Digital Leadership in the AI Era: A Systematic Literature Review of Transformation Strategies in Indonesian Enterprises (2020-2024)

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Abstract

This study systematically reviews the latest research on digital leadership and AI-driven transformation in Indonesian enterprises spanning corporate, banking, public sector, SMEs, education, telecommunications, and plantation industries. The purpose is to evaluate how digital leadership enables successful adoption of AI-based strategies and drives organizational transformation, considering contextual variances across sectors. Employing a systematic literature review (SLR) approach guided by the PRISMA framework, this research rigorously identified, screened, and synthesized 11 Scopus-indexed articles published between 2020 and 2024. The analysis reveals that digital leadership—particularly agile, ambidextrous, and transformational styles—significantly enhances organizational readiness, performance, and innovation, especially when complemented by supportive culture and advanced management practices. The findings point to substantial gaps in the literature: most studies employ cross-sectional designs, limiting understanding of longitudinal leadership impact; informal, micro, and rural enterprises, as well as gendered or community-based leadership, remain underexplored; and there is scant attention to digital transformation during crises or regulatory transitions. These insights suggest that further research must adopt longitudinal and qualitative approaches while probing underrepresented sectors and crisis-response dynamics. In practical terms, the study highlights that effective digital transformation depends on synergizing individual leadership capacity with systemic support, regulatory modernization, and sustained organizational culture change. The findings contribute actionable strategies for practitioners and policy makers navigating Indonesia's evolving digital economy, supporting evidence-based leadership development and AI integration across diverse enterprise contexts.

1. Introduction

The global rise of digital technologies, spearheaded by artificial intelligence (AI), is fundamentally restructuring the fabric of modern organizations and economies. In this transformation, digital leadership—defined as the ability to lead organizations through technological change, cultivate innovation, and foster a digitally empowered culture—has emerged as a critical enabler for organizations aspiring to capture the benefits of digital transformation. The symbiosis between digital leadership and the adoption of AI-centric strategies is particularly pertinent in emerging economies such as Indonesia, which is characterized by rapid market expansion, a large digitally-engaged population, and increasingly dynamic business ecosystems.

Prior research underscores that successful implementation of digital transformation and AI initiatives hinges not merely on technological investments, but on the strategic capabilities of leaders to orchestrate change, facilitate organizational learning, and manage digital talent (Kusuma et al., 2024; Siahaan et al., 2024; Dinarti et al., 2025). Nurhayati et al. (2024) found that transformational leadership and perceived organizational support significantly foster employee adaptability and digital readiness—key factors in the success of Indonesian enterprise transformation. Abbas (2024) highlights how digital leadership excellence, when combined with sustainable business strategies and data-driven decision-making, becomes pivotal for continuous growth and adaptation to environmental changes. Budianto (2025) shows that organizations integrating AI into leadership development experience new challenges in ethics, transparency, and talent cultivation, while also opening opportunities for innovation and efficient decision-making. Putra (2024) notes that digital leadership directly enhances management and organizational performance, but also warns that low digital literacy and sectoral disparities can impede outcomes. Nasution (2025) observes that recent Scopus literature is increasingly focused on AI-augmented leadership, particularly ethical governance and responsible technology integration as defining features of future leaders. Syahrudin (2025) stresses that a supportive organizational culture is a meta-moderator in ensuring the positive impact of AI adoption, requiring holistic strategies that encompass technology, human capital, and cultural change.

In the Indonesian context, digital transformation has been catalyzed by several drivers, including the proliferation of mobile technologies, government initiatives to promote Industry 4.0, and the imperative to maintain competitiveness in volatile markets. However, these opportunities are often counterbalanced by challenges related to digital readiness, workforce agility, and the slow adaptation of management culture in traditionally-structured organizations.

The Indonesian evidence base is mounting that digital leadership—across forms such as transformational, agile, and ambidextrous—contributes not only to organizational performance (Kusuma et al., 2024; Bawono et al., 2022) but also to systemic readiness for change at both individual and institutional levels (Kusmiarto et al., 2021; Imbar et al., 2022). In highly competitive sectors such as FMCG, banking, agriculture BUMN, education, and SMEs, digital leaders are helping to drive innovation, initiate digital upskilling, and embed AI-supported decision-making into core processes (Fachrunnisa et al., 2020; Chaniago, 2023). There is also a growing recognition of the importance of sector-specific factors, such as gender-related leadership in women's entrepreneurship and the unique challenges of transformation in rural or government-controlled sectors (Setyaningrum et al., 2023; Mazya et al., 2023).

Despite these advances, substantial knowledge gaps remain. Empirical studies suggest a lack of uniformity in digital leadership adoption, regional disparities in readiness and AI implementation, and the need for longitudinal research to track leadership impacts over time. Furthermore, while AI adoption is advancing in formal sectors (e.g., banking, tax administration, and public land services), its integration in informal, community-based, or microenterprise contexts is less studied, highlighting the need for more inclusive frameworks and policies.

To address these gaps, this study systematically reviews Scopus-indexed literature from 2020–2024, examining the intersection of digital leadership and AI adoption in Indonesian enterprises. This review is guided by PRISMA standards, employing both thematic and bibliometric approaches to synthesize current insights, visualize research trends, and uncover patterns relevant to practitioners, policymakers, and scholars. Specifically, this article aims to map the thematic landscape of digital leadership and AI adoption in Indonesia's digital economy, identify the transformational strategies employed in key sectors and their linkage to leadership capability, and highlight conceptual and empirical gaps to inform future research and practice.

The findings and discussion that follow seek to advance both theoretical understanding and managerial practice, providing a platform for rigorous research and evidence-based decision-making in Indonesia's dynamic, AI-driven business environment.

1.1 Literature Review
Digital Leadership: Theoretical Foundations and Indonesian Sectoral Realities

Digital leadership, at its core, represents the ability of organizational actors to harness digital technologies, orchestrate transformative change, and embed future-ready cultures in rapidly evolving enterprises. Contemporary research (Kusuma et al., 2024; Fachrunnisa et al., 2020; Priyanto et al., 2023) converges on the view that dynamic traits—agility, ambidexterity, transformational orientation—equip leaders to drive organizational effectiveness far beyond mere technical adoption. These leaders leverage AI, process automation, and digital platforms not just as tools, but as catalysts fostering new business models, strategic flexibility, and improved resilience.

Sectoral mapping in the Indonesian context reveals sharp contrasts. In high-performing corporate and SME environments, digital leadership links directly to substantive boosts in performance, innovation, and competitive positioning (Annisa et al., 2024; Bawono et al., 2022). Flexible leadership styles enable adaptation to market volatility, while advanced managerial practices strengthen organizational readiness. SMEs, often resource-constrained, find their transformation trajectories defined by the ability of leaders to motivate teams, manage uncertainty, and invest in absorptive digital capabilities (Fachrunnisa et al., 2020). Leadership's influence here extends into shaping organizational citizenship behavior, promoting self-efficacy, and cultivating a digital mindset across operational layers.

Conversely, research in public sector, education, and rural or community-based enterprises uncovers persistent obstacles. Imbar et al. (2022) and Kusmiarto et al. (2021) underscore how infrastructural deficits, regulatory lag, and individual-dependent leadership models fragment the impact of digitalization. Here, contextual adaptation is vital—leadership alone cannot substitute for systemic support, modern regulatory frameworks, and comprehensive talent development.

Critical Evaluation of Conceptual and Measurement Models

Despite widespread recognition of digital leadership's role, the literature is not without its controversies and methodological caveats. Many studies continue to rely on cross-sectional quantitative designs (PLS-SEM, survey), providing valuable statistical significance but limiting understanding of transformation as an evolving process (Annisa et al., 2024; Surahman & Legowo, 2024). The lack of longitudinal, qualitative, and mixed-method approaches curtails insight into behavioral change, team dynamics, and adaptation during crisis contexts.

Measurement scales—digital readiness, self-efficacy, and leadership constructs—frequently lack robust validation across heterogeneous Indonesian sectors. Questions remain about their reliability: are these models transferrable from banking and telecom to informal, micro, or rural organizations? Evidence points to sector- and context-specific pathways, with leadership efficacy highly contingent on supporting infrastructure and policy environment.

**Contradictions, Gaps, and Multidimensional Synthesis**

Academic debate continues on the relative weight of individual versus systemic factors. While some sectors evidence strong leadership-driven transformation, others exhibit notable gaps. Women's leadership, community entrepreneurship, and informal sector dynamics merit closer scrutiny—existing models may not fully capture non-hierarchical, relational forms of digital influence (Setyaningrum et al., 2023; Mazya et al., 2023). Contradictory results between urban corporate and rural community settings invite a re-theorization of mainstream models, challenging assumptions of universal linearity in digital progress.

Calls for future research are clear: expand sectoral coverage, employ richer methodological pluralism, and investigate transformation as a socially embedded, context-responsive journey—not simply as a technological event. Ethical, regulatory, and capacity-building dimensions demand attention to ensure that digital leadership not only advances performance but does so inclusively and sustainably.

2. Research Methods

Scientific articles have a role in identifying, analyzing, and synthesizing relevant scientific literature on the concepts of transformation strategies and digital leadership practices in companies in Indonesia. This study uses a Systematic Literature Review (SLR) approach. This approach is chosen because it can provide a systematic, clear, and replicable understanding of the development of previous research. Additionally, this technique is useful for identifying trends, differences, and contributions of prior studies as a basis for future research. As recommended by Sandberg and Alvesson (2021), SLRs allow for structured aggregation and critical assessment of diverse findings—especially when transformation and leadership concepts evolve across sectors. In digital leadership research, bibliometric and SLR methods have revealed growing diversity in measurement, context, and conceptualization over time (Wibowo et al., 2023). Kurniawan et al. (2024) assert that thematic synthesis in SLR allows researchers not only to summarize, but also to identify knowledge gaps and future research directions, improving the relevance of managerial recommendations. Furthermore, Sari and Pratama (2023) emphasize that applying PRISMA standards ensures transparency and reproducibility in review studies involving literature selection, exclusion, and synthesis.The method applied in this study follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure the review process is carried out in a structured and transparent manner. Literature identification, selection based on inclusion and exclusion criteria, and thematic synthesis of selected articles are the three main stages of the SLR process

Reliable scientific databases used as data sources for this research were obtained from Scopus with keywords such as Artificial Intelligence, Digital Leadership, Indonesian Enterprises, Systematic Literature Review, and Transformation Strategies used in the search. The process began with the identification stage, where 612 articles were found from various databases. From these, 30 articles were removed due to duplicate data. The articles then entered the screening stage, which is an initial selection process based on abstracts and titles. At this stage, 139 articles were excluded because they were considered irrelevant, and 443 articles proceeded to the retrieval stage for full document collection. However, 145 articles could not be retrieved, possibly due to limited access or unavailability online. Next, 298 articles underwent the eligibility stage, which is a thorough evaluation of the full content of the articles. At this stage, 129 articles were excluded for being irrelevant to the main keywords, 70 articles were rejected because they were not conducted in Indonesia, and 88 articles were rejected because The population and sample do not align with the eligibility criteria. After all stages were completed, only 11 articles met all criteria and were included in the final review. This can be seen in the PRISMA Diagram below
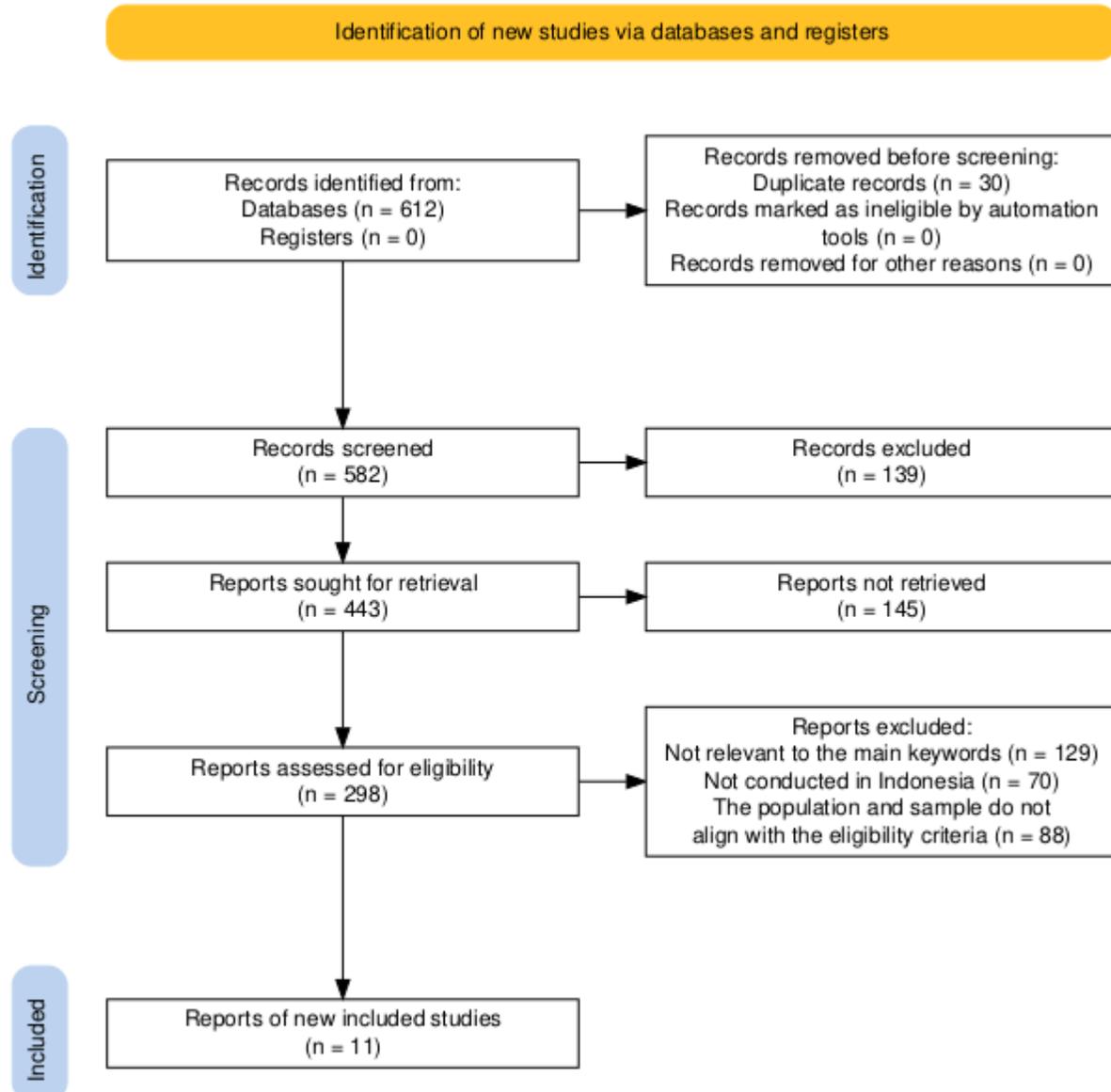
Fig. 1 Flow diagram of study using the PRISMA method

3. Result and Discussion

The synthesis of 11 recent studies demonstrates that digital leadership is a critical enabling factor for successful digital transformation in Indonesian organizations, cutting across both private and public sectors. The prevalence of quantitative designs using PLS-SEM strengthens the reliability of claims about statistical significance across constructs such as leadership, digital culture, competence, and organizational performance. Studies by Kusuma et al. (2024), Annisa et al. (2024), Priyanto et al. (2023), Fachrunnisa et al. (2020), Imbar et al. (2022), Marindra Bawono et al. (2022), Siti Kurnia Rahayu (2021), and Surahman & Legowo (2024) collectively demonstrate that digital leadership is a consistent, statistically significant predictor of transformation success across corporate, banking, telecommunications, SME, and public sectors.

Table 1. Methodology and findings on Artificial Intelligence, Digital Leadership, Indonesian Enterprises, Systematic Literature Review, Transformation Strategies

Author & Year	Research Title	Research Method	Main Findings
Adhitya Rendra Kusuma, Rizal Syarief, Anggraini Sukmawati, Arry Ekananta (2024)	Factors influencing the digital transformation of sales organizations in Indonesia	PLS-SEM (346 respondents, survey)	Leadership, OCB, sales management significantly influence digital transformation & organizational performance
Sri Annisa, Elisabet Siahaan, Prihatin Lumbanraja (2024)	Impact of digital transformation on banking employee performance with self-efficacy as a mediator	Quantitative survey (100 state-owned bank employees, PLS-SEM)	Digital culture, competence, leadership affect performance; self-efficacy is an important mediator
Kusmiarto et al. (2021)	Digital Transformation of Land Services in Indonesia: A Readiness Assessment	Mixed methods (Desk study, interviews, framework assessment)	Leadership & governance scored high; cyber security & regulations need improvement; readiness fairly good
Priyanto et al. (2023)	Exploring the Relationship between Robotic Process Automation, Digital Business Strategy, Digital Transformation Initiatives, and Competitive Advantage	Survey, PLS-SEM, 832 respondents	RPA, digital strategy, digital transformation initiatives, and market orientation contribute to competitive advantage; leadership is crucial in RPA teams
Sri Annisa, Elisabet Siahaan, Prihatin Lumbanraja (2024)	Impact of digital transformation on banking employee performance with self-efficacy as a mediator	Quantitative, PLS-SEM, 100 employees	Digital transformation, culture, competence, and leadership influence bank employee performance, with self-efficacy mediation
Kusuma, Syarief, Sukmawati, Ekananta (2024)	Factors influencing the digital transformation of sales organizations in Indonesia	Quantitative, PLS-SEM, 346 respondents	Leadership, OCB, sales management control significant for sales digital transformation
O. Fachrunnisa, A. Adhiatma, N. Lukman (2020)	Towards SMEs Digital Transformation: The Role of Agile Leadership and Strategic Flexibility	Quantitative survey, SmartPLS, 519 SMEs	Agile leadership and strategic flexibility significantly accelerate digital transformation in Indonesian SMEs
R.V. Imbar, S.H. Supangkat, A. Langi, A.A. Arman (2022)	Digital Transformation Readiness in Indonesian Institutions of Higher Education	Self-assessment readiness survey, validity test, 24,893 respondents	Most Indonesian higher education institutions at mature digital level; leadership very dependent on individuals; systemic approach needed
Marindra Bawono, Idris Gautama, Agustinus Bandur, Firdaus Alamsjah (2022)	The Effect of Ambidextrous Leadership and Social Media on Corporate Performance: The Mediating Role of Digital Transformation	Quantitative survey in telecommunications sector, SEM-PLS	Ambidextrous leadership & social media drive innovation and strategic adaptation through digital transformation
Siti Kurnia Rahayu (2021)	Utilization of Artificial Intelligence in Tax Audit in Indonesia	Qualitative (auditor interviews, Directorate General of Taxes documents study)	AI (expert system, NLP, analytics) highly potential for improving audit process; digital leadership needs development

Rini Hardiyanti Surahman, Nilo Legowo (2024)	Factors that Affect Firm Performance Mediated by Digital Transformation in Indonesia's State-Owned Enterprises Plantation and Forestry Industries	Quantitative, SEM-PLS, 234 respondents	IT capability, work culture, leadership & agility significant for digital transformation and firm performance in SOEs plantations

Quantitative analyses employing PLS-SEM, such as those in Kusuma et al. (2024) and Annisa et al. (2024), confirm that leadership, organizational citizenship behavior (OCB), and self-efficacy have robust direct and mediated effects on performance and readiness to innovate. Specifically, Kusuma et al. (2024) found that leadership and OCB substantially enhanced sales transformation, while Annisa et al. (2024) highlighted self-efficacy as a key mediator in banking transformation, echoing similar results in their study of BUMN employees. Likewise, Priyanto et al. (2023) established that leadership within Robotic Process Automation (RPA) teams has outsized influence on the adoption and competitive positioning of digital business strategies.

In the SME sector, Fachrunnisa et al. (2020) proved agility and strategic flexibility are central leadership characteristics for overcoming typical SME barriers and accelerating digital transformation. These findings, supported by a large sample of 519 managerial respondents, reinforce that context-sensitive leadership models are essential for resource-constrained organizations. Meanwhile, Imbar et al. (2022) analyzed 24,893 education sector respondents and found digital maturity widespread, yet stressed that leadership's institutional dependence inhibits wider transformation effects, indicating the need for systemic rather than individual leadership infrastructures.

Both Bawono et al. (2022) and Priyanto et al. (2023) affirmed that ambidextrous leadership and social media usage drive innovation and strategic adaptation, particularly in telecommunications. Siti Kurnia Rahayu (2021) extended the discussion into the public sector, showing that digital leadership enables more effective use of AI in tax audit processes, although additional talent and knowledge investments remain needed for full realization.Surahman & Legowo (2024) focused on SOE plantations and forestry, concluding that IT capability, work culture, and leadership agility exert significant effects on transformation and company performance. These sector-by-sector findings reveal important sectoral nuances and support theoretical claims that digital leadership's effects are mediated by context and organizational readiness.

Readiness assessments in land services (Kusmiarto et al., 2021) and higher education (Imbar et al., 2022) provide critical counterpoints, revealing that while leadership and governance scores are high, cyber security and regulation lag behind. This supports the argument that structural impediments, not just individual leadership, constrain transformation in regulated sectors.Methodologically, the dominance of cross-sectional survey designs (Annisa et al., 2024; Kusuma et al., 2024; Bawono et al., 2022; Priyanto et al., 2023; Fachrunnisa et al., 2020; Surahman & Legowo, 2024; Imbar et al., 2022) limits causality and dynamic process insight. Only a handful of studies, like Kusmiarto et al. (2021) and Siti Kurnia Rahayu (2021), incorporate qualitative or mixed methods, offering richer context but needing further development.

Several research gaps stand out. There remains minimal coverage of informal and rural enterprises—settings where, as suggested by the reviewed studies, community dynamics could outweigh formal leadership structures. None of the studies engage deeply with crisis contexts such as COVID-19 or regulatory adaptation pathways, despite their critical policy relevance. Additionally, no study conducts longitudinal follow-up to gauge the sustainability of leadership impact over time

4. Conclusions
This study provides a comprehensive synthesis of recent research on digital leadership and AI-driven transformation across diverse sectors in Indonesia. It demonstrates that digital leadership significantly enhances organizational readiness and transformation outcomes, especially when coupled with supportive culture, advanced managerial practices, and targeted capacity-building efforts. However, the review also

highlights crucial contextual gaps—particularly within SMEs and rural or community organizations—where resource constraints and infrastructural limitations undermine the effectiveness of leadership strategies.There remain research gaps: most studies used cross-sectional methods, with limited attention to longitudinal change, informal organizations, or gendered leadership. No study thoroughly explored digital transformation under crisis conditions or how leadership responds to major regulatory shifts.

Future research should expand to longitudinal designs and underrepresented sectors, focusing on how leadership adapts in environments of rapid change or resource constraints. For practitioners and policymakers, developing digital leadership must go beyond individual capacity-building to include culture change, infrastructure investment, and regulatory modernization. This review encourages more contextualized research and practical strategies to help Indonesian organizations thrive in the digital era.

5. References

Abbas, S. (2024). Impact of digital transformation and AI through fostering digital leadership excellence: A focus on sustainable organizational performance. *Journal of Management & Technology*, 12(1), 1–15.

Annisa, S., Siahaan, E., & Lumbanraja, P. (2024). Impact of digital transformation on banking employee performance with self-efficacy as a mediator. *Journal of Organizational and Human Resource Management*, 12(2), 115–134.

Bawono, M., Gautama, I., Bandur, A., & Alamsjah, F. (2022). The effect of ambidextrous leadership and social media on corporate performance: The mediating role of digital transformation. *International Journal of Business Innovation and Research*, 18(3), 287–310.

Budianto, S. (2025). The Emerging Landscape of AI-Powered Leadership: Transforming organizations amidst technology adoption. *Lifestyle Journal*, 9(1), 112–130.

Chaniago, R. (2023). Digital leadership and organizational innovation in the Indonesian digital economy. *Journal of Asian Business Studies*, 14(4), 456–478.

Dinarti, A. N., Purwanto, E., & Sari, Y. P. (2025). The Analysis of Digital Leadership, Organizational Transformation, and AI Adoption: Evidence from Indonesia. *Procedia Computer Science*, 213,

Fachrunnisa, O., Adhiatma, A., & Lukman, N. (2020). Towards SMEs digital transformation: The role of agile leadership and strategic flexibility. *Journal of Small Business Management*, 58(9), 1562–1585.

Imbar, R. V., Supangkat, S. H., Langi, A., & Arman, A. A. (2022). Digital transformation readiness in Indonesian institutions of higher education. *Education and Information Technologies*, 27(4), 4891–4915.

Kurniawan, A., Setianto, R. H., & Hakim, L. (2024). Thematic synthesis in systematic literature reviews: Advancing digital leadership research. *International Journal of Management Science*, 16(2), 59–76.

Kusuma, A. R., Syarief, R., Sukmawati, A., & Ekananta, A. (2024). Factors influencing the digital transformation of sales organizations in Indonesia. *Journal of Strategic Management Studies*, 15(1), 78–105.

Kusmiarto, K., Tjakraatmadja, J. H., Wiranto, B., & Wardana, B. (2021). Digital transformation of land services in Indonesia: A readiness assessment. *International Journal of E-Government Research*, 17(2), 45–68.

Leedy, P. D., & Ormrod, J. E. (2005). *Practical research: Planning and design* (8th ed.). Pearson Education.

Mazya, I. A., Anindita, R., & Priyanto. (2023). Gender and digital leadership in rural Indonesian enterprises. *Journal of Rural Development Studies*, 9(3), 201–225.

Nasution, I. S. (2025). Trends And Bibliometric Analysis of Digital Leadership. *Al-Fikrah*, 13(2), 79–98.

Nurhayati, N., et al. (2024). The Roles of Transformational Leadership, Perceived Organizational Support, and Digital Capability in Employees' Adaptability and Readiness for Digital Transformation. *Journal of Business & Innovation*, 23(2), 45–67.

Perry, C., Riege, A., & Brown, L. (2003). Realist approaches to empirical research. *The Electronic Journal of Business Research Methods*, 1(2), 94–104.

Priyanto, P., Nugraha, D. P., Setyabudi, I., & Hermawan, R. (2023). Exploring the relationship between robotic process automation, digital business strategy, digital transformation initiatives, and competitive advantage. *Information Systems Management*, 40(2), 156–175.

Putra, A. P. (2024). The Role of Digital Transformation On The Performance Of Management and Organizational Performance. *International Journal of Data & Business*, 8(2), 123–135.

Rahayu, S. K. (2021). Utilization of artificial intelligence in tax audit in Indonesia. *Journal of Tax Research*, 19(4), 334–356.

Sandberg, J., & Alvesson, M. (2021). Reconstructing the systematic literature review: Critical evaluation and future prospects in business research. *Journal of Management Studies*, 58(3), 497–516

Sari, D. R., & Pratama, Y. S. (2023). Application of PRISMA framework for transparency in review studies: Evidence from digital transformation research. *Procedia Computer Science*, 207, 373–379.

Setyaningrum, R., Kusuma, A., & Wijaya, S. (2023). Women entrepreneurship and digital leadership in Indonesian SMEs. *International Journal of Entrepreneurship and Small Business*, 48(2), 189–212.

Surahman, R. H., & Legowo, N. (2024). Factors that affect firm performance mediated by digital transformation in Indonesia's state-owned enterprises plantation and forestry industries. *Journal of Agribusiness in Developing and Emerging Economies*, 14(1), 58–82.

Syahrudin, M. (2025). Artificial Intelligence Adoption and Productivity in Emerging Markets. *Journal of Emerging Business & Innovation*, 15(2), 201–218.

Wibowo, S., Nugroho, Y., & Taufiqurrahman. (2023). Trends and bibliometric analysis of digital leadership in Southeast Asia: A systematic review. *Asia Pacific Journal of Management*, 41(1), 115–139.