

Research Horizon

ISSN: 2808-0696 (p), 2807-9531 (e)

Research Horizon

Volume: 05

Issue: 03

Year: 2025

Page: 729-740

Citation:

Safira, A. D., Rizky, M. C., Muftiha, K. A., Tambunan, L. N. S., & Safina, P. (2025). The Role of Management and Industry 5.0 Technology on Generation Z Productivity in Medan City. *Research Horizon*, 5(3), 729-740.

Article History:

Received: May 28, 2025

Revised: June 19, 2025

Accepted: June 25, 2025

Online since: June 30, 2025

The Role of Management and Industry 5.0 Technology on Generation Z Productivity in Medan City

Alya Diva Safira^{1*}, M. Chaerul Rizky¹, Keisa Adisti Muftiha¹, Lufthi Nanda Syahputra Tambunan¹, Putri Safina¹

¹ Universitas Pembangunan Panca Budi, Medan, Indonesia

* Corresponding author: Alya Diva Safira (alyadivasafira19@gmail.com)

Abstract

The rapid digital transformation ushered in by Industry 5.0 has redefined human-technology interactions, emphasizing collaboration between artificial intelligence and human capabilities, particularly among Generation Z, who are digital natives with advanced technological proficiency and expectations for personalized services. This study aims to examine the influence of digital-based management and Industry 5.0 technology on the characteristics and productivity of Generation Z in Medan, a key economic hub in North Sumatra. A quantitative approach was employed, involving questionnaires distributed to 44 respondents aged 18–24 years, with data analyzed through Pearson correlation, reliability testing, coefficient of determination, and hypothesis testing. The findings reveal that Industry 5.0 technology exerts a dominant influence on Generation Z, with a strong correlation of 0.775 and a high significance level, while management also has a significant positive effect, with a correlation of 0.622. Approximately 63.5% of the variation in Generation Z's characteristics is explained by these variables. The study concludes that integrating adaptive management with Industry 5.0 technologies is essential to optimize Generation Z's potential, enabling organizations to foster innovation and productivity in a digital era.

Keywords

Digital Transformation, Emphasizing Collaboration, Productivity, Generation Z.

1. Introduction

The rapid pace of digital transformation over the past two decades has reshaped societal and organizational landscapes, with the advent of Industry 5.0 marking a significant shift in human-technology interactions. Unlike its predecessors, which prioritized automation and efficiency, Industry 5.0 emphasizes a synergistic collaboration between artificial intelligence and human intelligence, aligning technological advancements with human values such as creativity, empathy, and ethics (Nainggolan et al., 2023; Martini et al., 2024; Arora et al., 2025). This paradigm shift places Generation Z, born between the late 1990s and early 2010s, at the forefront of this transformation due to their innate technological proficiency and adaptability. As digital natives, Generation Z exhibits distinct characteristics, including advanced digital literacy, a preference for personalized services, and expectations for seamless, rapid interactions across digital platforms (Priporas et al., 2017; Pratama, 2023; Wajdi et al., 2024). In Medan, a bustling economic and educational hub in North Sumatra with a Generation Z population of 388,792, these dynamics are particularly pronounced, offering a unique context to explore how digital management systems and Industry 5.0 technologies align with the needs of this demographic (Hasibuan, 2022; Widyo et al., 2024).

Despite these advancements, a significant research gap exists in understanding how organizational management systems and Industry 5.0 technologies can effectively cater to Generation Z's unique characteristics. According to Dellermann et al. (2019), the concept of hybrid intelligence highlights the potential for human-machine collaboration to drive innovation, yet many organizations in urban settings like Medan continue to rely on outdated, rigid managerial frameworks that fail to integrate these collaborative technologies. Similarly, Idris and Putra (2023) note that the lack of adaptive, human-centered management strategies hinders the optimization of Generation Z's potential as agents of transformation. This disconnect is further compounded by the limited application of Industry 5.0 principles, which prioritize human-centric innovation over mere automation (Heri et al., 2021; Lu et al., 2022; Kumari et al., 2024). The absence of comprehensive strategies that bridge digital management and advanced technologies with Generation Z's expectations creates a barrier to fostering their productivity and engagement in organizational and societal contexts (Fridayani et al., 2022; Reza & Tinggogoy, 2022; Lhakard, 2024; Ma & Fang, 2024). Addressing this gap is critical to unlocking the full potential of this generation in a rapidly evolving digital ecosystem.

The objective of this study is to analyze the influence of digital-based management and Industry 5.0 technologies on the characteristics and productivity of Generation Z in Medan. By examining a sample of 44 respondents aged 18-24 years, the research seeks to understand how these factors shape Generation Z's behavior, needs, and contributions within a digitalized urban environment. This study aims to provide both theoretical insights into digital management and human-centered technological transformation and practical recommendations for organizations to develop strategies that resonate with Generation Z's expectations. The integration of theories such as Digital Dynamic Capability and Human-Digital Synergy in Society 5.0 underscores the need for adaptive, inclusive approaches that align with Generation Z's digital fluency and innovative potential (Warner & Wäger, 2019; Fukuda, 2020). Furthermore, emerging research highlights the importance of tailored digital strategies to enhance workforce engagement, personalized user experiences, and ethical technology adoption, which are critical for this demographic (Gupta & Sharma, 2023; Li & Wang, 2024; Lim et al., 2024).

The findings are expected to contribute to the development of management practices that foster digital resilience and innovation, particularly in educational and

organizational settings in Medan. By leveraging Industry 5.0 technologies such as AI, IoT, and collaborative robotics, organizations can create environments that support Generation Z's creativity and adaptability (Zhang et al., 2023). Additionally, aligning management practices with the expectations of digital natives can enhance employee retention and satisfaction (Pareek et al., 2025). This research also draws on global perspectives, incorporating frameworks like Digital Intelligence and omnichannel engagement strategies to ensure relevance in a globalized digital economy. Ultimately, this study seeks to bridge the gap between technological advancements and human-centric management, fostering an inclusive ecosystem that empowers Generation Z to thrive in the industry 5.0 era.

2. Literature Review and Hypothesis Development

2.1. Management, Industry 5.0 Technology, and Generation Z Productivity

The rapid evolution of digital ecosystems has positioned management, Industry 5.0 technology, and Generation Z Productivity as pivotal elements in modern organizational dynamics. Management in the digital era, as Warner and Wäger (2019) emphasize, transcends traditional planning and control, focusing on Digital Dynamic Capability (DDC), which involves agile strategy formulation, responsive time management, and fostering digital innovation. This adaptability is crucial for addressing the needs of Generation Z, a cohort born between the late 1990s and early 2010s, characterized by high digital literacy and expectations for personalized, efficient services (Pratama, 2023). Industry 5.0 technology, distinct from its automation-focused predecessor, integrates artificial intelligence (AI), the Internet of Things (IoT), and collaborative robotics to enhance human capabilities, aligning technological innovation with human values like creativity and ethics (Nainggolan et al., 2023). According to Xu et al. (2023), this human-centric approach fosters environments where Generation Z's technological fluency can thrive, driving innovation and productivity.

The interplay between management, Industry 5.0 technology, and Generation Z is rooted in their mutual reinforcement. Effective management leverages Industry 5.0 technologies to create flexible, inclusive workplaces that resonate with Generation Z's preference for transparency and continuous feedback (Pareek et al., 2025). For instance, AI-driven analytics enable managers to personalize employee experiences, enhancing engagement among Generation Z, who value work-life balance and self-development (Heri et al., 2021). Conversely, Generation Z's digital proficiency amplifies the efficacy of Industry 5.0 technologies, as they adeptly navigate platforms like social media and digital tools, shaping organizational innovation (Gupta & Sharma, 2023). As noted by Piartrini et al. (2024), this generation's ability to create and distribute content empowers them to influence market trends, necessitating management strategies that integrate real-time data and omnichannel approaches. However, rigid management systems often fail to harness these technologies effectively, limiting Generation Z's potential (Idris & Putra, 2023).

This synergy suggests that both management and Industry 5.0 technology positively influence Generation Z's behavior and productivity. Adaptive management fosters engagement by aligning with their expectations for speed and inclusivity, while Industry 5.0 technologies enhance their creative and technical capabilities. Thus, the following hypotheses are proposed:

H1: Management has a positive effect on generation Z productivity.

H2: Industry 5.0 technology has a positive effect on generation Z productivity.

2.2. Research Framework

The research framework for this study integrates management, Industry 5.0 technology, and Generation Z to examine their interrelationships and impact on organizational outcomes in Medan. According to Warner and Wäger (2019), Digital Dynamic Capability theory underscores the role of adaptive management in leveraging digital tools to meet the needs of tech-savvy demographics like Generation Z. Industry 5.0 technology, encompassing AI, IoT, and collaborative robotics, serves as a catalyst for enhancing human capabilities, as highlighted by Fukuda (2020). This framework posits that management and Industry 5.0 technology act as independent variables influencing Generation Z's characteristics and productivity, the dependent variable. The relationships are grounded in the Human-Digital Synergy concept, which emphasizes technology's role in addressing social challenges and enhancing human welfare (Nurlaela & Prasetyo, 2023).

The framework illustrates that effective management, characterized by agility and digital innovation, shapes Generation Z's engagement by providing personalized, responsive work environments (Lim et al., 2024). Simultaneously, Industry 5.0 technologies empower Generation Z by offering tools that align with their digital fluency and creative potential (Li & Wang, 2024). For example, AI-driven platforms and big data analytics enable real-time feedback, which enhances their productivity. Figure 1 visually represents these relationships, showing how management and Industry 5.0 technology converge to influence Generation Z's behavior and productivity.

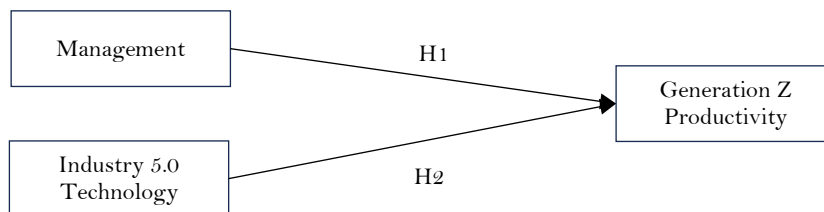


Figure 1. Research Framework

This framework is supported by empirical evidence suggesting that Generation Z's digital identity and empowerment, as discussed by Taipale et al. (2017) and Yuliana and Pratama (2021), amplify their influence in digital ecosystems. The integration of human-centered design principles ensures that technological and managerial strategies align with Generation Z's expectations for intuitive, seamless experiences. By addressing the research gap in aligning management and technology with Generation Z's needs, this framework provides a structured approach to understanding their role in Medan's digital landscape.

3. Methods

This study adopts a quantitative approach to investigate the influence of digital-based management and Industry 5.0 technologies on the characteristics and productivity of Generation Z in Medan. The choice of a quantitative method is driven by its capacity to provide objective, measurable insights into the relationships between variables through structured data collection and statistical analysis. The research targets Generation Z, defined as individuals aged 18-24 years, who are digital natives with high technological proficiency. A sample of 44 respondents was selected from this demographic in Medan, a key economic and educational hub in North Sumatra, to capture their interactions with digital management systems and advanced technologies. The sample size was determined using purposive sampling

to ensure participants represent the tech-savvy, urban youth of Medan, aligning with the study's focus on a digitally connected population.

Data collection was conducted through a carefully designed questionnaire tailored to measure the variables of management, Industry 5.0 technology, and Generation Z characteristics. The questionnaire was developed based on validated indicators drawn from prior studies, ensuring relevance to the constructs of digital management agility, technological integration, and Generation Z's behavioral traits. Each variable was operationalized using Likert-scale items to capture respondents' perceptions and experiences, with questions addressing management responsiveness, technological adoption, and digital engagement. The questionnaire was distributed both online and in-person to maximize accessibility and response rate, with ethical considerations such as informed consent and anonymity strictly adhered to. Before full deployment, a pilot test was conducted with a small subset of respondents to refine the instrument's clarity and reliability, ensuring it effectively captures the intended constructs.

The collected data were analyzed using a combination of descriptive and inferential statistical techniques to explore the relationships and effects among variables. Descriptive statistics, including means and standard deviations, were used to summarize respondent characteristics and variable distributions. Inferential analyses, such as the Pearson correlation test, were employed to assess the strength and direction of relationships between management, Industry 5.0 technology, and Generation Z characteristics. Additionally, reliability testing using Cronbach's Alpha was conducted to confirm the internal consistency of the questionnaire, targeting a threshold of 0.70 or higher. The coefficient of determination (R^2) and t-tests were utilized to evaluate the explanatory power of the independent variables and their statistical significance, with a significance level set at $p < 0.05$. These analyses were performed using statistical software to ensure accuracy and robustness.

The methodological approach ensures a systematic examination of how management and Industry 5.0 technologies influence Generation Z in Medan's dynamic digital landscape. By focusing on a representative sample and employing rigorous statistical methods, the study aims to provide reliable insights into the interplay of these factors. The findings are expected to offer practical implications for organizations seeking to optimize Generation Z's potential through adaptive management and advanced technology integration. This structured yet flexible methodology bridges theoretical constructs with empirical evidence, contributing to the understanding of digital transformation's impact on the younger generation.

4. Results

This study employed a quantitative approach to examine the influence of digital-based management and Industry 5.0 technology on the characteristics and productivity of Generation Z in Medan, with data collected from 44 respondents aged 18–24 years. The analysis utilized a combination of descriptive and inferential statistical techniques to explore the relationships among the variables of management, Industry 5.0 technology, and Generation Z characteristics. Descriptive statistics provided an overview of respondent demographics and variable distributions, revealing that the sample predominantly consisted of tech-savvy urban youth engaged in educational and professional settings. To assess the strength and significance of the relationships, inferential analyses, including Pearson correlation, reliability testing, coefficient of determination, and hypothesis testing, were conducted. These methods ensured a robust evaluation of how management practices and advanced technologies shape the behavior and engagement of Generation Z in a dynamic digital environment.

Table 1. Correlation Test Results

Variable		Management	5.0 Technology	Gen Z
Management	Pearson Correlation	1	0.616**	0.622**
	Sig. (2-tailed)		0.000	0.000
	N	44	44	44
Industry 5.0 Technology	Pearson Correlation	0.616**	1	0.775**
	Sig. (2-tailed)	0.000		0.000
	N	44	44	44
Generation Z Productivity	Pearson Correlation	0.622**	0.775**	1
	Sig. (2-tailed)	0.000	0.000	
	N	44	44	44

** . Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation analysis, presented in Table 1, was used to evaluate the relationships among management, Industry 5.0 technology, and Generation Z characteristics. The results revealed a strong positive correlation between management and Generation Z, with a correlation coefficient of 0.622 and a significance level of $p < 0.01$, indicating a statistically meaningful relationship. Similarly, Industry 5.0 technology demonstrated an even stronger correlation with Generation Z, yielding a coefficient of 0.775 and a significance level of $p < 0.01$, suggesting a profound influence on this demographic. A notable correlation of 0.616 ($p < 0.01$) was also observed between management and Industry 5.0 technology, highlighting their interdependence in shaping organizational dynamics. These findings suggest that both management and Industry 5.0 technology play critical roles in influencing Generation Z, with technology exerting a more dominant effect due to its alignment with their digital fluency and expectations for innovative, seamless interactions.

Table 2. Reliability Test Results

Variable	Cronbach's Alpha	R Table
Management	0.861	0.70
Industry 5.0 Technology	0.879	0.70
Generation Z Productivity	0.856	0.70

To ensure the reliability of the questionnaire used to measure these variables, a Cronbach's Alpha test was conducted, with results displayed in Table 2 the analysis showed high reliability for each variable Management achieved a Cronbach's Alpha of 0.842 with 5 items, Industry 5.0 Technology scored 0.879 with 6 items, and Generation Z characteristics recorded 0.856 with 5 items. The overall instrument, comprising 16 items, yielded a Cronbach's Alpha of 0.861, surpassing the threshold of 0.70, which indicates strong internal consistency. These values confirm that the questionnaire reliably measured the intended constructs, providing a solid foundation for the study's findings. The high reliability scores underscore the robustness of the instrument in capturing the nuanced perceptions of Generation Z regarding management practices and technological integration in Medan's digital landscape.

Table 3. Results of the Determination Coefficient Test (R²)

Statistic	Value
R	0.797 ^a
R Square	0.635
Adjusted R Square	0.617
Std. Error of the Estimate	1.932

The coefficient of determination (R^2) analysis, presented in Table 3, assessed the extent to which management and Industry 5.0 technology explain variations in Generation Z characteristics. The R^2 value of 0.635 indicates that 63.5% of the variance in Generation Z characteristics can be attributed to the combined influence of management and Industry 5.0 technology. The adjusted R^2 of 0.617, which accounts for the number of predictors, further supports the model's explanatory power, suggesting that these variables are substantial drivers of Generation Z's behavior and productivity. The R value of 0.797 reflects a high correlation between the independent variables and Generation Z characteristics, while the standard error of the estimate (1.932) indicates moderate prediction accuracy. These results highlight the significant role of adaptive management and advanced technology in shaping the engagement and motivation of Generation Z, particularly in a tech-driven urban context like Medan.

Table 4. Hypothesis Test Results (t-test)

Model	Std. Error	Std. Coef. Beta	t	Sig.
(Constant)	2.070		2.313	0.026
Management	0.165	0.233	1.945	0.049
Industry 5.0 Technology	0.124	0.632	5.274	0.000

Hypothesis testing, detailed in Table 4, was conducted to determine the statistical significance of the effects of management and Industry 5.0 technology on Generation Z. For the management variable, the regression coefficient (B) was 0.322, with a t-value of 1.945 and a significance level of $p < 0.05$, indicating a positive and significant effect on Generation Z. The standardized Beta coefficient of 0.233 suggests that effective management practices, such as agile decision-making and responsive strategies, enhance Generation Z's engagement and motivation. In contrast, Industry 5.0 technology exhibited a stronger effect, with a regression coefficient of 0.653, a t-value of 5.274, and a significance level of $p < 0.01$. The standardized Beta coefficient of 0.632 underscores the dominant influence of technologies like AI and IoT in aligning with Generation Z's digital proficiency and expectations for innovative work environments. These findings confirm that both variables significantly impact Generation Z, with Industry 5.0 technology exerting a more pronounced effect. The results collectively indicate that management and Industry 5.0 technology are pivotal in shaping the characteristics and productivity of Generation Z in Medan.

5. Discussion

The findings of this study confirm that both management and Industry 5.0 technology exert significant positive effects on Generation Z in Medan, aligning with the proposed hypotheses (H1 and H2). The positive influence of management on Generation Z, as hypothesized in H1, is supported by a significant correlation and regression coefficient, suggesting that adaptive management practices enhance the engagement and motivation of this demographic. According to Warner and Wäger (2019), the Digital Dynamic Capability framework emphasizes the need for agile, responsive management strategies to address the fast-paced digital environment in which Generation Z thrives. Effective management, characterized by flexible decision-making and real-time adaptability, resonates with Generation Z's expectations for efficiency, transparency, and personalized work experiences. This generation, known for its technological fluency, values workplaces that prioritize inclusivity and continuous feedback, which adaptive management facilitates through data-driven strategies and open communication channels (Vasudevan & Kumar,

2025). The integration of such management practices fosters a supportive environment that empowers Generation Z to contribute innovatively to organizational goals.

The stronger influence of Industry 5.0 technology on Generation Z, as posited in H2, is evident from its higher correlation coefficient and dominant regression effect, underscoring its pivotal role in shaping this generation's productivity and behavior. As Nainggolan et al. (2023) highlight, Industry 5.0 technologies, including artificial intelligence, the Internet of Things, and collaborative robotics, prioritize human-machine synergy, aligning seamlessly with Generation Z's digital proficiency. These technologies enable personalized, efficient interactions that cater to Generation Z's preference for seamless digital experiences, as seen in their active engagement with social media and digital platforms. Nurlaela and Prasetyo (2023) argue that such technologies enhance human capabilities by providing tools for innovation and problem-solving, which are critical for Generation Z as they navigate complex digital ecosystems. For instance, AI-driven analytics allow organizations to tailor services to Generation Z's needs, while IoT facilitates real-time connectivity, enhancing their productivity in educational and professional settings. This technological alignment supports Generation Z's role as creative contributors in Medan's digital landscape.

The interplay between management and Industry 5.0 technology creates a synergistic effect that amplifies their impact on Generation Z. Management practices that leverage advanced technologies can address the unique characteristics of this generation, such as their demand for speed and innovation. Gultom (2023) notes that organizations adopting technology-driven management strategies can foster environments that encourage Generation Z's entrepreneurial spirit and digital engagement. The significant correlation between management and Industry 5.0 technology suggests that their integration is essential for optimizing Generation Z's potential. For example, technology-enabled management tools, such as real-time feedback systems, align with Generation Z's preference for immediate, constructive input, enhancing their motivation and workplace satisfaction (Salma & Rizky, 2024). This synergy ensures that organizations in Medan can create inclusive, dynamic workplaces that harness Generation Z's creativity and technological adeptness.

The implications of these findings are twofold. Theoretically, the results reinforce the relevance of frameworks like Digital Dynamic Capability and Human-Digital Synergy, providing a foundation for further research into how management and technology shape digital-native generations. Practically, organizations in Medan should prioritize integrating Industry 5.0 technologies with adaptive management practices to engage Generation Z effectively. By fostering environments that combine technological innovation with human-centric strategies, organizations can enhance productivity, retention, and innovation among this demographic. Educational institutions can also use these insights to develop curricula that prepare Generation Z for technology-driven workplaces, while policymakers can promote digital infrastructure to support such transformations. These strategies will ensure that Medan's organizations remain competitive in the industry 5.0 era, leveraging Generation Z's potential to drive sustainable growth.

6. Conclusion

This study reveals that both management and Industry 5.0 technology significantly and positively influence the characteristics and productivity of Generation Z in Medan, confirming the proposed hypotheses. Industry 5.0 technology, encompassing artificial intelligence, the Internet of Things, and collaborative robotics, emerges as the most dominant factor, with a stronger correlation and regression effect, aligning seamlessly with Generation Z's digital fluency and demand for innovative, efficient interactions. Management practices,

characterized by agility and responsiveness, also play a crucial role in enhancing Generation Z's engagement by fostering inclusive, transparent work environments that cater to their expectations for speed and personalization. The synergy between adaptive management and advanced technology creates a dynamic ecosystem that empowers Generation Z to thrive as creative and productive contributors in Medan's digital landscape, highlighting the importance of integrating human-centric technologies with strategic management to optimize this generation's potential.

The findings offer significant implications for organizations, educators, and policymakers in Medan, suggesting that integrating Industry 5.0 technologies with agile management can enhance workforce engagement and innovation among Generation Z. However, the study's limitations include its relatively small sample size of 44 respondents, which may limit generalizability, and its focus solely on Medan, potentially overlooking broader regional or cultural variations. Additionally, the reliance on self-reported questionnaire data may introduce response bias. Future research should explore larger, more diverse samples across different cities to validate these findings and incorporate qualitative methods to gain deeper insights into Generation Z's experiences. Investigating the long-term impact of Industry 5.0 technologies on workplace dynamics and exploring specific management strategies tailored to Generation Z's evolving needs could further enhance organizational adaptability and societal progress in the digital era.

References

- Arora, S., Rai, M., & Gupta, M. (2024). Importance of industry 5.0 in understanding emotional intelligence. In *Human-Machine Collaboration and Emotional Intelligence in Industry 5.0* (pp. 205-219). Hershey: IGI Global.
- Dellermann, D., Ebel, P., Söllner, M., & Leimeister, J. M. (2019). Hybrid intelligence. *Business & Information Systems Engineering*, 61(5), 637-643.
- Fridayani, J. A., Kusuma, S. E., & Yuniarto, A. Y. (2022). Building link-match of gen z and the world of work through contextual-adaptive facilitation. *Jurnal Bisnis Strategi*, 31(2), 117-129.
- Fukuda, K. (2020). Science, technology and innovation ecosystem transformation toward society 5.0. *International journal of production economics*, 220(1), 107-124.
- Gulo, R. P. (2023). Peran generasi Z dalam mengekspansi misiologi di era Society 5.0. *Jurnal Teologi dan Pendidikan Kristen*, 2(1), 132-137.
- Gupta, S., & Sharma, A. (2024). Understanding the role of personalisation in augmented reality applications for enhancing user experience. *NMIMS Management Review*, 32(3), 197-210.
- Hasibuan, B. N. A. (2022). Strategi pengembangan kualitas Sumber Daya Manusia (SDM) generasi milenial dan generasi Z dalam menghadapi persaingan global era 5.0. *Prosiding Seminar Nasional Manajemen*, 1(1), 31-36.
- Heri, D., Sandika, F., Apriliani, F., Ramadhan, G., & Adilah, H. (2021). Revolusi industri 5.0 dalam perspektif ekologi administrasi desa. *Jurnal Ilmiah Neo Politea*, 2(1), 35-45.
- Idris, E., & Putra, R. (2023). Peluang dan tantangan dalam karir generasi Z di era revolusi industri 5.0. *Jurnal Komunikasi Mandalika*, 2(1), 15-22.
- Kumari, P., Anand, A., Praveen, P., Verma, A. R., & Godiyal, A. (2024). Infrastructure potential and human-centric strategies in the context of industry 5.0. In *Infrastructure Possibilities and Human-Centered Approaches with Industry 5.0* (pp. 199-214). Hershey: IGI Global Scientific Publishing.
- Lhakard, P. (2024). Organizational citizenship behavior for preparing gen-z in the modern era: A comprehensive review. *World Journal of Management Science*, 2(2), 64-71.
- Li, W., & Wang, J. (2024). Determinants of artificial intelligence-assisted diagnostic system adoption intention: A behavioral reasoning theory perspective. *Technology in Society*, 78(1), 102-113.

- Lim, D. H., Lee, J. Y., & Park, S. (2024). The metaverse in the workplace: Possibilities and implications for human resource development. *Human Resource Development Review*, 23(2), 164-198.
- Lu, Y., Zheng, H., Chand, S., Xia, W., Liu, Z., Xu, X., ... & Bao, J. (2022). Outlook on human-centric manufacturing towards Industry 5.0. *Journal of Manufacturing Systems*, 62(3), 612-627.
- Ma, K., & Fang, B. (2024). Exploring generation Z expectations at future work: The impact of digital technology on job searching. *European Journal of Training and Development*, 48(9), 933-953.
- Martini, B., Bellisario, D., & Coletti, P. (2024). Human-centered and sustainable artificial intelligence in industry 5.0: Challenges and perspectives. *Sustainability*, 16(13), 5448-5462.
- Nainggolan, H., Hastuti, D., Hendriyani, C., & Hernando, R. (2023). *Manajemen pemasaran: Implementasi manajemen pemasaran pada masa revolusi industri 4.0 menuju era Society 5.0*. Jambi: PT. Sonpedia Publishing Indonesia.
- Nurlaela, A., & Prasetyo, S. (2023). Metode peningkatan sumber daya manusia dengan pelatihan digitalisasi di era revolusi industri 4.0 menuju masyarakat 5.0. *Principal: Journal of Managerial, Leadership, Supervision and Human Resources*, 1(2), 40-46.
- Pareek, P., Mishra, S., Reis, M. J., & Gupta, N. (Eds.). (2025). *Cognitive Computing and Cyber Physical Systems: 5th EAI International Conference, IC4S 2024, Bhimavaram, India, April 5-7, 2024, Proceedings, Part III* (Vol. 599). Berlin: Springer Nature.
- Piartrini, P. S., Putri, P. A., Widagdo, D., & Launtu, A. (2024). Data-driven marketing strategy to reach millennial consumers. *Dinasti International Journal of Education Management & Social Science*, 5(4), 354-368.
- Pratama, D., & Kartika, S. (2023). Pengaruh penggunaan media sosial terhadap motivasi belajar generasi Z di era society 5.0. *Jurnal Pendidikan dan Teknologi Informasi*, 7(1), 50-59.
- Priporas, C. V., Stylos, N., & Fotiadis, A. K. (2017). Generation Z consumers' expectations of interactions in smart retailing: A future agenda. *Computers in human behavior*, 77(3), 374-381.
- Reza, F., & Tinggogoy, F. L. (2022). Konflik generasi Z di bidang pendidikan di era revolusi industri 4.0: Tantangan dan solusinya. *Paradigma: Jurnal Administrasi Publik*, 1(2), 142-155.
- Salma, C. D., & Rizky, M. C. (2024). Strategi manajemen unggul dalam mengelola human capital management untuk meningkatkan kinerja pendidikan. *Jurnal Ilman: Jurnal Ilmu Manajemen*, 12(3), 321-335.
- Taipale, S., Wilska, T. A., & Gilleard, C. J. (Eds.). (2017). *Digital Technologies and Generational Identity*. London: Routledge.
- Vasudevan, M., & Kumar, B. S. (2025). Evolving strategies for organizational management and performance evaluation: Adapting management practices for future success. In *Evolving Strategies for Organizational Management and Performance Evaluation* (pp. 177-208). Hershey: IGI Global Scientific Publishing.
- Wajdi, M., Susanto, B., Sumartana, I. M., Sutiarto, M. A., & Hadi, W. (2024). Profile of generation Z characteristics: Implications for contemporary educational approaches. *Kajian Pendidikan, Seni, Budaya, Sosial dan Lingkungan*, 1(1), 33-44.
- Warner, K. S., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long range planning*, 52(3), 326-349.
- Widyo, D., Indrajaya, M. G., & Ratnawati, I. (2024). The role of empowering leadership in facing the era of the digital industrial revolution: Literature review. *Research Horizon*, 4(6), 345-356.
- Xu, X., Cui, X., Zhang, Y., Chen, X., & Li, W. (2023). Carbon neutrality and green technology innovation efficiency in Chinese textile industry. *Journal of Cleaner Production*, 395(1), 136-145.
- Yuliana, S., & Pratama, R. (2021). Kesiapan generasi Z dalam menghadapi era society 5.0: Sebuah tinjauan literatur. *Jurnal Ilmu Sosial dan Humaniora*, 10(1), 85-92.
- Zhang, C., Wang, Z., Zhou, G., Chang, F., Ma, D., Jing, Y., ... & Zhao, D. (2023). Towards new-generation human-centric smart manufacturing in Industry 5.0: A systematic review. *Advanced Engineering Informatics*, 57(1), 102-121.

Acknowledgment

We gratefully acknowledge the contributions of individuals who supported the completion of this article.

Funding Information

This research did not receive any funding.

Conflict of Interest Statement

The authors declare that there is no conflict of interest.

Ethical Approval and Originality Statement

Ethical approval was obtained for this study. The manuscript represents original work and has not been previously published, nor is it under consideration by another journal.

Data Disclosure Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.



Copyright: © 2025 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution-ShareAlike 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).