DINASTI INTERNATIONAL JOURNAL OF ECONOMICS, FINANCE AND ACCOUNTING (DIJEFA)
E-ISSN : 2721-303X
P-ISSN : 2721-3021
https://dinastipub.org/DIJEFA dinasti.info@gmail.com +62 811 7404 455

DOI: https://doi.org/10.38035/dijefa.v5i3
Received: 22 June 2024, **Revised:** 07 July 2024, **Publish:** 18 July 2024

Fostering Sustainable Digital Leadership in Educational Organization, Systematic Literature Review using NVIVO and PRISMA

Netaniel Giovanni[1*], Hapzi Ali[2], Ida Nurhaida[3]
[1] Universitas Terbuka, Jakarta, Indonesia: netanielgiovanni@gmail.com
[2] Universitas Bhayangkara Jakarta Raya, Jakarta, Indonesia, hapzi.ali@gmail.com
[3] Universitas Pembangunan Jaya, Tangerang Selatan, Indonesia, ida.nurhaida@upj.ac.id

[*]Corresponding Author: netanielgiovanni@gmail.com

Abstract: This research identifies the role of digital leadership in educational organizations. The analysis uses qualitative analysis. The research method used is SLR (Systematic Literature Review) with the PRISMA protocol through stages supported by the Publish or Perish and NVIVO applications. All supporting publications were searched through Publish or Perish and Dimension Database. The article search results found 543 related studies in 2020-2024, then filtered through the PRISMA protocol to 35 articles selected to answer the research questions. The results of the article are: 1) Sustainable digital leadership involves several essential aspects: agility, resilience, and adaptability. 2) There are 10 sustainable digital leadership competencies that digital leaders need to have: Focus on Vision, Repetitiveness, Communication and Collaboration, Flexibility, Resourcefulness, Risk-Taking and Recovery, Critical Thinking, Culture of Learning, Responsiveness, and Creativity and Innovation. 3) Future leaders must prioritize understanding digital change and assessing digital leadership competencies. This competency development can take the form of training, talent development, support from experts, and digital leadership assessments. 4) Essential to provide financial resources, infrastructure, work environment, and access to the latest learning technology. 5) The most vital aspect of digital leadership is how leaders collaborate and empower to realize the vision, implement change, and create a creative and innovative educational organizational environment.

Keyword: Digital Leadership, Digital Transformation, Educational Organization, NVIVO, PRISMA

INTRODUCTION

Digital leadership is a concept that is gaining attention in the digital transformation era. Many businesses are transforming into digital businesses, including educational organizations. However, educational organizations need to understand the importance of digital leadership in digital transformation. This lack of understanding can hinder an organization's ability to effectively integrate digital technology into the education process and maximize its potential

benefits, thus impacting its overall strategic goals and competitive advantage (ALAwAmRAh et al., 2023). Therefore, developing digital leadership capabilities is crucial for guiding organizations through transformation and ensuring alignment of technological advancements with vision and goals. (Grobman & Joia, 2022)

Educational organizations are facing several challenges, including dealing with the effects of the pandemic, adapting to distance learning, utilizing social media, and integrating information technology. According to Kıyak & Bozkurt (2020), many leaders lack the necessary skills to be effective digital leaders. However, the ongoing changes have compelled organizational leaders to acquire new skills (Ratajczak, 2023).

Digital leadership refers to the ability of leaders to utilize digital technologies and innovations to achieve organizational goals. In educational organizations, digital leadership encompasses digital transformation, the use of data for decision-making, and digital skills development among employees and students (Rizki & Suwadi, 2024). Leadership is a crucial factor that impacts the success or failure of an educational organization Educational organization leaders need to possess digital leadership capabilities (Ridho et al., 2023).

Implementing digital leadership in educational organizations should include understanding their position in the digital world, the vision and strategy of digital transformation, and the protection of works and copyrights (Rizki & Suwadi, 2024). In addition to technology implementation, cultural transformation, and skills development are also important. By understanding the theory and necessary steps, educational organizations can achieve more effective digital leadership to create an organization that is sustainable against change.

Research Question

Based on this background, the problem that will be discussed in this article is formulated as follows:

1. What is Digital Leadership theories and common term that mention in previous studies?
2. What are the challenges that arise in educational organizations regarding Digital Leadership in previous studies?
3. What is Digital Leadership competencies that mention in previous studies?
4. What model of Sustainable Digital Leadership do educational organizations require?
5. How can educational organizations overcome the challenges associated with Sustainable Digital Leadership?

METHOD

This research uses a qualitative method with a Systematic Literature Review (SLR) approach. SLR is a way of synthesizing scientific evidence to answer a particular research question in a way that is transparent and reproducible while seeking to include all published evidence on the topic and appraising the quality of this evidence (Lame, 2019). 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., 2010). In addition, NVIVO, a qualitative data analysis software, was utilized to enhance the management and analysis of qualitative data (Siccama & Penna, 2008).

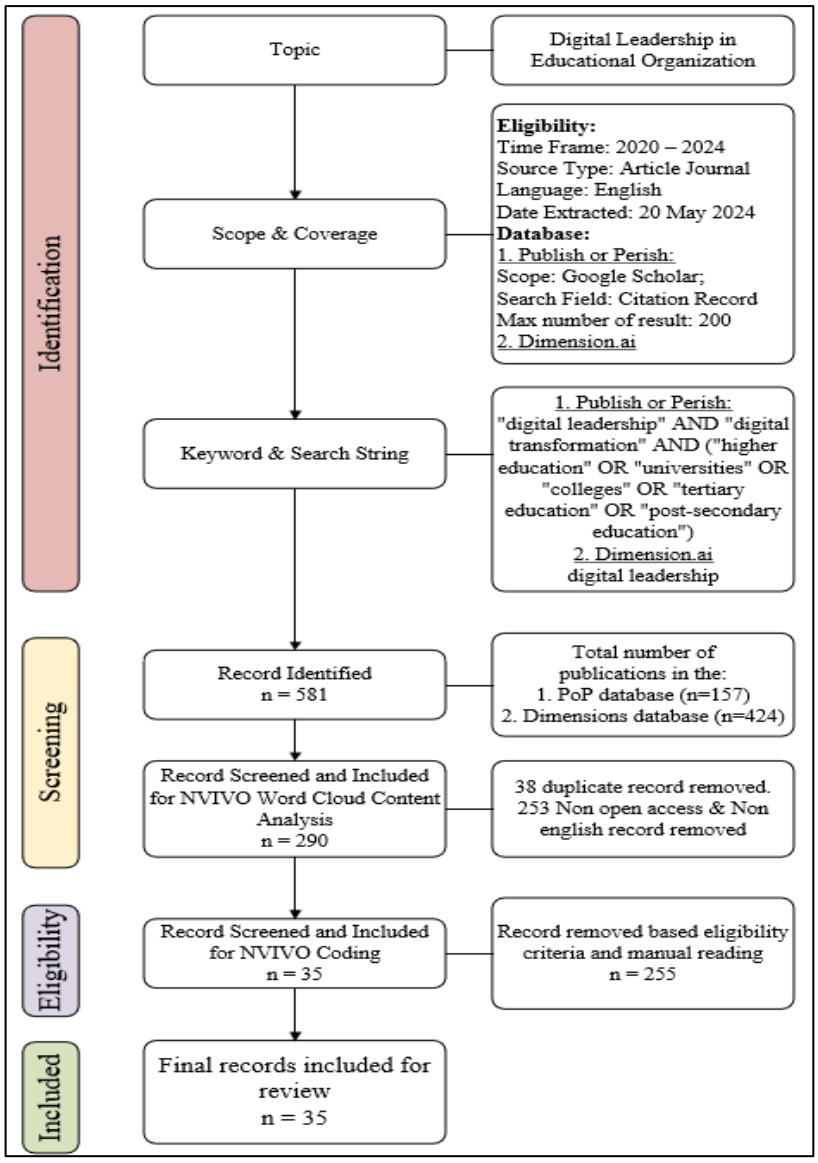
The search terms were conducted using the Google Scholar through Harzing's Publish or Perish Application Database (McGrail et al., 2006) and Dimension Database, the search included terms related to digital leadership that matched the requirements for the operation.

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 (Wahono, 2016). The search sequence was as follows:

Table 1. Search term

Database	Search Keyword
Harzing's Publish or Perish	"digital leadership" AND "digital transformation" AND ("higher education" OR "universities" OR "colleges" OR "tertiary education" OR "post-secondary education")
Dimension.ai	digital leadership

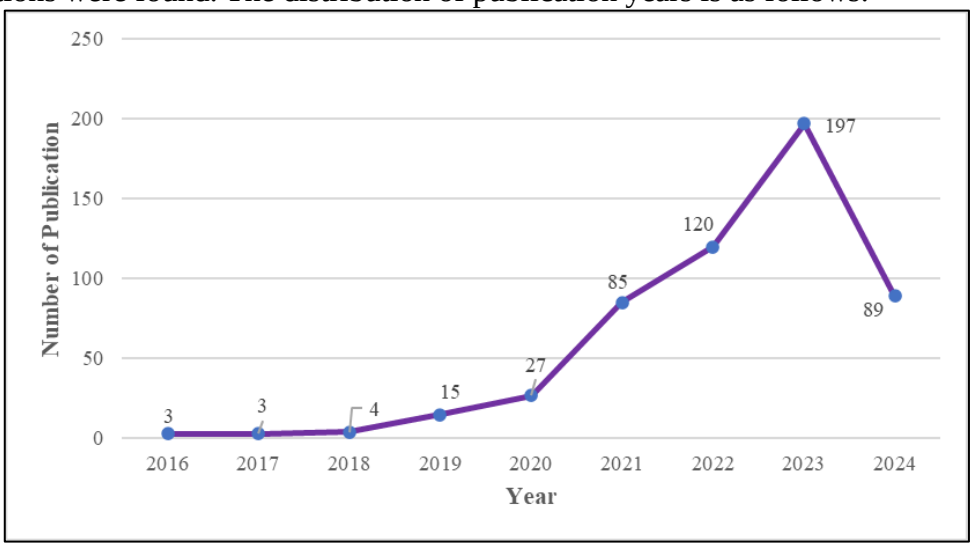
The study selection process involved three stages. Firstly (Identification), 581 articles were collected from the Publish or Perish Application Database and Dimension Database. After removing duplicate articles, 543 unique article titles remained. In the second stage (Screening), these articles were screened based on specific criteria such as open access and published in English language. After filtering, 290 articles were retained. Word cloud analysis was then performed using the NVIVO application. In the final stage (Eligibility), the remaining articles were reviewed based on eligibility criteria through manual reading. This resulted in 35 articles being coded using NVIVO. In conclusion, a total of 35 articles were included for review.



Source: Research Method

Figure 1. PRISMA flowchart

Based on the search results, 543 articles related to digital leadership in educational organizations were found. The distribution of publication years is as follows:



Source: Research data

Figure 2. Number of publications on Digital Leadership

Word cloud analysis was utilized to examine common terms in 290 open-access articles during the screening process (QSR International, 2014). The 10 most popular words from the analysis are digital, leadership, research, technology, management, study, transformation, performance, and education. Below is the result of the word cloud analysis using NVIVO.

Source: Resource Method

Figure 3. Word cloud of 290 open-access articles

Eligibility criteria in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol refer to a set of predefined conditions that studies must meet to be included in a systematic review (Moher et al., 2010). These criteria determine the scope and boundaries of the review by specifying which studies are relevant and appropriate for

answering the research questions. The eligibility criteria used to filter articles for the literature review are as follows:

Table 2. Eligibility criteria

Criteria	Inclusion	Exclution
Period of Search	2020-2024	< 2020
Language	English	Non English
Scope	Digital Leadership in Educational Organization	Non Educational Organization
Source type	Qualitative/Quantitative/Mix Method/Literature Review Journal	Essay, Editor Note, Proceeding.
Access	Open-access (downloadable)	Limited Access

After carefully selecting articles that met the eligibility criteria and reviewing them, 35 out of the initial 581 search results were found to be relevant and included in the review. Below are the titles of these 35 articles.

Table 3. Inclusion of the research result

No	Name	Title	Source	Method	Country
1.	Abdul Musid et al. (2023)	Communication Significance in Digital Leadership: Does it Matter?	International Journal of Academic Research in Business and Social Sciences	Qualitative	Malaysia
2.	Acharya et al. (2022)	Evaluating the impact of a digital leadership programme on national digital priorities: A mixed methods study	BMJ Open	Mix Method	United Kingdom
3.	Agustina et al. (2020)	Influence of the Principal's Digital Leadership on the Reflective Practices of Vocational Teachers Mediated by Trust, Self Efficacy, and Work Engagement	International Journal of Learning, Teaching and Educational Research	Qualitative	Indonesia
4.	ALAwAmRAh et al. (2023)	Transformational Practices of Academic Leaders in Universities: Suggestions for Improvement	Information Sciences Letters	Qualitative	Jordan
5.	Alexandro & Basrowi (2024)	Measuring the effectiveness of smart digital organizations on digital technology adoption: An empirical study of educational organizations in Indonesia	International Journal of Data and Network Science	Quantitative	Indonesia
6.	Badjuka et al. (2024)	Strengthening Higher Education Performance Management	KnE Social Sciences	Qualitative	Indonesia
7.	Chang et al. (2022)	E-Leadership Analysis during Pandemic Outbreak to Enhanced Learning in Higher Education	TEM Journal	Qualitative	Indonesia
8.	Fang (2023)	Examining the Effects of Digital Leadership Strategies on Enhancing Organizational Innovation Performance	Journal of Logistics, Informatics and Service Science	Quantitative	China
9.	Gunawan et al. (2023)	E-Learning As a Form of Technology Application With Digital Leadership	Journal of Engineering Science and Technology	Quantitative	Indonesia

No	Name	Title	Source	Method	Country
10.	Hadi et al. (2024)	The Effect of Digital Leadership and Organizational Support on Innovative Work Behavior: The Mediating Role of Emotional Intelligence	Quality - Access to Success	Quantitative	Indonesia
11.	Hassan & Hamed (2022)	The Role of Digital Leadership in the Effectiveness of Organizational Crisis Management	Journal of Positive School Psychology	Quantitative	Iraq
12.	Jimoh & Adenekan (2024)	Exploring the Dynamics of Digital Transformation Capabilities and Adaptive Performance of Administrative Staff in Public Tertiary Institutions, South-West Nigeria	European Journal of Science, Innovation and Technology	Quantitative	Nigeria
13.	Jogezai et al. (2023)	Teachers Digital Competence In The Post Covid-19 Era: The Effects Of Digital Nativeness, And Digital Leadership Capital	Contemporary Educational Technology	Quantitative	Pakistan
14.	Khalaf & Al (2022)	The Effectiveness of the Practice of Digital Leadership and Information Technology among Public School Principals in the Southern Mazar District from Their Point of View	Journal of Education and Practice	Quantitative	Jordan
15.	Laorach & Tuamsuk (2022)	Factors Influencing the Digital Transformation of Universities in Thailand	International Journal of Innovative Research and Scientific Studies	Quantitative	Thailand
16.	Lim & Teoh (2022)	Predicting the Influence of Digital Leadership on Performance of Private Higher Education Institutions: Evidence from Malaysia	Journal of Entrepreneurship,Business and Economics	Quantitative	Malaysia
17.	Maguatcher & Ru (2023)	Research on Advancing the Digital Transformation of Higher Education in Cameroon	International Journal of Current Research	Mix Method	Cameroon
18.	Malik et al. (2024)	Digital Leadership, Business Model Innovation And Organizational Change: Role Of Leader In Steering Digital Transformation	Benchmarking	Qualitative	Finland
19.	Milton & Al-Busaidi (2023)	New Role of Leadership in AI Era: Educational Sector	SHS Web of Conferences	Qualitative	Oman
20.	Morze et al. (2021)	Educating Future Digital Leaders: Developing e-Governance Curriculum in Estonia and Ukraine	Digital Humanities Workshop	Quantitative	Ukraina
21.	Msila (2022)	Higher Education Leadership in a Time of Digital Technologies: A South African Case Study	International Journal of Information and Education Technology	Qualitative	South Africa
22.	Muniroh et al. (2022)	Managerial Implications on the Relation of Digital Leadership, Digital Culture, Organizational Learning, and Innovation of	Management and Entrepreneurship: Trends of Development	Quantitative	Indonesia

No	Name	Title	Source	Method	Country
		the Employee Performance (Case Study of PT. Telkom Digital and Next Business Department)			
23.	Munsamy et al. (2023)	The Development and Validation of a Digital Leadership Competency Scale	Acta Commercii	Quantitative	South Africa
24.	Phakamach et al. (2023)	Conceptualization and Development of Digital Leadership to Drive Corporate Digital Transformation for Sustainable Success	International Journal of Educational Communications and Technology	Qualitative	Thailand
25.	Rahmanitabar et al. (2023)	Designing a Digital Leadership Model for Managers in Educational Organizations (Case Study: Islamic Azad University, Tehran Province)	International Journal of Innovation Management and Organizational Behavior	Qualitative	Iran
26.	Rizki & Suwadi (2024)	Digital Leadership (Theory and Implementation in Higher Education)	Sean Institute Science Analytic	Qualitative	Indonesia
27.	Saleem & Alqudah (2023)	The Level of Advanced Digital Leadership Practice Among Public School Principals in Karak Governorate from the Point of View of the Teachers Themselves	Journal of Education and Practice	Quantitative	Jordan
28.	Samunderu & Kuhnen (2023)	Redefining Management Competencies in Industry: A Critical Analysis on HR Digital Transformation Efforts	Journal of Digital Innovation for Humanity	Quantitative	Germany
29.	ȘIȘU (2023)	Digital leadership at universities a systematic literature review	Forum Scientiae Oeconomia	Qualitative	Romania
30.	Suharto et al. (2023)	The Role of Digital Leadership, Total Quality Management, and Knowledge Management on Sustainability Management of Vocational Schools	Journal of Research and Educational Research Evaluation	Quantitative	Indonesia
31.	Sunu (2022)	The Impact of Digital Leadership on Teacher's Acceptance and Use of Digital Technologies	Mimbar Ilmu	Quantitative	Indonesia
32.	Tang S. et al. (2022)	Exploration of Technology Transformation-Based Learning Experiences and Higher Education Leadership	Tafkir: Interdisciplinary Journal of Islamic Education	Qualitative	Indonesia
33.	Xie & Wang (2023)	The Connotation Evolution and Enhancement Strategies of Digital Leadership in China's Universities in the Context of Digital Transformation	Advances in Education, Humanities and Social Science Research	Qualitative	China
34.	Yansen & Yujie (2023)	The Impact of Transformative Digital Leadership on Organizational Innovation: A Case Study of Successful Digital Transformation	International Journal of Advanced Research in Technology and Innovation	Qualitative	Malaysia

No	Name	Title	Source	Method	Country
35.	Zayed & Abu (2022)	The Degree of Digital Leadership Practice among Public School Principals in the Minors Education Directorate from the Principals' Point of View	Journal of Education and Practice	Quantitative	Jordan

RESULTS AND DISCUSSION

Leadership

Leadership is the capacity to influence groups to achieve a specific vision or goals (Bush, 2003). A manager is formally appointed and given managerial rank in the organization. Although an organization assigns formal responsibilities to managers, it sometimes follows that they will lead effectively. Nevertheless, leaders can emerge through formal appointment. Since both leaders and followers are part of the leadership process, addressing the issues that followers and leaders face is essential. Leaders and followers must understand their relationship (Robbins & Judge, 2013).

The distinction between management and leadership is clear, but there is also an overlap between the two. Managers engage in leadership when they influence a group to achieve its goals, while leaders engage in management when they are involved in planning, organizing, staffing, and controlling. Both management and leadership involve influencing a group to reach its objectives (Northouse, 2016).

Leadership involves using authority and responsibility to influence members in the organization to achieve measurable goals through intelligence, appreciation, motivation, and cooperation with subordinates (Nguyen et al., 2020). Effective leadership is about inspiring and winning commitment. Leadership is more about personal authenticity and sometimes recognizing personal weaknesses that limit leadership capacity (Tomlinson, 2004).

Leadership is the ability and wisdom of the principal or the school management team to plan and develop a vision for the integration of technology and to influence and guide all teachers, students, and staff to work together to achieve this vision while promoting technological advancement in the educational organization (Xie & Wang, 2023).

Goffee & Jones (2019) described several myths about leadership.

1. Everyone can be a leader.
   Not all organizational leaders possess the self-awareness or creativity required for leadership. Moreover, individuals must have the desire to be leaders, and many talented employees are not interested in taking on that role.
2. Leaders deliver business results.
   Only sometimes. Well-led and well-managed organizations do not consistently deliver good results, especially in the short term. The best strategy is to focus on individuals who deliver the best results, although the reality is not simple. Many competently managed organizations deliver better results than those managed with good leadership.
3. People who get to the top are leaders.
   Not necessarily. One common misconception is that individuals in leadership positions are leaders, but reaching the top may be due to political savvy rather than leadership qualities.
4. Leaders are great coaches.
   Rarely do we find leaders who can inspire and impart technical skills despite the assumption that good leaders are good coaches. While there are great leaders who are also great coaches, they are rare.

Digital Leadership

Digital leadership is the process of using Advanced Information and Technology (AIT) to influence attitudes, feelings, thoughts, behaviors, and performance within individuals, groups, and organizations (Avolio et al., 2000). It involves strategically using digital resources to achieve organizational goals (Phakamach et al., 2023). Digital leadership combines the transformational leadership style with the application of digital technology (Abdul Musid et al., 2023). Transformational leadership involves inspiring change and innovation, which is essential in today's rapidly evolving digital landscape.

Digital leadership in educational organizations plays an important role in successfully implementing digital transformation (Tang S. et al., 2022), relying on digital technologies and resource tools, and applying digital intelligence-based business models (Shuang, 2024). Digital leadership attaches importance to digital mindset awareness and data analysis for decision-making and innovation (Xie & Wang, 2023).

Digital leadership is defined as the ability to set direction, influence others, initiate sustainable change through access to information, and build relationships to anticipate important changes for educatonal organization’s future success (Agustina et al., 2020). Digital leadership promotes educational reform and engages all stakeholders, including learners and teachers, in the process (Alexandro & Basrowi, 2024).

Since the pandemic, digital leadership has helped transform the practice of IT implementation in educational organizations. In several studies, leaders and staff in educational organizations were found to be unprepared for digital transformation and needed to gain competence in using technology (Tang S. et al., 2022), (Chang et al., 2022) and (Al-Hadrami et al., 2024). Digital leadership is essential in implementing distance work, disseminating balanced and accurate information, and ensuring effective and impactful leadership. Effective digital leadership is essential for distance education programs to successfully and efficiently achieve their goals (Chang et al., 2022). Good digital leadership can create an innovative, flexible, practical, and transparent organizational environment by utilizing various digital devices and applications (Alexandro & Basrowi, 2024).

Digital leadership transforms traditional educational approaches through digital technology and technology-based tools to improve teaching and learning. These changes include using online learning platforms, digital resources, webinars, and virtual classes. Digital leadership allows education to be accessed anytime and anywhere, expanding educational opportunities despite location and time constraints. In addition, virtual platforms can strengthen interactions within educational organizations, facilitating information sharing, collaboration in teams, and sharing experiences, ultimately increasing individual knowledge (Rahmanitabar et al., 2023).

In this way, new opportunities can be identified and integrated into educational organizational processes. Moreover, both organizations and executives should possess the digital competencies required to prevent knowledge gaps in relationships between executives and their employees, as well as with external partners and competitors.

Sustainable Digital Leadership

Educational organizations must be agile, resilient, and capable of adapting to technological changes and disruptions (Bushuyeva et al., 2019), (McCann & Holt, 2010), and (Ossiannilsson, 2022). They need to implement sustainable digital leadership to address these increasingly rapid changes. Sustainable digital leadership focuses on applying the latest technologies and developing an organizational culture that supports innovation, resilience, and adaptability.

Sustainable digital leadership involves several essential aspects. First, agility allows organizations to rapidly adapt to changing needs and conditions in the education market.

Agility can be achieved by creating a flexible curriculum and quickly adjusting to student feedback and advancements in educational technology (Chang et al., 2022) and (Ossiannilsson, 2022).

Secondly, resilience ensures that organizations can withstand and recover from various technological or other disruptions. This involves developing robust and redundant systems and training staff to handle crisis situations effectively (Ossiannilsson, 2022).

Thirdly, adaptability means that organizations can adjust strategies and operations based on new information and conditions. Adaptability includes continuous learning, innovating, and integrating new technologies into the learning and management processes (Bushuyeva et al., 2019).

Literature Review

In the case of Ukraine, digital leadership skills are studied in the e-governance curriculum, which the Cabinet of Ministers of Ukraine mandates to form an innovative digital society. Critical components in the learning curriculum include E-service development and design, Data protection, Data integrity and security, Digital capability development case studies, and Digital transformation case studies. Key learning outcomes in the e-governance curriculum include Digital service development, Digital database operations, Digital literacy and digital skills, Digital work tool proficiency, and Re-engineering government services. There are risks and challenges to implementing digital leadership through this e-government curriculum, including low digital competency in stakeholders, low awareness of training options and formats, access to e-learning resources, and access to technology (Morze et al., 2021).

In a study of 14 educational organizations with 373 samples in Nigeria, it was found that digital leadership and digital culture are important factors in efforts to learn new learning methods, improve the ability to think innovatively, improve collaboration skills, actively participate in virtual communication, and commit to improving other abilities to meet job needs along with technological developments (Jimoh & Adenekan, 2024).

A study in South Africa by Msila (2022) also states that visionary and creative digital leadership is able to deal with technological change. Authentic leadership psychologically accommodates its employees. Leaders must be inclusive in their approach and able to instill the organization's vision. Digitalization will not lead to innovation or improve performance without influential leaders.

Digital leadership can be achieved when organizational leaders actively encourage and provide opportunities for their team members to engage directly with digital technology. The 4C formula (Critical thinking, Creativity, Communication, Collaboration) is also essential for digital leadership in educational organizations (Ridho et al., 2023).

In future educational institutions, digital leadership is essential for integrating soft skills, technology, and AI skills into decision-making and long-term vision (Milton & Al-Busaidi, 2023).

In the study by Abdul Musid et al. (2023), it is said that communication is an essential aspect of digital leadership in Malaysia. Digital leadership is related to the Five-dimensional Model of Communication theory (Mowlana, 2019) and The Transactional Model theory (West & Turner, 2010). Based on the five-dimensional model of human communication, digital leadership in education is closely related to only three dimensions: communication with self, communication with others, and communication with technology. In contrast, the other two dimensions, namely, relationship with God and communication with nature, are not closely related. This study also supports the transactional model, meaning that communication in digital leadership occurs intertransactionally and intransactionally.

A study in Cameroon (Maguatcher & Ru, 2023) found that the government has realized the potential of innovative education and encouraged digital transformation in educational organizations. However, the country faces challenges such as a lack of digital infrastructure, internet access, and funding.

Effective digital leadership requires proficient use of information technology and related practices, understanding organizational transformation, and integrating technology and its functions in educational organizations. Professional education development for educators regarding technology integration is needed (Jogezai et al., 2023).

In Jordan, digital leadership is needed to develop and implement digital infrastructure within educational organizations. Digital leadership involves providing modern digital platforms that meet current needs. Efforts should also be made to encourage employees to develop technical skills, embrace organizational changes, and increase financial allocations for digital transformation (ALAwAmRAh et al., 2023).

The dimensions of digital leadership, namely digital competence, digital insight, digital culture, and digital strategy, all affect Organizational Crisis Management (Hassan & Hamed, 2022).

A study in Malaysia by Lim & Teoh (2022) found that learning culture, professionalism, and digital citizenship affect organizational performance. However, visionary leadership and systemic improvement did not.

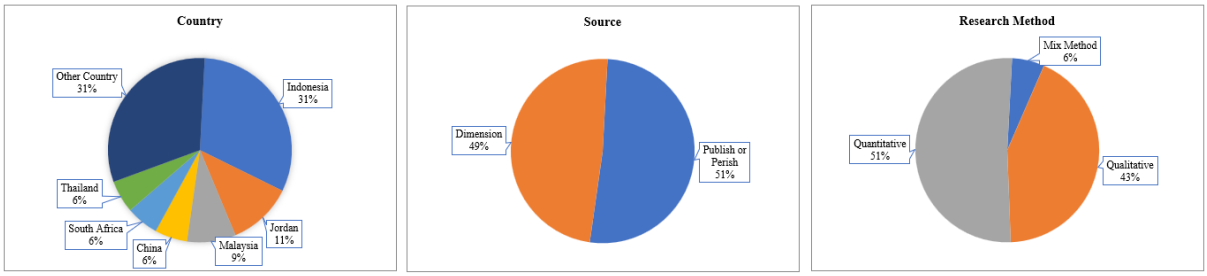
The study highlights several significant challenges in fostering sustainable digital leadership within educational organizations. It reveals that organizations often need more effective leadership (ALAwAmRAh et al., 2023), resistance to cultural change, insufficient innovation, and lack of financial support. Educational organizations need more financial resources and infrastructure, lack necessary training, and difficulties in adapting to continuous technological changes. These challenges are compounded by insufficient confidence in using digital technologies, a lack of strategic planning for digital leadership, and a failure to integrate such plans into the organization's overall strategy (Saleem & Alqudah, 2023). The surveys underscore a critical gap in digital knowledge, which is essential for coping with AI advancements and overcoming associated insecurities (Milton & Al-Busaidi, 2023). Effective digital educational leadership demands proficiency in IT, understanding organizational transformation, advocating for technology integration, and providing professional development avenues for teachers(Jogezai et al., 2023).

Additionally, institutions with unclear goals tend to imitate successful ones, a phenomenon known as mimetic isomorphism (Msila, 2022). The scarcity of digital talent is a significant constraint on digital transformation, with many educational organization leaders lacking the personal digital literacy, management concepts, and design capabilities necessary for supporting digital education and governance (Xie & Wang, 2023). This deficiency significantly weakens digital leadership within these institutions.

There is a significant influence between Total Quality Management and Sustainability Management, as well as between Digital Leadership and Sustainability Management. Digital Leadership has a positive and significant effect on Total Quality Management. Knowledge Management has a positive and significant effect on Total Quality Management. Digital Leadership positively and significantly affects Knowledge Management (Suharto et al., 2023).

Analysis of Qualitative Data Using NVIVO

This study used NVivo software to organize the papers and improve data extraction. This study captured themes related to digital leadership competencies in the literature and visualized them. The analysis process involved coding digital leadership competencies, determining the frequency of words that appeared most often, visualizing these words, and creating a digital leadership competency model.

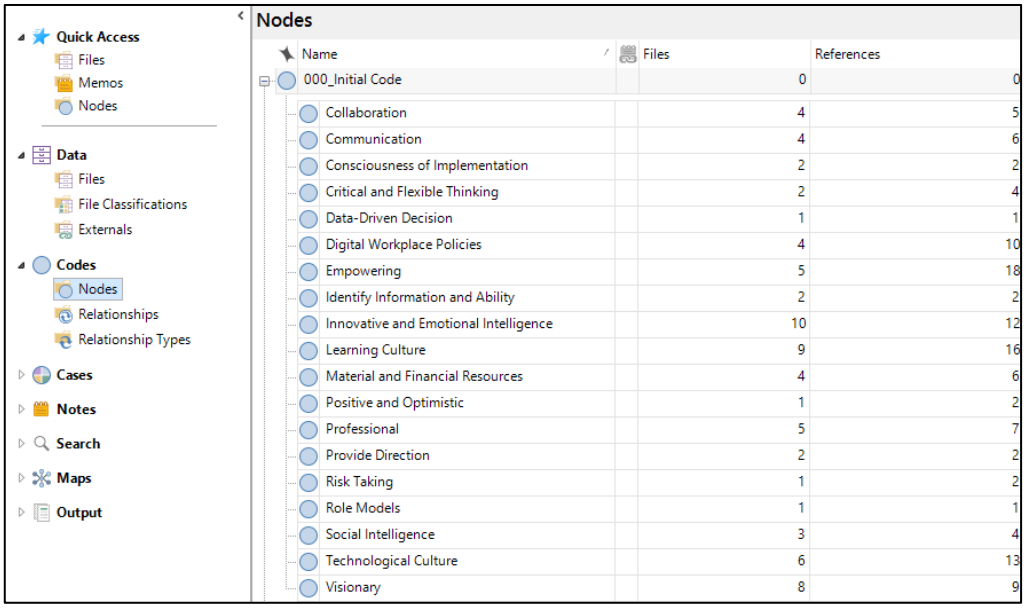


Source: Own elaboration

Figure 4. Distribution of articles

The coding process was conducted in two stages: initial coding to comprehensively capture digital leadership competencies in the reviewed articles and simplification of the coding results to categorize digital leadership competencies related to sustainability in educational organizations.

During the initial coding process, several digital leadership competencies were identified, including: Collaboration, Communication, Consciousness of Implementation, Critical and Flexible Thinking, Data-Driven Decision, Digital Workplace Policies, Empowering, Identify Information and Ability, Innovative and Emotional Intelligence, Learning Culture, Material and Financial Resources, Positive and Optimistic, Professional, Provide Direction, Risk Taking, Role Models, Social Intelligence, Technological Culture, and Visionary.



Source: Own elaboration

Figure 5. Initial coding for digital leadership competencies in NVIVO

The process of categorizing digital leadership educational competencies related to sustainability in organizations is based on competency themes such as agility, resilience, and adaptability. The code of competency themes resulting from the reviewed articles is as follows.

Table 4. Sustainable Digital Leadership Competencies in Educational Organization

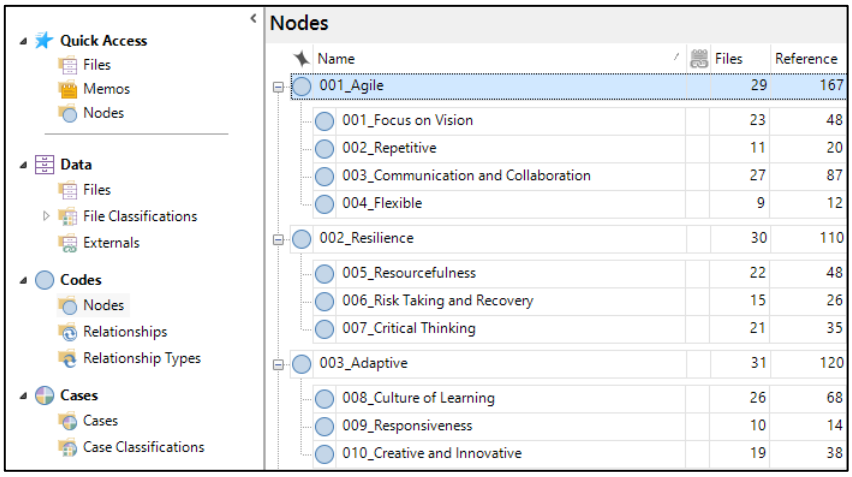
Digital Leadership Competencies	Description	Article	Ref.
Agile		29	167
Focus on Vision	Have good vision, commitment and focus as role model to improve performance. Ensuring alignment with the overall business strategy and objectives.	23	48

Digital Leadership Competencies	Description	Article	Ref.
	Prioritizing and maximizing stakeholder needs and feedback in digital techology.		
Repetitiveness	The same standards of fundamental digital efficiency are used across the organization. Implementing short, iterative cycles for digital project development.	11	20
Communication and Collaboration	Built trust and Positive Attitude. Promoting and encourage teamwork communication using digital platforms. Identify Information and Ability of staff.	27	87
Flexible	Open-minded, being open to changes and share idea in digital and technologies implementation. Develop and manage autonomous work group.	9	12
Resilience		30	110
Resourcefulness	Provide time, financial, resources, and access of digital technolody. Create environment that fasilitating the digital drive. Efficiently managing digital resources specially under stress.	22	48
Risk Taking and Recovery	Maintain data, security, legal, and patent. Quickly restoring digital operations after a disruption. Creating duplicate digital systems or processes for continuity.	15	26
Critical Thinking	Critical and Strategic Thinking initiating change to realize the goals of technology and the creation of media-rich resources. Adoption of technology in a way that is sustainable and benefits relevant stakeholders.	21	35
Adaptive		31	120
Culture of Learning	Emphasizing continuous learning and development in digital contexts. Digital Literacy and Knowledge Management. Individual learning and the professional talent development of digital leaders.	26	68
Responsiveness	Quickly reacting and transform to technological advancements and educational trends.	10	14
Creative and Innovative	Accept the process of errors or failures in development to build innovative environtment and policies. Create and Improve Innovation related to change often causes disruption in innovation including business model innovation, market model innovation, by following an approach that can potentially increase opportunities.	19	38

Model of sustainable digital leadership

Sustainable digital leadership involves several essential aspects: agility, resilience, and adaptability. Organizational leaders and potential future leaders should develop agile, resilient, and adaptive digital leadership to ensure the sustainability of educational organizations. There are 10 sustainable digital leadership competencies that digital leaders need to have:

1. Focus on Vision
2. Repetitiveness
3. Communication and Collaboration
4. Flexibility
5. Resourcefulness
6. Risk-Taking and Recovery
7. Critical Thinking
8. Culture of Learning
9. Responsiveness
10. Creativity and Innovation.



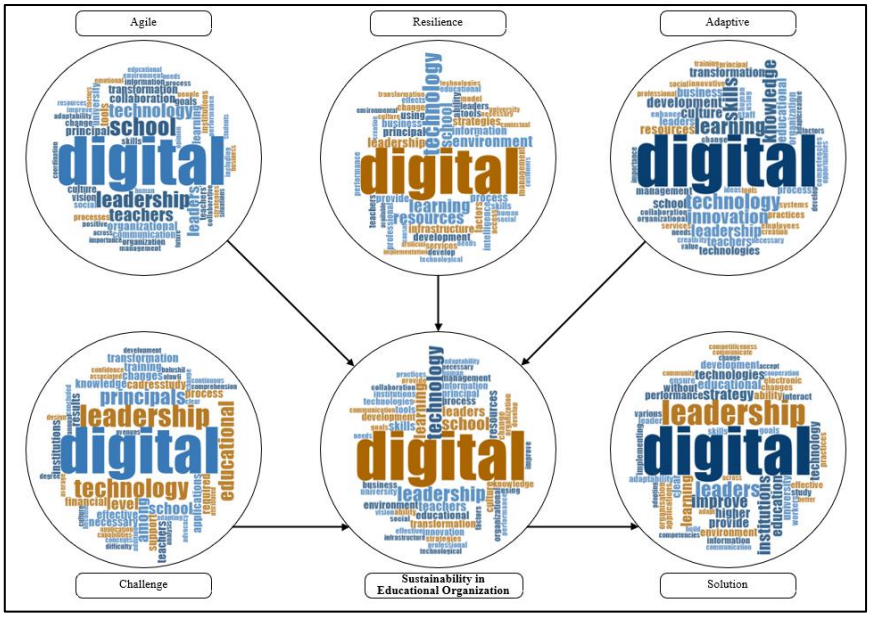
Source: Own elaboration

Figure 6. Sustainable digital leadership competencies qualitative analysis in NVIVO

Agile digital leaders demonstrate a clear vision, strong commitment and serve as role models for improving organizational performance. They ensure alignment with overall business strategy and goals, prioritize stakeholder needs and feedback in digital technologies, and implement consistent digital efficiency standards across the organization. Agile leaders employ short, iterative cycles for digital project development, building trust and fostering positive attitudes. They encourage teamwork and communication using digital platforms, identify necessary information and capabilities, stay open-minded to change, share ideas regarding digital implementation, and develop and manage autonomous work groups. These competencies enable leaders to effectively navigate the complexities of digital transformation, ensuring agility to changing technology and organizational needs.

Resilience digital leaders must ensure that they provide adequate time, financial resources, and access to digital technology. They need to create an environment that fosters digital initiatives and effectively manages digital resources, especially during challenging times. It is essential to maintain data for decision-making, with no compromise in data security, legal compliance, and patent protection. Leaders must be capable of swiftly restoring digital operations after disruptions and creating duplicate digital systems or processes to ensure continuity. They should employ critical and strategic thinking to drive changes that achieve technological goals and create media-rich resources. Additionally, the adoption of technology must be sustainable and beneficial to all relevant stakeholders. These competencies collectively enable leaders to establish resilient digital infrastructures for educational organizations and promote sustainable technological advancements within their organizations.

Adaptive digital leaders must must prioritize continuous learning and development in digital environments. This includes promoting digital literacy and effective knowledge management, as well as supporting individual learning and the professional development of digital leaders. It's crucial for them to react quickly and adapt to technological advancements and educational trends. Embracing the process of making mistakes and learning from failures is essential for fostering an innovative environment and policies. Additionally, leaders should create and enhance innovations, acknowledging that changes often disrupt existing models, such as business and market innovations, by following approaches that can potentially increase opportunities. These adaptive competencies enable leaders to remain flexible and responsive, effectively navigating and capitalizing on the ever-evolving digital landscape.



Source: Data analysis using NVIVO

Figure 7. Model of sustainable digital leadership in educational organization

In order to overcome the challenges associated with promoting sustainable digital leadership in educational institutions, various solutions have been identified. These include the precise definition and implementation of transformational practices, such as raising awareness, providing education and training, ensuring integration, and enhancing readiness. It is crucial to provide modern digital and technical platforms and to encourage acceptance of changes in organizational work environments.

Additionally, increasing financial allocations for transformational practices and developing the skills of technical workers are essential steps. Strategic plans, achievement of educational goals, and proper supervision and control are necessary to facilitate the transfer of educational experiences and technology. High-quality e-learning tools should be provided to ensure effective teaching without obstacles. Organizational leaders should have the authority to organize and make decisions, providing the necessary tools for the community to engage in digital leadership. Utilizing digital leadership and IT can improve managers' performance and elevate the educational level of staff. Providing digital programs for the work environment is crucial to keep pace with public and private sector developments.

Leaders need to possess competencies such as humility, adaptability, vision, and engagement to foster an innovative, flexible, and transparent organizational environment. Leveraging digital strategies, promoting international cooperation, and improving governance are vital for overcoming digital transformation challenges. It is essential to ensure that the people strategy aligns with the digital strategy, including assessing digital leadership competency requirements and implementing a co-created learning and development plan. Finally, adaptive leadership, characterized by continuous learning and development, effective communication, and openness to change, will be essential for navigating the digital era successfully.

CONCLUSION

Sustainable digital leadership involves several essential aspects: agility, resilience, and adaptability. Organizational leaders and potential future leaders should develop agile, resilient, and adaptive digital leadership to ensure the sustainability of educational organizations. There are 10 sustainable digital leadership competencies that digital leaders need to have: Focus on Vision, Repetitiveness, Communication and Collaboration, Flexibility, Resourcefulness, Risk-

Taking and Recovery, Critical Thinking, Culture of Learning, Responsiveness, and Creativity and Innovation.

Future leaders must prioritize understanding digital change and assessing digital leadership competencies. This competency development can take the form of training, talent development, support from experts, and digital leadership assessments. Additionally, it is essential to provide financial resources, infrastructure, work environment, and access to the latest learning technology. Finally, the most vital aspect of digital leadership is how leaders collaborate and empower to realize the vision, implement change, and create a creative and innovative educational organizational environment so that the organization can sustain and improve its performance through the changes that occur.

REFERENCES

Abdul Musid, N., Effendi, M., Matore, E. M., Hanim, A., & Hamid, A. (2023). Communication Significance in Digital Leadership: Does it Matter? *International Journal of Academic Research in Business and Social Sciences*, *13*(5), 1256–1264. https://doi.org/10.6007/ijarbss/v13-i5/16923

Acharya, A., Black, R. C., Smithies, A., & Darzi, A. (2022). Evaluating the Impact of a Digital Leadership Programme on National Digital Priorities: A Mixed Methods Study. *BMJ Open*, *12*(4). https://doi.org/10.1136/bmjopen-2021-056369

Agustina, R., Kamdi, W., Hadi, S., Muladi, null, & Nurhadi, D. (2020). Influence of the Principal's Digital Leadership on the Reflective Practices of Vocational Teachers Mediated by Trust, Self Efficacy, and Work Engagement. *International Journal of Learning, Teaching and Educational Research*, *19*(11), 24–40. https://doi.org/10.26803/ijlter.19.11.2

ALAwAmRAh, A. F., Darawsheh, N. A., Alrashdan, H., Ghalia, N. H., Mustafa, M., Darawsheh, A., Reya, H. A., & Alali, T. I. (2023). Transformational Practices of Academic Leaders in Universities: Suggestions for Improvement. *Information Sciences Letters*, *12*(10), 2767–2774. https://doi.org/10.18576/isl/121025

Alexandro, R., & Basrowi, B. (2024). Measuring the effectiveness of smart digital organizations on digital technology adoption: An empirical study of educational organizations in Indonesia. *International Journal of Data and Network Science*, *8*(1), 139–150. https://doi.org/10.5267/j.ijdns.2023.10.009

Al-Hadrami, A., Al-Aabri, L. S. S., Al Sharjib, H., & Alyaarubi, A. S. S. (2024). The Degree of Academic Leaderships Practice in Universities for the Dimensions of Strategic Digital Leadership. *Kurdish Studies*, *12*(1), 229–244.

Avolio, B. J., Kahai, S., & Dodge, G. E. (2000). E-Leadership: Implications for Theory, Research, and Practice. *Leadership Quarterly*, *11*(4), 615–668. https://doi.org/10.1007/978-3-319-05248-9_1

Badjuka, A., Aneta, A., Abdussamad, Z., & Aneta, Y. (2024). Strengthening Higher Education Performance Management. *KnE Social Sciences*, *2024*, 55–81. https://doi.org/10.18502/kss.v9i7.15466

Bush, T. (2003). Leadership in Education. In M. Brundrett, N. Burton, & R. Smith (Eds.), *University of Leicester*. University of Leicester. https://doi.org/10.4135/9781446215036.n1

Bushuyeva, N., Bushuiev, D., & Bushuieva, V. (2019). Agile Leadership of Managing Innovation Projects. *Innovative Technologies and Scientific Solutions for Industries*, *0*(4 (10)), 77–84. https://doi.org/10.30837/2522-9818.2019.10.077

Chang, C.-L., Arisanti, I., Octoyuda, E., & Insan, I. (2022). E-Leadership Analysis during Pandemic Outbreak to Enhanced Learning in Higher Education. *TEM Journal*, *11*(2), 932–938. https://doi.org/10.18421/TEM112-56

Fang, L. (2023). Examining the Effects of Digital Leadership Strategies on Enhancing Organizational Innovation Performance. *Journal of Logistics, Informatics and Service Science*, *10*(4), 318–335. https://doi.org/10.33168/JLISS.2023.0422

Goffee, R., & Jones, G. (2019). Why Should Anyone be Led by You? In *Harvard Business Review Press*. Harvard Business Review Press.

Grobman, M., & Joia, L. A. (2022). Digital Transformation of Leadership in the Post-Pandemic Era: A Literature Review on E-Leadership and E-Competencies. *XLVI Encontro Da Anpad - EnAnpad*, 2177–2576.

Gunawan, A., Sobandi, A., Santoso, B., Yuniarsih, T., & Ali Muhidin, S. (2023). E-Learning As a Form of Technology Application With Digital Leadership. *Journal of Engineering Science and Technology*, *18*(4), 2192–2204. https://jestec.taylors.edu.my/Vol 18 Issue 4 August 2023/18_4_27.pdf

Hadi, S., Setiawati, L., Kirana, K. C., Lada, S. Bin, & Rahmawati, C. H. T. (2024). The Effect of Digital Leadership and Organizational Support on Innovative Work Behavior: The Mediating Role of Emotional Intelligence. *Quality - Access to Success*, *25*(199), 74–83. https://doi.org/10.47750/QAS/25.199.09

Hassan, N. K., & Hamed, S. A. (2022). The Role of Digital Leadership in the Effectiveness of Organizational Crisis Management. *Journal of Positive School Psychology*, *6*(4). https://journalppw.com/index.php/jpsp/article/view/4305

Jimoh, T. A., & Adenekan, T. E. (2024). Exploring the Dynamics of Digital Transformation Capabilities and Adaptive Performance of Administrative Staff in Public Tertiary Institutions, South-West Nigeria. *European Journal of Science, Innovation and Technology*, *4*(1), 1–14. https://www.ejsit-journal.com/index.php/ejsit/article/view/356

Jogezai, N. A., Koroleva, D., & Baloch, F. A. (2023). Teachers' digital competence in the post COVID-19 era: The effects of digital nativeness, and digital leadership capital. *Contemporary Educational Technology*, *15*(4), ep466. https://doi.org/10.30935/cedtech/13620

Khalaf, B., & Al, A. (2022). The Effectiveness of the Practice of Digital Leadership and Information Technology among Public School Principals in the Southern Mazar District from Their Point of View. *Journal of Education and Practice*, *13*(20), 93–101. https://doi.org/10.7176/jep/13-20-10

Kıyak, A., & Bozkurt, G. (2020). A General Overview To Digital Leadership Concept. In *Uluslararası Sosyal ve Ekonomik ...* (Vol. 1, pp. 84–95). https://dergipark.org.tr/en/pub/gsijses/issue/72093/1160298%0Ahttps://dergipark.org.tr/en/download/article-file/2589357

Lame, G. (2019). Systematic Literature Reviews: An introduction. *Proceedings of the International Conference on Engineering Design, ICED*, *2019-Augus*(July), 1633–1642. https://doi.org/10.1017/dsi.2019.169

Laorach, C., & Tuamsuk, K. (2022). Factors Influencing the Digital Transformation of Universities in Thailand. *International Journal of Innovative Research and Scientific Studies*, *5*(3), 211–219. https://doi.org/10.53894/ijirss.v5i3.646

Lim, C. H., & Teoh, A. P. (2022). Predicting the Influence of Digital Leadership on Performance of Private Higher Education Institutions: Evidence from Malaysia. *Journal of Entrepreneurship,Business and Economics*, *10*(1), 1–38. scientificia.com/index.php/JEBE/article/view/161

Maguatcher, J., & Ru, N. (2023). Research on Advancing the Digital Transformation of Higher Education in Cameroon. *International Journal of Current Research*, *15*(05), 24506–24511. https://doi.org/https://doi.org/10.24941/ijcr.45254.05.2023

Malik, M., Raziq, M. M., Sarwar, N., & Tariq, A. (2024). Digital Leadership, Business Model Innovation And Organizational Change: Role Of Leader In Steering Digital Transformation. *Benchmarking*. https://doi.org/10.1108/BIJ-04-2023-0283

McCann, J. T., & Holt, R. A. (2010). Defining sustainable leadership. *International Journal of Sustainable Strategic Management*, *2*(2), 204. https://doi.org/10.1504/ijssm.2010.032561

McGrail, M. R., Rickard, C. M., & Jones, R. (2006). Publish or Perish: a Systematic Review of Interventions to Increase Academic Publication Rates. *Higher Education Research and Development*, *25*(1), 19–35. https://doi.org/10.1080/07294360500453053

Milton, J., & Al-Busaidi, A. (2023). New Role of Leadership in AI Era: Educational Sector. *SHS Web of Conferences*, *156*, 09005. https://doi.org/10.1051/shsconf/202315609005

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2010). Preferred Reporting Items for Systematic Reviews and Meta-analyses: The PRISMA Statement. *International Journal of Surgery*, *8*(5), 336–341. https://doi.org/10.1016/j.ijsu.2010.02.007

Morze, N., Makhachashvili, R., Mosiashvili, G., & Pappel, I. (2021). Educating Future Digital Leaders: Developing e-Governance Curriculum in Estonia and Ukraine. *Digital Humanities Workshop*, 185–190. https://doi.org/10.1145/3526242.3526253

Mowlana, H. (2019). Human communication theory: a five-dimensional model. *Journal of International Communication*, *25*(1), 3–33. https://doi.org/10.1080/13216597.2018.1560351

Msila, V. (2022). Higher Education Leadership in a Time of Digital Technologies: A South African Case Study. *International Journal of Information and Education Technology*, *12*(10), 1110–1117. https://doi.org/10.18178/ijiet.2022.12.10.1728

Muniroh, M., Hamidah, H., & Abdullah, T. (2022). Managerial Implications on the Relation of Digital Leadership, Digital Culture, Organizational Learning, and Innovation of the Employee Performance (Case Study of PT. Telkom Digital and Next Business Department). *Management and Entrepreneurship: Trends of Development*, *1*(19), 58–75. https://doi.org/10.26661/2522-1566/2022-1/19-05

Munsamy, M., Dhanpat, N., & Barkhuizen, E. N. (2023). The Development and Validation of a Digital Leadership Competency Scale. *Acta Commercii*, *23*(1), 1–15. https://doi.org/10.4102/ac.v23i1.1057

Nguyen, P. T., Yandi, A., & Mahaputra, M. R. (2020). Factors That Influence Employee Performance: Motivation, Leadership, Environment, Culture Organization, Work Achievement, Competence and Compensation (A STUDY OF HUMAN RESOURCE MANAGEMENT LITERATURE STUDIES). *DIJDBM: Dinasti International Journal Business Management*, *1*(4), 645–662. https://doi.org/10.31933/DIJDBM

Northouse, P. G. (2016). Leadership: Theory and Practice. In *SAGE Publication* (Seventh Ed). SAGE Publication.

Ossiannilsson, E. S. I. (2022). Resilient Agile Education for Lifelong Learning Post-Pandemic to Meet the United Nations Sustainability Goals. *Sustainability (Switzerland)*, *14*(16). https://doi.org/10.3390/su141610376

Phakamach, P., Panjarattanakorn, D., & Onsampant, S. (2023). Conceptualization and Development of Digital Leadership to Drive Corporate Digital Transformation for Sustainable Success. *International Journal of Educational Communications and Technology*, *3*(2 SE-Original Articles), 30–42. https://ph01.tci-thaijo.org/index.php/IJECT/article/view/252269

QSR International. (2014). Nvivo 10 for Windows. *Frontiers in Earth Sciences*. https://download.qsrinternational.com/Document/NVivo10/NVivo10-Getting-Started-Guide.pdf

Rahmanitabar, Z., Khorshidi, A., Araghieh, Alireza., Barzegar, N., & Faghiharam, Batoul. (2023). Designing a Digital Leadership Model for Managers in Educational Organizations

(Case Study: Islamic Azad University, Tehran Province). *International Journal of Innovation Management and Organizational Behavior*, *3*(4), 1–8. https://doi.org/10.61838/kman.ijimob.3.4.1

Ratajczak, S. (2023). Agile Leadership Practices in the Digital Transformation of Heis. *Scientific Papers of Silesian University of Technology. Organization and Management Series*, *2023*(185), 409–431. https://doi.org/10.29119/1641-3466.2023.185.23

Ridho, M. R., Indra Lesmana, Heriani Dhia Ayu Safitr, Meirani, R. K., & Prestiadi, D. (2023). Digital Leadership in the Scope of Education. *Proceedings of the International Conference on Educational Management and Technology (ICEMT 2022)*, 52–61. https://doi.org/10.2991/978-2-494069-95-4

Rizki, A. M., & Suwadi. (2024). Digital Leadership (Theory and Implementation in Higher Education). *Sean Institute Science Analytic*, *13*(02), 384–391. https://ejournal.seaninstitute.or.id/index.php/Ekonomi/article/view/4396

Robbins, S. P., & Judge, T. A. (2013). Organizational Behavior. In S. Yagan (Ed.), *Pearson* (15 Ed). Pearson.

Saleem, E., & Alqudah, M. (2023). The Level of Advanced Digital Leadership Practice Among Public School Principals in Karak Governorate from the Point of View of the Teachers Themselves. *Journal of Education and Practice*, *14*(14), 27–43. https://doi.org/10.7176/jep/14-14-04

Samunderu, E., & Kuhnen, A. (2023). Redefining Management Competencies in Industry: A Critical Analysis on HR Digital Transformation Efforts. *Journal of Digital Innovation for Humanity*, 1–36. https://doi.org/10.31355/89

Shuang, W. (2024). Research Status and Enhancement Path of Executive Digital Leadership in the Context of Enterprise Digital Transformation. *Academic Journal of Business & Management*, *6*(3), 152–157. https://doi.org/10.25236/ajbm.2024.060319

Siccama, C. J., & Penna, S. (2008). Enhancing Validity of a Qualitative Dissertation Research Study by Using NVIVO. *Qualitative Research Journal*, *8*(2), 91–103. https://doi.org/10.3316/QRJ0802091

ȘIȘU, J. A. (2023). Digital leadership at universities – a systematic literature review. *Forum Scientiae Oeconomia*, *24*(1), 69–77. https://doi.org/10.24818/RMCI.2023.1.69

Suharto, S., Siswanto, E., Prasetyo, T., & Sarana, S. (2023). The Role of Digital Leadership, Total Quality Management, and Knowledge Management on Sustainability Management of Vocational Schools. *Journal of Research and Educational Research Evaluation*, *12*(1), 2023–2059. http://journal.unnes.ac.id/sju/index.php/jere

Sunu, I. G. K. A. (2022). The Impact of Digital Leadership on Teachers' Acceptance and Use of Digital Technologies. *Mimbar Ilmu*, *27*(2), 311–320. https://doi.org/10.23887/mi.v27i2.52832

Tang S., M., Zulkifli, Bangkara, B. M. A. S. A., Maryam, & Hajja Ristianti, D. (2022). Exploration of Technology Transformation-Based Learning Experiences and Higher Education Leadership. *Tafkir: Interdisciplinary Journal of Islamic Education*, *3*(2), 181–197. https://doi.org/10.31538/tijie.v3i2.249

Tomlinson, H. (2004). Educational Leadership: Personal Growth for Professional Development. In *Belmas*. Belmas. https://doi.org/10.4135/9781446247150

Wahono, R. S. (2016). Systematic Literature Review: Pengantar, Tahapan Dan Studi Kasus. In *Pengaruh Akupresur Lo4 (he kuk) dan Thai Cong terhadap Tingkat Nyeri Persalinan Kala I pada Ibu Bersalin.* (Vol. 9). http://romisatriawahono.net/2016/05/15/systematic-literature-review-pengantar-tahapan-dan-studi-kasus/

West, R., & Turner, L. H. (2010). Introducing Communication Theory: Analysis and Application. In M. Ryan (Ed.), *McGraw-Hill Higher Education* (Forth Edit). McGraw-Hill Higher Education. https://doi.org/10.4148/1051-0834.1223

Xie, Y., & Wang, N. (2023). The Connotation Evolution and Enhancement Strategies of Digital Leadership in China's Universities in the Context of Digital Transformation. *Advances in Education, Humanities and Social Science Research*, *8*(1), 221. https://doi.org/10.56028/aehssr.8.1.221.2023

Yansen, Y., & Yujie, Z. (2023). The Impact of Transformative Digital Leadership on Organizational Innovation: A Case Study of Successful Digital Transformation. *International Journal of Advanced Research in Technology and Innovation*, *5*(1), 57–71. https://doi.org/10.55057/ijarti.2023.5.1.6

Zayed, S., & Abu, Z. (2022). The Degree of Digital Leadership Practice among Public School Principals in the Minors Education Directorate from the Principals' Point of View. *Journal of Education and Practice*, *13*(16), 37–45. https://doi.org/10.7176/jep/13-16-04