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THE EFFECT OF DIGITAL COMPETENCE ON EMPLOYEE PERFORMANCE THROUGH ARTIFICIAL INTELLIGENCE ADAPTATION AS AN INTERVENING VARIABLE

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ABSTRACT

This research aims to analyze the effect of Digital Competence, Technology Readiness, and Leadership Style on Employee Performance through the adaptation of Artificial Intelligence (AI) among employees at PT Sewangi Alam Nusantara. The study is motivated by the need to improve employee effectiveness, efficiency, and work quality in the digital era, where digital literacy, readiness of technological infrastructure, and adaptive leadership are key factors supporting adaptation to AI-based innovations. The research employed a quantitative approach, with data collected through questionnaires distributed to 102 employees. Data analysis was conducted using Structural Equation Modeling (SEM) via Smart PLS 3.0 to examine both direct and indirect relationships among variables. The results indicate that Digital Competence (path coefficient = 1.740), Technology Readiness (2.731), and Leadership Style (1.844) positively affect Employee Performance. These three variables also contribute positively to AI Adaptation (0.534; 0.834; 1.063), which significantly mediates the improvement in employee performance (0.423), resulting in a total mediated effect of 0.917. The study concludes that a combination of digital competence, technology readiness, and adaptive leadership, reinforced by AI adoption, is a critical factor in enhancing employee productivity and performance. Practical implications include the need for digital literacy development, upgrading technological infrastructure, and applying leadership styles that support digital transformation to ensure optimal AI implementation in the workplace.

KEYWORDS *Digital Competence, Technology Readiness, Leadership Style,Artificial Intelligence Adaptation,Employee Performance.*

INTRODUCTION

Human resources (HR) are a key element in a company's success, as they drive all organizational activities (Agustian et al., 2023; Gadzali et al., 2023; Sinambela et al., 2022; Sutrisno et al., 2023). Employees with technical skills, soft skills, high motivation, and loyalty can enhance productivity, work efficiency, and organizational innovation (Arifin et al., 2023). Performance, as a measure of individual or group output, reflects how employee knowledge and capabilities are utilized to achieve company goals (Mio et al., 2022; Shin et al., 2023; Vuong & Nguyen, 2022; Widodo, 2022). However, in the digital era, employees are expected not only to perform well but also to possess adequate digital competence to compete effectively in modern work environments (Wahono et al., 2024). Digital competence encompasses the ability to understand, use, and manage information technology ethically and effectively, enhancing productivity, adaptability, and data-driven decision-making (Nugroho & Fauziah, 2024).

According to the Indonesian Digital Society Index, the digital index for the productive age group increased from 43.18 in 2023 to 44.53 in 2025, although growth remains slow and behind countries such as Singapore and Malaysia (Indonesian Digital Society Index, 2025). Research by Larasshati & Priyastiwi (2024) shows that digital competence significantly affects employee performance, highlighting the crucial role of digital technology mastery in work effectiveness. In addition to digital competence, company technology readiness is a supporting factor for performance. Technology readiness includes adequate digital infrastructure, high-speed internet access, data security systems, and training in the use of the latest technologies (Harsasi et al., 2024). Data show a digital gap between medium-to-large companies and SMEs in Indonesia, affecting efficiency and technological adaptation in smaller businesses (Indonesian Digital Society Index, 2025). Sabri et al. (2025) confirm that adequate technology readiness positively affects employee performance, emphasizing the need for companies to maintain updated digital infrastructure to support productivity.

Leadership style and AI integration also play a significant role in performance improvement. Adaptive transformational leaders can motivate, inspire, and encourage digital innovation, making employees more responsive to technological changes (Azmy, 2021). AI implementation can increase work efficiency, process automation, data analysis, and accurate decision-making (Kozabbah, 2024). Observations at PT Sewangi Alam Nusantara indicate that low employee adaptation to technology and conventional leadership styles hinder AI optimization, highlighting the need to enhance digital competence, technology readiness, and adaptive leadership to maximize employee performance. This forms the basis for the study on the effect of digital competence, technology readiness, and leadership style on employee performance through AI adaptation as an intervening variable.

The novelty of this research lies in its integrated approach to examining how Digital Competence, Technology Readiness, and Leadership Style collectively influence Employee Performance, with Artificial Intelligence (AI) Adaptation specifically positioned as a crucial intervening variable in a corporate setting in Indonesia. While prior studies have often explored these factors in isolation or in different contexts, this study aims to empirically verify the direct and indirect pathways through which these organizational and individual capabilities enhance performance, mediated by the adoption of AI technology. The primary objective is to analyze the effect of Digital Competence, Technology Readiness, and

Leadership Style on Employee Performance, both directly and through the mediation of AI Adaptation, among employees at PT Sewangi Alam Nusantara. The benefits of this research are twofold: theoretically, it is expected to contribute to the existing body of knowledge in human resource management and information systems by providing an evidence-based model of performance enhancement in the digital transformation era. Practically, the findings are intended to offer actionable insights for the management of PT Sewangi Alam Nusantara and similar organizations, guiding the development of targeted strategies such as digital literacy programs, infrastructure upgrades, and leadership training to foster effective AI adoption and ultimately improve overall employee productivity and organizational effectiveness.

RESEARCH METHOD

This study uses a quantitative approach with a verifikatif method to measure the influence of digital competence, technology readiness, and leadership style on employee performance through AI adaptation as an intervening variable at PT Sewangi Alam Nusantara. This approach allows for objective and measurable analysis using numerical data obtained from questionnaires distributed to all employees as the study sample. The dependent variable is employee performance, while the independent variables are digital competence, technology readiness, and leadership style. AI adaptation serves as the intervening variable bridging the relationship between the independent and dependent variables, allowing analysis of both direct and indirect effects.

Operationalization of variables uses indicators and a Likert scale to ensure accurate and systematic measurement. Research data were obtained from primary sources (employee questionnaires) and secondary sources (relevant literature) to strengthen analysis and comparisons. Data analysis employed Structural Equation Modeling (SEM) using SmartPLS 3.0, including outer model design, inner model analysis, goodness-of-fit evaluation, and hypothesis testing with bootstrapping. Descriptive analysis was used to describe data characteristics, while inferential analysis generalized findings from the sample to the population. Instrument validity and reliability were tested through convergent and discriminant validity, Cronbach’s alpha, and composite reliability, while hypothesis testing compared t-statistics to t-table values and p-values. The model illustrates the relationships between digital competence, technology readiness, leadership style, and employee performance through AI adaptation.

RESULT AND DISCUSSION

Research Object Description

Based on demographic characteristics of 102 respondents, the majority are aged 27-32 years (35.29%), followed by 21-26 years (33.33%), with smaller proportions for 33-38 years (20.59%), 39-45 years (7.85%), and above 45years (2.94%), indicating primary participation from young to middle-aged employees.By gender, respondents were predominantly male (61.76%) versus female (38.24%),reflecting higher male participation. Most respondents had a high school education (80.39%), followed by bachelor's (17.65%) and master's degrees (1.96%), indicating a predominantly secondary education background in the study population.

Descriptive Statistical Analysis

Table 1. Descriptive Statistical Analysis

Statistics	Competencies Digital	Readiness Technology	Leadership Style	Adaptation Artificial Intelligence	Performance Employees
N	102	102	102	102	102
Missing	0	0	0	0	0
Mean	4,53	4,46	4,58	4,41	4,42
Median	5,00	5,00	5,00	4,00	4,00
Min	2,00	2,00	2,00	1,00	1,00
Max	5,00	5,00	5,00	5,00	5,00
Standard Deviation	0,68	0,73	0,62	0,74	0,73
Excess Kurtosis	1,72	1,01	1,34	1,41	1,21
Skewness	-1,45	-1,12	-1,28	-1,11	-1,10
Number of Observations Used	102	102	102	102	102

Source: Processed Primary Data by Researcher, 2025

All research variables-digital competence, technology readiness, leadership style, AI adaptation, and employee performance-showed high mean scores (4.41-4.58 on a 5-point scale) and median scores of 4-5,reflecting very positive respondent assessments. Variability was low (standard deviation 0.62-0.74), data skewed negatively, and leptokurtic (excess kurtosis 1.01-1.72),indicating data concentration around the mean.

Convergen Validity

All indicators for digital competence,technology readiness, leadership style,AI adaptation, and employee performance had outer loading values above the Rtabel (0.194), indicating validity and suitability for further analysis. Even indicators with lower performance values still met minimum criteria,ensuring reliable data for testing relationships among variables.

Composite Reability

Tabel 2.Composite Reavility

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Competencies Digital	0,864	0,905	0,888	0,458
Readiness Technology	0,916	0,928	0,931	0,577
Leadership Style	0,827	0,876	0,861	0,404
Adaptation AI	0,855	0,859	0,884	0,433
Performance Employees	0,724	0,799	0,770	0,309

Source: Processed Primary Data by Researcher, 2025

All variables demonstrated reliability with composite reliability values above 0.60.Technology Readiness had the highest composite reliability (0.931) with Cronbach's alpha 0.916, followed by Al Adaptation (0.884),Digital

Competence (0.888), Leadership Style (0.861),and Employee Performance (0.770), which was the lowest but still reliable.

Inner Model

Structural model testing using PLS shows that digital competence, technology readiness, and leadership style positively affect AI adaptation and employee performance, with path coefficients indicating significant influence. AI adaptation partially mediates the relationship between the independent variables and performance. The R-Square values were 0.423 for AI adaptation (moderate) and 0.917 for employee performance (very strong), indicating high predictive capability. F-square analysis confirmed strong effects of digital competence, technology readiness, and leadership style on employee performance, as well as a very strong effect of AI adaptation on performance. Hypothesis testing showed that all eight hypotheses were accepted, confirming that digital competence, technology readiness, and adaptive leadership significantly enhance employee effectiveness, productivity, and work quality, both directly and through AI adaptation at PT Sewangi Alam Nusantara.

CONCLUSION

This study demonstrates that Digital Competence, Technology Readiness, and Leadership Style have a positive influence on Employee Performance, both directly and through the mediating mechanism of Artificial Intelligence (AI) Adaptation. These three key variables not only enhance effectiveness, motivation, and technological support in the workplace but also strengthen employees' ability to adjust to AI-based technologies. AI Adaptation subsequently plays a significant role in improving work quality, productivity, and efficiency, leading to the acceptance of all hypotheses proposed in this research.

Based on the findings, several practical suggestions are offered. First, the management of PT Sewangi Alam Nusantara should prioritize the enhancement of employee Digital Competence through structured training programs focused on essential digital tools, data literacy, and ethical technology use. Second, the company needs to invest in upgrading its Technology Readiness by ensuring robust digital infrastructure, reliable high-speed internet access, and secure data systems to support seamless AI integration. Third, leaders should adopt a more adaptive and transformational leadership style that encourages innovation, provides a clear vision, and supports employees through the digital transition. Finally, to maximize the benefits, the organization should foster a supportive culture for AI Adaptation by providing hands-on training on AI tools, creating clear implementation guidelines, and establishing feedback mechanisms to address employee concerns. Implementing these strategies is expected to optimize AI adoption, thereby significantly boosting overall employee performance and organizational competitiveness in the digital era.

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