding digital innovation and organizational transformation. This perspective emphasizes the importance of contextual factors, such as culture, norms, and institutions, in influencing the adoption and implementation of digital innovations
8	Knies, E., Leisink, P. (2018)	People Management in the Public Sector. In: Brewster, C., Cerdin, JL. (eds) HRM in Mission Driven Organizations	Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-319-57583-4_2	This research highlights the importance of effective HR management in the public sector and the challenges it faces. Because the public sector has unique missions and goals, HR management must consider this specific organizational context.
9	Matt, C., Hess, T. & Benlian, A (2015).	Digital Transformation Strategies	*Bus Inf Syst Eng* 57, 339–343. https://doi.org/10.1007/s12599-015-0401-5	This research emphasizes the importance of strong leadership in directing digital transformation. Leaders must have a clear vision, the ability to adapt to technological changes, and the ability to influence organizational culture

No	Author	Title	Source	Findings
10	Muñoz, L. A., & Bolivar, M. P. R (2018)	Experiences of e-government development implementation in developing countries: Challenges and solutions. In, International e-government development: Policy, implementation and best practice (pp. 3-18)	Springer.	The importance of involving various stakeholders in the e-government development process. Collaboration between government, the private sector, civil society, and academia is needed to ensure successful e-government development. Involving the public in the planning and implementation stages can increase the adoption and acceptance of e-government.
11	Novita, D. (2014)	Faktor-faktor penghambat pengembangan e-government: Studi kasus pemerintah Kota Palembang, Sumatera Selatan	Jurnal Eksplora Informatika, 4(1), 43–52.	This research provides a better understanding of the factors inhibiting e-government development
12	Porfirio, J.A., Carrilho, T., Felicio, J.A., & Jardim, J. (2021)	Leadership characteristics and digital transformation	Journal of Business Research, 124, 610-619. https://doi.org/10.1016/j.jbusres.2020.10.058.	This research highlights the important role of leadership characteristics in driving digital transformation. By understanding and developing relevant leadership characteristics, organizations can improve their ability to adapt and succeed in an environment that continues to change due to developments in digital technology
13	Prasojo, E., & Holidin, D. (2018)	Leadership and Public Sector Reform in Indonesia	In E. Berman & E. Prasojo (Eds.), Leadership and Public Sector Reform in Asia (Public Policy and Governance, Vol. 30) (pp. 53-83). Emerald Publishing Limited, Bingley. Retrieved from https://doi.org/10.1108/S2053-769720180000030003	This research highlights the importance of leadership in directing and encouraging public sector reform in Indonesia. Researchers identify several factors that influence the role of leadership in reform, including political support, commitment to reform, and leadership quality.
14	Purwoko, Sigit and Rokhman, Ali and, Toburin (2022)	Konsep Dan Pengaruh Kepemimpinan Digital Dalam Transformasi Digital Di Sektor Pemerintahan	Prosiding Seminar Nasional dan Call For Paper 2022 Magister Administrasi Publik . Program Studi Magister Administrasi Publik, Pascasarjana, Untirta, Banten	Organizations that adopt digital transformation become leaner, more efficient, and can adapt to rapid changes in complex environments, leadership has an important role in leading public organizations towards digital transformation
15	Vial, G. (2019)	Understanding digital transformation: A review and a research agenda	The Journal of Strategic Information Systems, 28(2), 118-144. https://doi.org/10.1016/j.jsis.2019.01.003	This research emphasizes that digital transformation is a change process that involves the application of digital technology in all aspects of organizations and society. This article highlights the importance of understanding the concepts and dimensions of digital transformation and the associated implications
16	Van Wart, D. W. (2017)	Operationalizing the definition of e-leadership: identifying the elements of e-leadership	Public Management Review, 19(5), 570-589	This research aims to operationalize the definition of electronic leadership (e-leadership) and identify elements related to this concept
17	Nuryadin, R., Sobandi, A., & Santoso, B. (2023)	Digital Leadership in the Public Sector- Systematic Literature Review	Jurnal Ilmu Administrasi, 20(1), 90–106. https://doi.org/https://doi.org/10.31113/jia.v20i1.934	This article shows that effective digital leadership is essential for governments and public sector organizations to keep pace with the rapid changes brought by digital transformation

3. RESULTS AND DISCUSSION

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

Digital leadership has become one of the important aspects in the transformation of the public sector in Indonesia. In an ever-evolving digital age, leaders who are able to adopt and utilize information and communication technologies effectively have the potential to achieve significant advances in public services. This research illustrates the importance of digital leadership in improving the effectiveness of public services in Indonesia. A systematic review of Cortelazzo (Cortellazzo et al., 2019) analyzed the role of leadership in the digital world and found that digital transformation has a significant impact on leadership, and leaders need to adopt styles and behaviors appropriate to the context. The review also highlights the importance of shared leadership, collaboration, and communication in virtual teams, as well as the need for leaders to develop digital competencies and embrace new technologies. The review suggests that future research focuses on developing new leadership models and theories that can better explain the complex relationship between digital transformation and leadership. Sow's research findings (Sow & Aborbie, 2018) show that leadership style is highly

influential in transforming organizations and employee engagement and input play an important role in the success of change efforts. Leadership styles are influential in organizations and can apply norms, expectations, and desired outcomes during large-scale, transformative projects.

Public services are efforts from the government to meet the needs and interests of the community through various programs and services provided. In the context of e-Government, public services can be improved through the use of information and communication technology. e-Government is a concept that involves the use of information and communication technology (ICT) to improve government efficiency, transparency, and responsiveness in the delivery of public services to the public. e-Government focuses on the use of digital technology to manage and deliver information, administrative processes, and public services electronically.

Novita (Novita, 2014) conducted a case study on obstacles to e-government development in Palembang City government, South Sumatra. This study aims to identify factors that hinder the implementation of e-government at the local level. The author uses qualitative methods by interviewing government officials and collecting data from primary and secondary sources. The results showed several significant inhibiting factors, including budget constraints, lack of adequate technology infrastructure, lack of awareness and technical knowledge, and inconsistent policy changes. This study provides insight into the challenges faced by the Palembang City government in implementing e-government. The results of this study can be a reference for other local governments in overcoming similar obstacles in the

development of e-government. In order to improve public services through digital technology, it is important for governments to overcome these inhibiting factors and build an environment conducive to effective and sustainable implementation of e-government. An article written by Gao and Gunawong (Gao & Gunawong, 2014) identified various factors that led to the failure of E-Government projects, the results showed that such failures were caused not only by technical factors, but also by dynamics involving various actors in the network. Some of the factors identified include conflicts of interest between the parties involved, lack of public involvement and participation, weaknesses in project planning, and regulatory and policy issues. The conclusion of this study is the importance of paying attention to non-technical factors and interactions between actors in planning and implementing e-Government projects. This shows that the success of e-Government implementation depends not only on technical aspects, but also on social, political, and organizational factors involved in the network.

Kane (Kane, 2019) argues that the success of digital transformation also depends on the mindset, skills, and culture of employees, leaders, and the organization as a whole, rather than just investing in technology. The most successful digital transformation begins with a shift in mindset at the employee, lead, and organizational levels. This shift resulted in a cultural shift that allowed companies to become more agile, risk-tolerant, experimental, and collaborative. Conversely, companies that start with technology are often disappointed; Their investments and efforts did not make the expected impact, leaving the company in a worse position in the future. Therefore, companies must focus on talent and

business issues, not just technology, to adapt and compete in the digital age.

Figure 3. Factors that cause e-government failure

Figure 3 shows that public sector reform in Indonesia involves efforts at the national level as well as leadership from the local level that has been empowered through decentralization previously (Prasojo & Holidin, 2018). National government reform efforts are based on the values of public services, increased efficiency, and eradication of corruption, although the National Development Agency and the Ministry of Administrative Reform provide central impetus and coordination, reforms look quite fragmented across ministries with uneven results, there are concerns about the effectiveness and sustainability of reforms, leadership in reforms is faced with challenges of human capital, processes and Inefficient but legally mandated bureaucratic structures, as well as challenges of public mistrust and disobedient civil servants.

Developing countries face unique challenges in implementing e-government, such as limited technological resources, low digital literacy, lack of adequate infrastructure, and policy and regulatory issues (Alcaide Muñoz & Rodríguez Bolívar, 2018). The study concludes that in the face of these challenges, developing countries can adopt a number of solutions. Some of the solutions found include cooperation and collaboration between the government and the private sector, active community involvement in decision making, human resource capacity building, and the use of adaptive and flexible approaches in e-government planning and implementation.

Matt's article (Matt et al., 2015) provides a framework for a digital transformation strategy that includes four dimensions: technology use, changes in value creation, structural changes, and financial aspects. The authors emphasize the importance of aligning these dimensions with overall organizational strategy and suggest that organizations need to establish management practices to govern this complex transformation. However, the article also notes that there is a lack of specific guidelines for companies on how to formulate, implement, and evaluate digital transformation strategies, thus opening up opportunities for further research in this area.

A literature review of Nuryadin (Nuryadin et al., 2023) on digital leadership in the public sector found that effective digital leadership is essential for governments and public sector organizations to keep pace with the rapid

changes brought about by digital transformation. This requires a strategic and holistic approach to digital transformation, as well as a commitment to continuous learning and improvement. This study provides valuable insights for leaders and managers in the public sector who want to develop effective strategies to meet the challenges of digital transformation and harness the potential of digital technologies for the good of organizations and society. The study also highlights the need for more research examining digital leadership in specific public sector contexts, such as local government or specific policy domains.

The comprehensive measures proposed in the literature review (Kusanke et al., 2023) help equip leaders with the necessary skills and knowledge to meet the challenges of digital transformation. "Digital Leadership" centers, informal learning, digital pilot empowerment, knowledge sharing, simulation games, cross-disciplinary approaches, online learning platforms, partnership programs, and specialist recruitment are some of the steps that can be taken to achieve strong digital leadership competencies.

Research conducted by Aminah (Aminah & Saksono, 2021) discusses the digital transformation of the government in Indonesia through case studies. This study aims to analyze the implementation of digital transformation in the Indonesian public sector. The results show that the digital transformation of the government in Indonesia has had a significant impact, including increasing efficiency, transparency, and accessibility of public services. The study also identifies several factors that influence the success of digital transformation, such as strong policy

support, collaboration between the government and the private sector, and active public participation in the use of digital services. The conclusion of this study is that the government's digital transformation has great potential in improving public services in Indonesia. However, there are still several challenges that need to be addressed, including the lack of digital literacy among the public, the gap in technology access, and the need for improved data security and privacy.
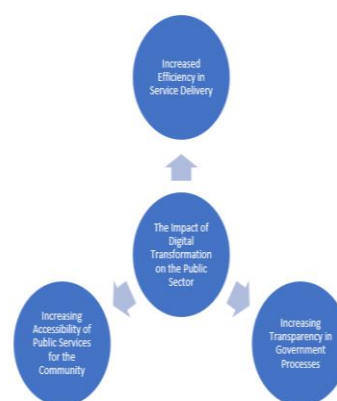

Figure 4. Impact of digital transformation on the public sector

Figure 4 shows that The application of information and communication technology in the government sector enables business processes to be carried out electronically, speed up services, increase efficiency, and reduce errors in carrying out tasks. Organizations that adopt digital transformation become leaner, more efficient, and can adapt to rapid changes in complex environments (Purwoko et al., 2022). Leadership has an important role to play in leading public organizations towards digital transformation. Leaders must have good digital and emotional skills, as well as

agility in the face of change. They need to be able to make innovative and efficient decisions and learn quickly in order to face challenges in the VUCA (Volatility, Uncertainty, Complexity, Ambiguity) era. Digital leadership is a combination of traditional leadership styles with the use of information and digital technology. Digital leaders must understand the concepts and workings of information technology to increase leadership effectiveness in organizations. They must be able to direct human resources, resources, and equipment by utilizing information technology to achieve organizational goals.

The development of e-government as part of the digital transformation of government faces several inhibiting factors that need to be overcome to achieve success. One of the main inhibiting factors is budget constraints. The implementation of digital technology and the development of e-government infrastructure require large investments. However, with limited budgets, governments often find it difficult to make adequate investments, so progress in the provision of digital-based public services is hampered.

The lack of adequate technology infrastructure is also a challenge in the implementation of e-government. Especially in rural or remote areas, stable and fast internet access may not be available. This makes it difficult for the government to provide digital services effectively to the public, due to the limitations of existing technology. Lack of awareness and technical knowledge among government officials and employees is also an inhibiting factor. A lack of understanding of the benefits and potential of digital technologies can hinder the effective adoption and implementation of e-government initiatives. Inconsistent policy changes can also complicate the development of e-government. Frequently changing or inconsistent policies can cause uncertainty in e-government development and hinder effective planning and implementation.

In addition, conflicts of interest and lack of public participation can also be inhibiting factors in the implementation of e-government. Conflicts of interest between various parties involved in e-government development can hinder progress, while lack of public participation in planning and implementing e-government projects can hinder the success of such initiatives. Regulatory and policy issues related to e-government are also an obstacle. Complex or inadequate regulations, as well as policies that do not support the development of e-government, can make it difficult for governments to implement digital initiatives.

The lack of digital literacy among the people and the gap in technology access between urban and rural areas are also inhibiting factors. If people do not have enough digital knowledge and skills, they may find it difficult to use digital services provided by the government. These factors show that e-government, which is the implementation of services and the use of electronic-based systems in Indonesia, faces complex and multidimensional challenges. Overcoming these barriers requires comprehensive efforts, including strong policy support, active engagement of all stakeholders, investment in technology infrastructure, increased digital literacy, and effective coordination between government, private sector, and communities.

In order to address the problems of developing e-government-based public sector services in Indonesia, strong and committed digital leadership is essential. The digital leadership model in Indonesia can start with a strong vision of digital transformation in government and public services. This vision is the foundation for driving comprehensive digital transformation. Digital transformation is supported by three main pillars. First, collaboration and partnership between government, private sector, academia, and civil society. It enables the sharing of resources, knowledge, and experience in overcoming barriers to the development of e-government-based public sector services. Second, strong policy support to direct and facilitate digital transformation in the public sector. Progressive and inclusive policies are an important foundation in creating a conducive environment for the growth of e-government. Third, empowering government employees through training, developing digital skills, and increasing digital literacy.

This empowerment ensures that government employees are ready for technical challenges and can adapt to technological changes. Active community participation is another important pillar. Through community participation, governments can gain valuable input in planning, implementing, and evaluating e-government initiatives. This participation also increases the transparency, acceptability, and effectiveness of digital services provided by the government.

Risk management is an element that should not be ignored. Digital leadership must have the ability to identify, analyze, and manage risks associated with e-government implementation. This includes technical risks, data security, privacy, and social and political risks that may arise

from changes brought about by digital transformation. In this overall model.

Picture 6. Factors influencing digital leadership in the public sector

The model of digital leadership influence in the public sector involves the use of digital technologies and appropriate leadership strategies to improve the performance of public organizations and deliver more effective public services to society. Here is an overview in the form of a model of the influence of digital leadership on the public sector:
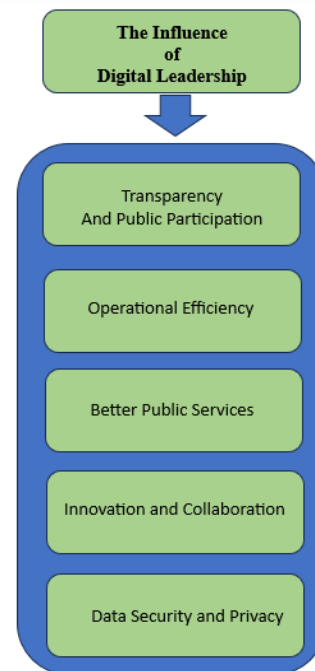
Picture 7. The impact of digital leadership

This model illustrates that digital leadership has an impact on various aspects of the public sector. It starts with the influence of digital leadership, which then leads to increased transparency and public participation, better operational efficiency, enhanced public services, innovation and collaboration, and data security and privacy required in complex digital environments. It is important for leaders in the public sector to understand and implement appropriate digital leadership strategies to achieve desired outcomes and face challenges that arise as technology evolves.

Digital leadership plays a crucial role in advancing digital transformation in the public sector. Strong and committed leadership is needed to drive change, lead digital transformation initiatives, and overcome obstacles that may arise in the process. One important aspect of digital leadership is having a strong vision related to digital transformation in the public sector. This vision should include long-term goals, clear goals, and a view of how technology can be used to improve public services and administrative efficiency. By having a strong vision, leaders can inspire and move the entire organization towards achieving digital transformation goals. In addition, leaders also need to have a good understanding of emerging digital technologies and trends. They must be able to recognize and understand the potential of digital technology to be applied in the public sector, as well as understand the associated risks and challenges. In this case, leaders can act as a liaison between technology and policy, as

well as ensure the use of appropriate technology to achieve organizational goals.

Digital leadership also involves collaboration with various stakeholders, both internal and external. Leaders must be able to build good relationships with the private sector, academia, civil society, and the technology community. This collaboration is important for sharing resources, knowledge, and experience in overcoming barriers and fostering innovation in the public sector.

In addition, digital leadership also involves empowering government employees. Leaders need to identify training and digital skills development needs for employees, and create an environment conducive to digital competency development. Empowering employees will ensure that they are ready for technological changes and can adapt quickly. Other research can be done on other challenges in digital leadership in the public sector including overcoming bureaucratic barriers and slow decision-making processes. Leaders need to have the ability to drive structural and organizational cultural change that enables innovation and adoption of digital technologies.

In addition, leaders must also be able to overcome policy and regulatory barriers that may hinder digital transformation. In the discussion, we can dig deeper into the role of digital leadership in addressing specific challenges faced by the public sector in Indonesia, such as cultural barriers, budget constraints, or lack of digital skills among employees. We can also discuss examples of successful digital

leadership in Indonesia's public sector and lessons learned from their experiences.

5. CONCLUSION

This research uses a qualitative approach with literature review method to explore the role of digital leadership in the public sector in Indonesia. Through data collection from previous studies consisting of relevant journals, books, and proceedings, this study illustrates the importance of digital leadership in improving the effectiveness of public services in Indonesia. The results show that digital leadership in the public sector refers to the ability of public sector leaders to effectively lead and utilize digital technologies such as data analytics, artificial intelligence, cloud computing, and the Internet of Things (IoT) to achieve organizational goals and provide better services to citizens. The implementation of e-government in Indonesia is also an important aspect in the transformation of the public sector. However, there are several inhibiting factors in the implementation of e-government in Indonesia. These factors include budget constraints, lack of adequate technology infrastructure, lack of awareness and technical knowledge, inconsistent policy changes, conflicts of interest and lack of public participation, regulatory and policy issues, as well as lack of digital literacy and technology access gaps. To overcome these barriers, digital leadership has an important role. Digital leadership must develop a clear vision and strategy for adopting digital technologies, leading organizational change toward digital transformation, building technology skills and awareness among employees, and promoting collaboration between government, the private sector, and society in e-government implementation.

Public sector reform in Indonesia also requires strong leadership at both the national and local levels. Government reform efforts should be based on the values of public services, increased efficiency, and combating corruption. However, the challenges of human capital, inefficient bureaucratic processes and structures, and public and civil servants' distrust of reforms need to be confronted.

Leaders in the public sector must have a commitment to drive digital transformation, leaders have a crucial role in improving public sector services through strong digital leadership. One way that can be done is the importance of having a strong vision in leading changes towards better public sector services by utilizing digital technology. In addition to having a strong vision, it is important for a digital leader to have a good understanding of technology trends and digital developments relevant to the public sector. Leaders must be able to recognize and understand the potential of digital technologies, as well as the risks and challenges associated with their implementation. In addition, it is necessary to build collaboration with various stakeholders, be it the private sector, academia, or civil society. Through this collaboration, we can leverage the expertise and resources of others, and promote knowledge exchange and innovation in driving positive change in public sector services.

Empowering public sector employees in the face of technological change can be done through training, developing digital skills, and creating a work environment that supports innovation. By empowering employees, agencies will have teams that are ready to face technological challenges and can actively contribute to positive change in public sector services. No less important must be encouraged process

improvement and efficiency through the application of digital technology. Identify and evaluate processes that can be improved, and collaborate with teams to implement appropriate technology solutions. By improving processes and increasing efficiency, we will be able to provide better services to the community. In a digital leadership role, it's important to constantly learn and adapt to technological developments. Equips organisations to stay informed about the latest trends and innovations, and be open to the use of relevant technologies to improve public sector services. By exercising strong digital leadership, leaders will be key drivers in advancing public sector services through digital technology. Leaders will be able to lead change, drive meaningful collaboration, empower employees, and increase efficiency through the right application of digital technologies. In this effort leaders will play an important role in creating a public sector that is more efficient, transparent, and responsive to the needs of society.

6. REFERENCES

Alcaide Muñoz, L., & Rodríguez Bolívar, M. P. (2018). Experiences of E-Government Development Implementation in Developing Countries: Challenges and Solutions. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International E-Government Development : Policy, Implementation and Best Practice* (pp. 3–18). Springer International Publishing. https://doi.org/10.1007/978-3-319-63284-1_1

Aliardo, M. (2022). The Challenges of Leadership in Indonesia in Implementing the Digital Transformation of Community 5.0 in the Context of Improving MSME Capacity. *Ilomata International Journal of Management*, *3*(2), 166–174. https://doi.org/10.52728/ijjm.v3i2.449

Al-Mahrezi, J., Bakar, N. A. A., & Sjarif, N. N. A. (2021). Digital Government Competency for Omani Public Sector Managers: A Conceptual Framework. In F. Saeed, F. Mohammed, & A. Al-Nahari (Eds.), *Innovative Systems for Intelligent Health Informatics* (pp. 1009–1020). Springer International Publishing.

AlNuaimi, B. K., Kumar Singh, S., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research*, *145*, 636–648. https://doi.org/10.1016/j.jbusres.2022.03.038

Aminah, S., & Saksono, H. (2021). Digital transformation of the government: A case study in Indonesia. *Jurnal Komunikasi: Malaysian Journal of Communication*, *37*(2), 272–288. https://doi.org/10.17576/JKMJC-2021-3702-17

Anwaruddin, A. (2013). e-Leadership for e-Government in Indonesia. In A. Singh, E. T. Gonzalez, & S. B. Thomson (Eds.), *Millennium Development Goals and Community Initiatives in the Asia Pacific* (pp. 177–187). Springer India. https://doi.org/10.1007/978-81-322-0760-3_14

Cortellazzo, L., Bruni, E., & Zampieri, R. (2019). The role of leadership in a digitalized world: A review. *Frontiers in Psychology*, *10*(AUG). https://doi.org/10.3389/fpsyg.2019.01938

Denhardt, J. V, & Denhard, R. B. (2007). *The New Public Service* (2nd Edition). Routledge.

Dwita Amaliah, R., & Runing Sawitri, H. S. (2023). Digital Transformation in the Public Sector: The Role of Leadership and Culture (A Study of Civil Servants in the Statistics Indonesia). *International Journal of Economics, Business and Management Research*, *07*(06), 263–276. https://doi.org/10.51505/IJEBMR.2023.7617

Fung, A. (2015). Putting the Public Back into Governance: The Challenges of Citizen Participation and Its Future. *Public Administration Review*, *75*(4), 513–522. https://doi.org/10.1111/puar.12361

Gao, P., & Gunawong, P. (2014). *Understanding e-Government failure from an actor-network perspective: The demise of the Thai Smart ID Card Open Government and Social Media: A Focus on Transparency View project Flood Twittering: A Marketing and Public Policy Perspective Through the Lens of Actor-Network Theory View project*. http://www.seed.manchester.ac.uk/subjects/idpm/research/publications/wp/igov/

Hinings, B., Gegenhuber, T., & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Information and Organization*, *28*(1), 52–61. https://doi.org/https://doi.org/10.1016/j.infoandorg.2018.02.004

Kane, G. (2019). The Technology Fallacy: People Are the Real Key to Digital Transformation. *Research Technology Management*, *62*(6), 44–49. https://doi.org/10.1080/08956308.2019.1661079

Knies, E., & Leisink, P. (2018). People Management in the Public Sector. In C. Brewster & J.-L. Cerdin (Eds.), *HRM in Mission Driven Organizations: Managing People in the Not for Profit Sector* (pp. 15–46). Springer International Publishing. https://doi.org/10.1007/978-3-319-57583-4_2

Kusanke, K., Kendziorra, J., Pilgenroeder, S., Christmann-Schwaab, T., & Winkler, T. J. (2023). *Association for Information Systems Association for Information Systems BUILDING DIGITAL LEADERSHIP IN THE PUBLIC SECTOR-A BUILDING DIGITAL LEADERSHIP IN THE PUBLIC SECTOR-A LITERATURE REVIEW LITERATURE REVIEW*. https://aisel.aisnet.org/ecis2023_rp/376

Matt, C., Hess, T., & Benlian, A. (2015). Digital Transformation Strategies. In *Business and Information Systems Engineering* (Vol. 57, Issue 5, pp. 339–343). Gabler Verlag. https://doi.org/10.1007/s12599-015-0401-5

Novita, D. (2014). Faktor -Faktor Penghambat Pengembangan E -Government: Studi Kasus Pemerintah Kota Palembang, Sumatera Selatan . *Eksplora Informatika*, *4*(1), 42–53.

Nuryadin, R., Sobandi, A., & Santoso, B. (2023). Digital Leadership in the Public Sector-Systematic Literature Review. *Jurnal Ilmu Administrasi*, *20*(1), 90–106. https://doi.org/https://doi.org/10.31113/jia.v20i1.934

Okoli, C., & Schabram, K. (2012). A Guide to Conducting a Systematic Literature Review of Information Systems Research. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1954824

Peters, B. G. (2002). *The Politics of Bureaucracy* (5th ed.). Taylor & Francis e-Library.

Porfírio, J. A., Carrilho, T., Felício, J. A., & Jardim, J. (2021). Leadership characteristics and digital transformation. *Journal of Business Research*, *124*, 610–619. https://doi.org/10.1016/j.jbusres.2020.10.058

Prasojo, E., & Holidin, D. (2018). *Chapter 3: Leadership and Public Sector Reform in Indonesia* (pp. 53–83). https://doi.org/10.1108/s2053-769720180000030003

Purwoko, S., Rokhman, A., & Tobirin. (2022). E-Leadership : Konsep Dan Pengaruh Kepemimpinan Digital Dalam Transformasi Digital Di Sektor Pemerintahan. *Prosiding Seminar Nasional Dan Call For Paper 2022 Magister Administrasi Publik*, 170–181.

Rowley, J., & Slack, F. (2004). Conducting a literature review. *Management Research News*, *27*(6), 31–39. https://doi.org/10.1108/01409170410784185

Solberg, E., Traavik, L. E. M., & Wong, S. I. (2020). Digital Mindsets: Recognizing and Leveraging Individual Beliefs for Digital Transformation. *California Management Review*, *62*(4), 105–124. https://doi.org/10.1177/0008125620931839

Sow, M., & Aborbie, S. (2018). Impact of Leadership on Digital Transformation. *Business and Economic Research*, *8*(3), 139. https://doi.org/10.5296/ber.v8i3.13368

Tangi, L., Janssen, M., Benedetti, M., & Noci, G. (2021). Digital government transformation: A structural equation modelling analysis of driving and impeding factors. *International Journal of Information Management*, *60*, 102356. https://doi.org/https://doi.org/10.1016/j.ijinfomgt.2021.102356

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, *122*, 889–901. https://doi.org/https://doi.org/10.1016/j.jbusres.2019.09.022

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, *28*(2), 118–144. https://doi.org/https://doi.org/10.1016/j.jsis.2019.01.003

Wart, M. Van, Roman, A., Wang, X., & Liu, C. (2019). Operationalizing the definition of e-leadership: identifying the elements of e-leadership. *International Review of Administrative Sciences*, *85*, 80–97. https://api.semanticscholar.org/CorpusID:157555072