E-ISSN: 2715-0461 P-ISSN: 2686-6285, DOI:10.34306

Corporate Leadership in the Digital Business Era and Its Impact on Economic Development Across Global Markets

Nuke Puji Lestari Santoso^{1*}, Risma Nurmala², Untung Rahardja³, ¹Master of Information Technology, University of Raharja, Indonesia ²Department of Digital Business, University of Raharja, Indonesia ³Department of Engineering, Universiti Teknologi Malaysia, Malaysia ¹nuke@raharja.info, ²risma.nurmala@raharja.info, ³rahardjauntung@graduate.utm.my
*Corresponding Author

Article Info

Article history:

Submission March 11, 2025 Revised March 30, 2025 Accepted April 12, 2025 Published April 19, 2025

Keywords:

Digital Transformation Corporate Leadership Economic Development Innovation Global Markets



ABSTRACT

The digital business era has transformed corporate leadership, demanding a shift in leadership strategies and organizational structures. With the rapid advancement of digital technologies such as AI, blockchain, and big data analytics, business leaders are challenged to integrate these technologies while fostering innovation and sustainable growth in competitive global markets. This paper explores the relationship between corporate leadership and economic development across various global markets experiencing digital transformation. By examining different leadership styles, digital transformation initiatives, and their economic effects, the study seeks to understand how leadership in the digital era impacts economic outcomes. It highlights the importance of strategic leadership in driving innovation, collaboration, and adaptability, which are crucial for navigating technological disruption. The paper also investigates the regional variations in economic development resulting from digital transformation, offering insights into how different markets respond to digital changes and the leadership approaches that contribute to or hinder growth. In conclusion, this research emphasizes the need for dynamic leadership that is proactive, visionary, and capable of guiding organizations through the complexities of the digital landscape. It suggests that strategic leadership not only drives innovation but also supports global economic growth by helping organizations adapt and thrive in the face of digital disruption.

This is an open access article under the <u>CC BY 4.0</u> license.



188

DOI: https://doi.org/10.34306/itsdi.v6i2.697
This is an open access article under the CC-BY license (https://creativecommons.org/licenses/by/4.0/
©Authors retain all copyrights

1. INTRODUCTION

The digital business era has ushered in a wave of transformation, fundamentally altering the way organizations operate and grow [1]. As businesses increasingly embrace new technologies such as artificial intelligence, blockchain, and big data analytics, corporate leadership plays a pivotal role in guiding these changes. Leadership strategies must evolve to not only drive innovation but also to ensure organizations remain competitive in an increasingly complex global market. This paper explores the crucial relationship between corporate leadership in the digital age and its influence on economic development across global markets [2]. By examining leadership approaches that foster digital transformation, we aim to understand how effective leadership can shape economic outcomes at the global level while aligning with global priorities such as the Sustainable Development Goals (SDGs), particularly Goal 8 (Decent Work and Economic Growth), Goal 9 (Industry,

Innovation and Infrastructure), and Goal 17 (Partnerships for the Goals).

With digital tools becoming an integral part of modern business operations, leadership must shift from traditional methods to more adaptive and forward-thinking strategies [3]. Leaders today are tasked with creating a culture of innovation, agility, and sustainability, enabling their companies to navigate through digital disruptions. The success of organizations increasingly depends on their leaders ability to drive digital change, which directly impacts their market position and overall economic performance [4]. Through this lens, the advancement of digital leadership is not only a corporate necessity but also a strategic driver for achieving SDG targets, particularly in expanding inclusive economic opportunities and fostering sustainable industrialization.

As companies and economies continue to digitize, the challenges faced by corporate leaders are more complex than ever. The ability to balance technological advancement with human factors such as workforce development, customer engagement, and ethical considerations is essential for successful leadership. This paper seeks to provide insights into how leaders can successfully manage digital transformation and explore its broader implications for global economic growth [5, 6]. By investigating real world case studies and examining leadership frameworks, we aim to offer actionable recommendations for organizations navigating this transformative period ultimately contributing to a more resilient and equitable global economy, in line with the broader vision of the SDGs.



Figure 1. Sustainable Development Goals

As shown in Figure 1, the 17 Sustainable Development Goals (SDGs) serve as a global framework for addressing key development priorities. This study particularly emphasizes Goal 8 (Decent Work and Economic Growth), Goal 9 (Industry, Innovation and Infrastructure), and Goal 17 (Partnerships for the Goals), which are closely aligned with the role of digital leadership in driving innovation, competitiveness, and inclusive economic development.

2. LITERATURE REVIEW

The advent of digital technologies has significantly altered business landscapes, challenging traditional models of leadership. Recent studies on digital transformation have explored how leaders influence innovation, agility, and resilience in their organizations [7]. According to [8–10], the digital revolution drives growth by enabling faster decision making, enhancing productivity, and fostering new business models. Leadership in the digital era requires not only technical expertise but also the ability to guide organizations through constant change. Furthermore, digital technologies such as artificial intelligence, machine learning, and blockchain have disrupted traditional industries, prompting a need for visionary leadership to harness these innovations for economic benefit [11–13].

In addition to traditional leadership styles, digital first leadership models have become increasingly relevant. One of the most prominent models is adaptive leadership, which emphasizes flexibility and the ability to respond to rapidly changing environments [14, 15]. Adaptive leaders are skilled at managing uncertainty, navigating complex problems, and fostering innovation in organizations undergoing digital transformation [16, 17]. This model is particularly effective in environments where traditional leadership styles fail to address the fast paced, disruptive nature of digital change.

Another relevant model is transformational leadership, which encourages leaders to inspire and motivate employees to embrace change, innovate, and contribute to organizational success [18]. In the context of digital transformation, transformational leaders help organizations transition to digital first strategies by fostering a culture of continuous learning and innovation [19–21]. These leaders focus on empowering employees to take ownership of digital initiatives, thus facilitating smoother transitions in the digital era. The incorporation of adaptive leadership and transformational leadership models is essential for guiding organizations through the complexities of digital transformation, as these models provide the flexibility and visionary guidance required in the digital first business environment [22, 23].

Economic development, especially in emerging markets, can be greatly influenced by digital leadership. Firms that successfully leverage digital tools contribute to economic growth by improving operational efficiency, expanding market reach, and creating jobs [24, 25]. On the global stage, countries with strong digital leadership are better positioned to compete economically, as digitalization enables greater access to international markets and fosters global collaboration [26, 27].

3. METHODOLOGY

This study adopts a qualitative research approach, focusing on secondary data from case studies, industry reports, and existing academic literature [28, 29]. The objective is to analyze how corporate leadership in the digital era influences economic development across global markets by examining leadership strategies and their impact on business outcomes. To achieve this, we explore a range of companies that have undergone significant digital transformations, analyzing the leadership styles that contributed to their success. The research is based on reports from credible sources such as McKinsey & Company, Deloitte, and the World Economic Forum, providing a comprehensive understanding of how digital leadership drives business and economic performance [30–32].

Data analysis follows a systematic coding procedure and employs thematic analysis. Initially, data from the selected case studies were organized by identifying recurring patterns and key themes in leadership strategies [33]. Thematic analysis was then conducted to categorize these patterns into broader themes, which helped in understanding the leadership approaches most effective in driving digital transformation. These themes were further analyzed to identify their impact on business outcomes and economic development. The analysis was cross checked for consistency, ensuring the validity and reliability of the findings [34–36].

Data analysis involves a comparative approach, looking at various industries, including technology, finance, and manufacturing, to assess how leadership has shaped digital adoption and innovation in different sectors. The study also examines leaderships role in fostering global competitiveness, exploring how digital business models enable companies to expand their reach and engage with international markets [22, 31, 37]. By synthesizing insights from diverse industries and regions, the research provides a holistic view of the relationship between leadership and economic development in the context of digital transformation.

The findings from this study are intended to inform both academic research and practical leadership strategies. The analysis draws from examples of successful leadership in global companies, offering insights into best practices and strategies that leaders can implement to drive digital transformation in their organizations. Through this methodology, the study aims to contribute to the ongoing discourse on the role of leadership in the digital economy, particularly in fostering sustainable economic growth [31, 38, 39].

4. RESULT AND DISCUSSION

This study investigates the intersection of corporate leadership and digital transformation, focusing on how leadership strategies influence economic development across global markets [40, 41]. The results indicate that organizations that have successfully integrated digital technologies have seen significant improvements in operational efficiency, market reach, and innovation capacity. Corporate leaders who embrace digital first leadership models, such as adaptive leadership and transformational leadership, are more likely to drive successful digital transformations and create sustainable growth.

These leadership styles foster an environment of innovation and resilience, allowing organizations to adapt quickly to the rapid pace of technological change [42, 43]. Moreover, these leadership approaches empower employees to take ownership of digital initiatives, promoting a sense of autonomy and collaboration within the organization, as shown in Table 1, which outlines the impact of various leadership models on both organizational performance and economic development.

Table 1. Impact of Leadership Models and Digital Transformation Strategies on Organizational Performance and Economic Development

Leadership Model	Key Characteristics	Impact on Orga- nizational Perfor- mance	Impact on Economic Devel- opment	Examples of Successful Implementation
Adaptive Leadership	Flexibility, continuous learning, quick decision mak- ing	Enables quick adaptation to digital disruptions, en- hancing agility	Drives competi- tiveness in digital markets	Tech firms adopting AI and blockchain
Transformation Leadership	alVisionary, motivating, empowering employees	Encourages innovation and productivity	Enables global collaboration and new business models	Tesla and Amazon transforming indus- tries
Digital First Leadership	Prioritizes digi- tal change	Streamlines processes, improves efficiency	Boosts global competitiveness via tech adoption	Alibaba and Amazon in e commerce
Collaborative Leadership	Teamwork, cross func- tional collabo- ration	Enhances problem solving and tech adaptation	Creates new opportunities through partnerships	Google and Microsoft alliances
Servant Lead- ership	Supports employees, fosters positive environment	Improves retention and performance	Builds sustainable growth in emerging markets	Southwest Airlines' leadership culture

The discussion highlights the critical role of digital leadership in shaping organizational success and economic development. In industries such as technology, finance, and manufacturing, the application of digital tools has not only enhanced operational performance but has also positioned organizations to compete on a global scale [44–46]. As companies adopt digital first strategies, leadership plays a pivotal role in facilitating the shift towards data driven decision making and technology adoption. Successful leaders foster cultures that prioritize continuous learning and skill development, ensuring their teams remain adaptable in the face of emerging technologies. This approach has been particularly effective in global markets where digital tools have enabled companies to expand their reach, engage with international customers, and form strategic partnerships. Additionally, digital leadership has been instrumental in fostering innovation within organizations, allowing companies to stay ahead of industry trends and create new value propositions for customers. These points are further supported by the digital transformation strategies highlighted in Table 2, which illustrates how strategies such as data driven decision making, cloud solutions, and agile management contribute to organizational efficiency, market reach, and global economic growth [47, 48].

The findings also underline the importance of fostering digital literacy across all levels of an organization [49]. As organizations face increasing pressure to innovate, it is essential that leaders equip their teams with the skills necessary to leverage digital technologies effectively [50]. Leaders who invest in employee development and promote digital literacy ensure that all staff members are empowered to contribute to the digital transformation process. Furthermore, the study emphasizes the importance of organizational agility [51, 52]. Leaders who promote agile decision making processes enable their teams to respond rapidly to market shifts and technological advancements. This agility allows organizations to remain competitive in the ever evolving digital landscape. In conclusion, the study shows that the role of corporate leadership in the digital business era is critical not only for organizational success but also for broader economic development. Digital leadership models that focus on innovation, adaptability, and employee empowerment are essential for fostering growth, resilience, and competitiveness in the global market [53, 54].

Digital Strategy	Description	Impact on Organizational Efficiency	Impact on Mar- ket Reach & In- novation	Impact on Global Economic Growth
Data-Driven Decision Making	Using big data analytics to guide business decisions	Improves decision making accuracy, reducing inefficien- cies and costs	Enhances prod- uct/service offer- ings based on data insights	Expands access to global markets through informed strategies
Cloud Based Solutions	Transitioning to cloud com- puting for storage and services	Increases opera- tional flexibility and reduces infras- tructure costs	Allows rapid scaling and access to new markets	Facilitates interna- tional collaboration and market entry
AI and Automation	Leveraging AI and automation tools	Increases productivity by automating repetitive tasks	Drives innova- tion in prod- ucts/services and creates new seg- ments	Contributes to economic growth via high tech industries
Agile Project Management	Implementing agile methods for project management	Speeds up project timelines, improves adaptability	Enables rapid iteration of products and services	Supports competitive advantage in evolving industries
Digital Mar- keting	Using digital channels for customer engagement	Expands customer base and improves brand visibility	Creates new touchpoints, enhancing innovation	Promotes global connectivity through e commerce

Table 2. Key Digital Transformation Strategies and Their Impact on Organizational Outcomes

5. MANAGERIAL IMPLICATIONS

The findings emphasize the importance of adaptive leadership in navigating digital transformation. As organizations integrate digital technologies, managers must foster flexibility, innovation, and sustainability to stay competitive. Embracing adaptive leadership encourages continuous learning, informed decision making, and responsiveness to disruptions, enabling organizations to seize new opportunities quickly.

Another key recommendation is enhancing organizational agility. Managers should cultivate an agile workforce capable of making quick decisions and adapting to fast evolving business environments. This agility will help organizations maintain a competitive edge in a rapidly changing digital landscape.

Lastly, while technological advancements drive digital transformation, the human element remains crucial. Managers should prioritize workforce development, employee well being, and a positive organizational culture. Balancing technological progress with attention to human factors will ensure sustainable success and contribute to long term organizational growth.

6. CONCLUSION

In conclusion, the role of corporate leadership in the digital business era is critical to shaping economic development across global markets. As companies embrace digital transformation, effective leadership is essential in guiding organizations through the complexities of technological disruption. Leaders who can adapt their strategies to integrate digital technologies into their business models are better positioned to create sustainable growth, innovate, and maintain a competitive edge in the global market. The impact of digital leadership extends beyond organizational success, influencing broader economic trends and contributing to overall economic development.

However, the journey toward digital transformation is not without challenges. Leaders must navigate issues such as cybersecurity risks, digital inequality, and the cultural shift required to embrace technology. To overcome these challenges, corporate leaders must foster a culture of innovation by prioritizing the development

of an organizational culture that embraces change, encourages experimentation, and rewards innovation. This will drive creativity and adaptability within their teams. Moreover, investing in continuous learning is crucial. Leaders should prioritize skill development for both themselves and their employees, offering opportunities to upskill in areas such as AI, data analytics, and digital tools. Promoting digital literacy across all levels of the organization is also essential, ensuring that employees, from entry level staff to senior executives, have a basic understanding of the technologies shaping their industry. This will foster better collaboration and decision making. Additionally, corporate leaders must encourage agility and flexibility within their organizations. They should develop a mindset that embraces uncertainty as an opportunity for growth, enabling their teams to pivot and adapt to new challenges and opportunities quickly.

Looking ahead, it is clear that digital leadership will continue to play a pivotal role in the success of organizations and the economies they operate within. As the digital landscape evolves, so too must leadership practices. Future research should focus on further exploring the dynamics of digital leadership across different sectors and regions, providing more granular insights into how leaders can effectively manage digital change and contribute to global economic development. Through such efforts, we can continue to shape a future where technology and leadership go hand in hand in driving prosperity.

7. DECLARATIONS

7.1. About Authors

Nuke Puji Lestari Santoso (NP) https://orcid.org/0000-0002-4414-2102

Risma Nurmala (RN) -

Untung Rahardja (UR) https://orcid.org/0000-0002-2166-2412

7.2. Author Contributions

Conceptualization: NP; Methodology: RN, and UR; Software: NP and RN; Validation: RN and UR; Formal Analysis: RN and NP; Investigation: NP, RN, and UR; Resources: RN; Data Curation: NP; Writing Original Draft Preparation: NP, RN and UR; Writing Review and Editing: NP, RN and UR; Visualization: UR; All authors NP, RN and UR, have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

7.4. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

REFERENCES

- [1] Kementerian Komunikasi dan Informatika Republik Indonesia, "Strategi nasional pengembangan ekonomi digital 2024-2029," https://www.kominfo.go.id/, 2024, dokumen kebijakan pemerintah Indonesia terkait pengembangan ekonomi digital yang mendukung kepemimpinan digital dan transformasi ekonomi sejalan dengan temuan Mokodongan et al. (2025).
- [2] S. W. Behie, H. J. Pasman, F. I. Khan, K. Shell, A. Alarfaj, A. H. El-Kady, and M. Hernandez, "Leadership 4.0: The changing landscape of industry management in the smart digital era," *Process safety and environmental protection*, vol. 172, pp. 317–328, 2023.
- [3] C. Ding, C. Liu, C. Zheng, and F. Li, "Digital economy, technological innovation and high-quality economic development: Based on spatial effect and mediation effect," *Sustainability*, vol. 14, no. 1, p. 216, 2021.

- [4] E. E. Djajasasana and J. R. K. Bokau, "Utilization of micro influencers and engagement in social media to gain cadet candidates," *ADI Journal on Recent Innovation*, vol. 6, no. 1, pp. 1–7, 2024.
- [5] H. Ruel, H. Rowlands, and E. Njoku, "Digital business strategizing: the role of leadership and organizational learning," *Competitiveness Review: An International Business Journal*, vol. 31, no. 1, pp. 145–161, 2021
- [6] A. M. A. Ausat and S. Suherlan, "Obstacles and solutions of msmes in electronic commerce during covid-19 pandemic: evidence from indonesia," *BASKARA: Journal of Business and Entrepreneurship*, vol. 4, no. 1, pp. 11–19, 2021.
- [7] S. Wijaya, A. Husain, M. Laurens, and A. Birgithri, "ilearning education challenge: Combining the power of blockchain with gamification concepts," *CORISINTA*, vol. 1, no. 1, pp. 8–15, 2024.
- [8] J. Jones, E. Harris, Y. Febriansah, A. Adiwijaya, and I. N. Hikam, "Ai for sustainable development: Applications in natural resource management, agriculture, and waste management," *International Transactions on Artificial Intelligence*, vol. 2, no. 2, pp. 143–149, 2024.
- [9] P. Silvia, Q. Aini, E. A. Nabila, H. Nusantoro *et al.*, "The role of user behavior patterns in enhancing fraud detection in online banking: A bibliometric analysis," in 2024 2nd International Conference on Technology Innovation and Its Applications (ICTIIA). IEEE, 2024, pp. 1–6.
- [10] N. Fitriawati, A. Maariz, M. A. Wiputra, M. R. D. Armanto, and E. Cahayani, "Inovasi prototipe: Sistem monitoring tinggi air dan curah hujan untuk peringatan banjir dengan pemanfaatan aplikasi iot blynk," *ADI Pengabdian Kepada Masyarakat*, vol. 4, no. 1, pp. 33–39, 2023.
- [11] J. Yu, Y. Xu, J. Zhou, and W. Chen, "Digital transformation, total factor productivity, and firm innovation investment," *Journal of Innovation & Knowledge*, vol. 9, no. 2, p. 100487, 2024.
- [12] M. Asri, M. Hardini, D. Apriliasari, U. Rahardja *et al.*, "Influence of technology adoption and internet security on satisfaction and investment decision quality," in 2024 Ninth International Conference on Informatics and Computing (ICIC). IEEE, 2024, pp. 1–6.
- [13] L. Meria, N. Lutfiani, R. A. Te Awhina *et al.*, "The influence of e-commerce and digital marketing on startupreneur performance using pls-sem," *Journal of Computer Science and Technology Application*, vol. 2, no. 1, pp. 93–100, 2025.
- [14] M. Mastur, "Dampak efektivitas pelatihan kompetensi terhadap kinerja pegawai, komitmen pegawai sebagai variabel intervening pada pondok pesantren," *Technomedia Journal*, vol. 7, no. 1 Juni, pp. 111–125, 2022.
- [15] S. K. C. Tulli, "Leveraging oracle netsuite to enhance supply chain optimization in manufacturing," *International Journal of Acta Informatica*, vol. 3, no. 1, pp. 59–75, 2024.
- [16] A. A. Al-Qudah, M. Al-Okaily, and H. Alqudah, "The relationship between social entrepreneurship and sustainable development from economic growth perspective: 15 'rcep'countries," *Journal of Sustainable Finance & Investment*, vol. 12, no. 1, pp. 44–61, 2022.
- [17] A. Alwiyah, S. N. Husin, P. Padeli, M. Anggaraeni, and S. Sulistiawati, "Alignment of science and technology with islamic principles using quantum theory," *International Journal of Cyber and IT Service Management*, vol. 1, no. 1, pp. 115–120, 2021.
- [18] N. Lutfiani, I. Sembiring, I. Setyawan, A. Setiawan, U. Rahardja, and S. Sulistio, "Exploring the relationship between artificial intelligence and business performance," *IJCCS (Indonesian Journal of Computing and Cybernetics Systems)*, vol. 19, no. 1, pp. 1–12, 2025.
- [19] I. Gutierriz, J. J. Ferreira, and P. O. Fernandes, "Digital transformation and the new combinations in tourism: A systematic literature review," *Tourism and Hospitality Research*, vol. 25, no. 2, pp. 194–213, 2025.
- [20] S. Miko, A. W. T. Atmaja, R. Mawardah, S. D. Zulfa, F. Siboro, and A. Marjuki, "The impact of competitiveness, information technology, risk perception, and financial literacy on the intention to invest in cryptocurrency," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 5, no. 1, pp. 1–7, 2023.
- [21] R. Ahli, M. F. Hilmi, and A. Abudaqa, "Moderating effect of perceived organizational support on the relationship between employee performance and its determinants: A case of entrepreneurial firms in uae," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 6, no. 2, pp. 199–212, 2024.
- [22] I. Amsyar, E. Cristhopher, U. Rahardja, N. Lutfiani, and A. Rizky, "Application of building workers services in facing industrial revolution 4.0," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 3, no. 1, pp. 32–41, 2021.

- [23] M. Chen, "The value of us college education in global labor markets: Experimental evidence from china," *Management Science*, vol. 70, no. 2, pp. 1276–1300, 2024.
- [24] D. P. Lazirkha, J. Hom, and V. Melinda, "Quality analysis of digital business services in improving customer satisfaction," *Startupreneur Business Digital (SABDA Journal)*, vol. 1, no. 2, pp. 156–166, 2022.
- [25] U. Rahardja and Q. Aini, "Evaluating the effectiveness of digital marketing campaigns through conversion rates and engagement levels using anova and chi-square tests," *Journal of Digital Market and Digital Currency*, vol. 2, no. 1, pp. 26–45, 2025.
- [26] W. Setyowati and A. Sofingi, "Determinants of employee performance with work motivation as an intervening variable at the semarang city search and rescue office," *APTISI Transactions on Management*, vol. 6, no. 1, pp. 19–29, 2022.
- [27] S. I. Al-Hawary, J. R. N. Alvarez, A. Ali, A. K. Tripathi, U. Rahardja, I. H. Al-Kharsan, R. M. Romero-Parra, H. A. Marhoon, V. John, and W. Hussian, "Multiobjective optimization of a hybrid electricity generation system based on waste energy of internal combustion engine and solar system for sustainable environment," *Chemosphere*, vol. 336, p. 139269, 2023.
- [28] F. Chien, K. Y. Chau, and X.-C. Huang, "The perceived relationship between sustainable energy technologies, eco-innovation, economic growth and social sustainability: evidence from china," *Technological and Economic Development of Economy*, vol. 30, no. 1, pp. 175–195, 2024.
- [29] J. Siswanto, V. A. Goeltom, I. N. Hikam, E. A. Lisangan, and A. Fitriani, "Market trend analysis and data-based decision making in increasing business competitiveness," *Sundara Advanced Research on Artificial Intelligence*, vol. 1, no. 1, pp. 1–8, 2025.
- [30] M. M. Mariani and S. Nambisan, "Innovation analytics and digital innovation experimentation: the rise of research-driven online review platforms," *Technological Forecasting and Social Change*, vol. 172, p. 121009, 2021.
- [31] D. Mohammed, A. G. Prawiyog, and E. R. Dewi, "Environmental management/marketing research: Bibliographic analysis," *Startupreneur Business Digital (SABDA Journal)*, vol. 1, no. 2, pp. 191–197, 2022.
- [32] U. J. Nneka, C. A. Ngong, O. A. Ugoada, and J. U. J. Onwumere, "Effect of bond market development on economic growth of selected developing countries," *Journal of Economic and Administrative Sciences*, vol. 41, no. 1, pp. 132–148, 2025.
- [33] A. Cahyadi and R. Magda, "Digital leadership in the economies of the g20 countries: A secondary research," *Economies*, vol. 9, no. 1, p. 32, 2021, digital leadership capability in digital readiness, innovation, and competitiveness 4.0 across G20 countries.
- [34] A. G. Prawiyogi, M. Hammet, and A. Williams, "Visualization guides in the understanding of theoretical material in lectures," *International Journal of Cyber and IT Service Management*, vol. 3, no. 1, pp. 54–60, 2023.
- [35] M. H. R. Chakim, S.-C. Chen, C. Nas, R. Supriati, and G. P. Cesna, "Integration of iot and blockchain technologies for enhancing transparency and efficiency in indonesian agriculture," in 2024 3rd International Conference on Creative Communication and Innovative Technology (ICCIT). IEEE, 2024, pp. 1–6.
- [36] A. Leffia, S. A. Anjani, M. Hardini, S. V. Sihotang, and Q. Aini, "Corporate strategies to improve platform economic performance: The role of technology, ethics, and investment management," *Journal of Computer Science and Technology Application*, vol. 1, no. 1, pp. 16–25, 2024.
- [37] J. Benitez, A. Arenas, A. Castillo, and J. Esteves, "Impact of digital leadership capability on innovation performance: The role of platform digitization capability," *Information & Management*, vol. 59, no. 2, p. 103590, 2022.
- [38] A. Muhtadibillah, B. Rawat, B. M. Sentosa *et al.*, "Motivasi organisasi dalam mengadopsi teknologi blockchain: Suatu tinjauan literatur dan analisis kualitatif," *Jurnal MENTARI: Manajemen, Pendidikan dan Teknologi Informasi*, vol. 2, no. 2, pp. 188–196, 2024.
- [39] F. O. Usman, A. J. Kess-Momoh, C. V. Ibeh, A. Elufioye, V. Ilojianya, and O. Oyeyemi, "Entrepreneurial innovations and trends: A global review: Examining emerging trends, challenges, and opportunities in the field of entrepreneurship, with a focus on how technology and globalization are shaping new business ventures," *International Journal of Science and Research Archive*, vol. 11, no. 1, pp. 552–569, 2024.
- [40] C. Zhao and L. Liang, "A study on the influence of environmental responsible leadership on employee pro-environmental behavior," *Frontiers in Environmental Science*, vol. 11, p. 1251920, 2023.
- [41] C. Lukita, M. Hardini, S. Pranata, D. Julianingsih, and N. P. L. Santoso, "Transformation of entrepreneur-

- ship and digital technology students in the era of revolution 4.0," *Aptisi Transactions on Technopreneur-ship (ATT)*, vol. 5, no. 3, pp. 291–304, 2023.
- [42] M. Annas and S. N. Wahab, "Data mining methods: K-means clustering algorithms," *International Journal of Cyber and IT Service Management*, vol. 3, no. 1, pp. 40–47, 2023.
- [43] J. Liu, J. Julaiti, and S. Gou, "Decomposing interconnectedness: A study of cryptocurrency spillover effects in global financial markets," *Finance Research Letters*, vol. 61, p. 104950, 2024.
- [44] T. A. D. Lael and D. A. Pramudito, "Use of data mining for the analysis of consumer purchase patterns with the fpgrowth algorithm on motor spare part sales transactions data," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 4, no. 2, pp. 128–136, 2023.
- [45] B. E. Sibarani, C. Anggreani, B. Artasya, and D. A. P. Harahap, "Unraveling the impact of self-efficacy, computer anxiety, trait anxiety, and cognitive distortions on learning mind your own business: The student perspective," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 6, no. 1, pp. 29–40, 2024.
- [46] A. T. Oyewole, O. B. Adeoye, W. A. Addy, C. C. Okoye, and O. C. Ofodile, "Enhancing global competitiveness of us smes through sustainable finance: A review and future directions," *International Journal of Management & Entrepreneurship Research*, vol. 6, no. 3, pp. 634–647, 2024.
- [47] Q. Wang, F. Zhang, and R. Li, "Free trade and carbon emissions revisited: the asymmetric impacts of trade diversification and trade openness," *Sustainable Development*, vol. 32, no. 1, pp. 876–901, 2024.
- [48] H. M. Utouh and F. A. Kitole, "Forecasting effects of foreign direct investment on industrialization towards realization of the tanzania development vision 2025," *Cogent Economics & Finance*, vol. 12, no. 1, p. 2376947, 2024.
- [49] C. R. Salas-Guerra, "Impact of digital economic activity on regional economic growth: A case study from northern minas gerais between 2009 to 2018," arXiv, Working Paper, 2021, shows correlation between digital economic activity, specialized knowledge, and municipal economic growth.
- [50] J. Lyu, "How does digital leadership improve organizational sustainability: Theory and evidence," *Journal of Cleaner Production*, vol. 434, p. 140148, 2024.
- [51] S. Kraus, P. Jones, N. Kailer, A. Weinmann, N. Chaparro-Banegas, and N. Roig-Tierno, "Digital transformation: An overview of the current state of the art of research," *Sage Open*, vol. 11, no. 3, p. 21582440211047576, 2021.
- [52] S. Suwarno, I. Idayati, H. Mulyono, D. Paramita, and E. A. Nabila, "Impact of motivation on compensation and discipline at musi rawas public works," *International Journal of Cyber and IT Service Management*, vol. 5, no. 1, pp. 12–22, 2025.
- [53] Y. Shen, W. Hu, and C. J. Hueng, "Digital financial inclusion and economic growth: a cross-country study," *Procedia computer science*, vol. 187, pp. 218–223, 2021.
- [54] P. Duarah, D. Haldar, A. K. Patel, C.-D. Dong, R. R. Singhania, and M. K. Purkait, "A review on global perspectives of sustainable development in bioenergy generation," *Bioresource Technology*, vol. 348, p. 126791, 2022.