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THE INFLUENCE OF ARTIFICIAL INTELLIGENCE UTILIZATION AND DIGITAL LITERACY ON EMPLOYEE PERFORMANCE WITH WORK MOTIVATION AS AN INTERVENING VARIABLE AT PT SEMEN INDONESIA LOGISTIK GROUP

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A R T I C L E I N F O

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Abstract. *This study examines the influence of artificial intelligence (AI) utilization and digital literacy on employee performance at PT Semen Indonesia Logistik Group, with work motivation as a mediating variable. Using a quantitative approach with Partial Least Squares Structural Equation Modeling (SEM-PLS), data were gathered from 188 policy-making employees through an online survey. The results show that digital literacy significantly enhances both work motivation and employee performance, while AI does not have a direct or indirect significant effect. Work motivation plays a crucial mediating role, particularly in linking digital literacy to performance. The findings suggest that improving digital literacy is more impactful for boosting employee performance than AI implementation, which remains underdeveloped in this context. The study highlights the importance of a human-centered approach when integrating AI, as its improper use may reduce motivation and limit performance outcomes.*

Abstrak. Penelitian ini mengkaji pengaruh pemanfaatan kecerdasan buatan (AI) dan literasi digital terhadap kinerja karyawan di PT Semen Indonesia Logistik Group, dengan motivasi kerja sebagai variabel mediasi. Menggunakan pendekatan kuantitatif dengan Partial Least Squares Structural Equation Modeling (SEM-PLS), data dikumpulkan dari 188 karyawan pembuat kebijakan melalui survei online. Hasil penelitian menunjukkan bahwa literasi digital secara signifikan meningkatkan motivasi kerja dan kinerja karyawan, sementara AI tidak memiliki efek signifikan langsung atau tidak langsung. Motivasi kerja memainkan peran mediasi yang penting, terutama dalam menghubungkan literasi digital dengan kinerja. Temuan penelitian menunjukkan bahwa peningkatan literasi digital lebih berdampak untuk meningkatkan kinerja karyawan daripada implementasi AI, yang masih kurang berkembang dalam konteks ini. Penelitian ini menyoroti pentingnya pendekatan yang berpusat pada manusia ketika mengintegrasikan AI, karena penggunaannya yang tidak tepat dapat mengurangi motivasi dan membatasi hasil kinerja.

INTRODUCTION

The rapid development of artificial intelligence (AI) has triggered a wave of transformation across various sectors, including logistics. In Indonesia, however, the macro-level implementation of AI faces numerous challenges, such as infrastructure limitations, workforce readiness, ethical considerations, regulatory gaps, and funding constraints. These obstacles require a holistic and collaborative response from the government, private sector, and academia. While policymakers are expected to craft supportive regulations, the private and educational sectors must enhance technological relevance and human capital development to fully realize AI's potential (Celik, 2023; Supriyadi, 2022).

In today's business environment, AI technologies—ranging from chatbots, machine learning systems, to virtual assistants—are transforming how organizations operate by accelerating workflows and reducing inefficiencies. Tools such as ChatGPT have been widely used to automate administrative tasks, enhance internal communication, and support decision-making (Batra & Arora, 2019). In the logistics sector, AI helps optimize route planning, manage inventory, and reduce operational costs (PwC Indonesia, 2023). PT Semen Indonesia Logistik Group, one of Indonesia's leading logistics firms, reflects this shift toward automation as part of its broader digital transformation strategy. However, the adoption of AI must be approached carefully, as its mismanagement may displace human labor and reduce motivation, ultimately affecting performance (Novgian et al., 2023; Sudirjo et al., 2023; Yao, 2023).

Digital literacy is essential in enabling employees to navigate these technological shifts effectively. It represents the ability to access, evaluate, and utilize digital tools for communication and problem-solving. High digital literacy allows employees to adapt quickly to workplace technologies like AI and contributes to improved job performance (Yazon et al., 2019; Thongrawd et al., 2019). Frameworks such as the Digital Competency Framework (DCF) help assess and enhance individual and organizational digital capabilities (Carretero et al., 2017). In the Indonesian context, gaps in digital literacy and infrastructure—such as poor internet connectivity or limited training—still hinder optimal digital adoption in the workplace (Pratama et al., 2023).

Nevertheless, technology adoption alone is insufficient to ensure productivity gains. Employee motivation plays a mediating role between technological competency and performance outcomes. According to Self-Determination Theory, motivation is driven by the satisfaction of autonomy, competence, and relatedness needs (Deci & Ryan, 2000). In a digital context, AI systems that provide employees with flexible, efficient tools—combined with strong digital literacy—can enhance these psychological needs, boosting both intrinsic and extrinsic motivation (Christian & Kurniawan, 2021; Putra & Fernos, 2024). Conversely, insufficient motivation can weaken the potential benefits of AI and digital systems. Therefore, motivation must be a focal point in workforce development strategies that aim to support AI integration.

In alignment with the Technology Acceptance Model (TAM) and Resource-Based View (RBV), this study investigates how organizational resources and individual perceptions shape technology adoption and its effects on performance (Ulfa et al., 2024; Kodrat, 2024). Digital competencies and AI tools are viewed as strategic resources that influence perceived usefulness and ease of use—key components in the TAM framework. Accordingly, this study seeks to examine the direct influence of AI and digital literacy on employee performance, and how work motivation mediates this relationship at PT Semen Indonesia Logistik Group. By doing so, the study offers practical insights for improving human capital strategies in the digital era.

To better understand the strategic role of digital transformation in organizational performance, this study investigates the influence of artificial intelligence (AI) utilization and

digital literacy on employee performance within PT Semen Indonesia Logistik Group, a key player in Indonesia's logistics sector. With the rapid advancement of digital technologies, organizations are increasingly compelled to explore how AI and digital skills affect not only operational outcomes but also human capital dynamics.

Specifically, the study seeks to examine whether the implementation of AI directly contributes to improved employee performance, and whether digital literacy serves as a significant determinant in enhancing workplace outcomes. Beyond direct relationships, this study also explores whether AI and digital literacy exert influence on employee motivation, which plays a central role in translating technological capabilities into performance gains. Understanding these pathways is crucial, as motivation may act as an intervening variable that amplifies or mitigates the effects of technological adoption.

Therefore, this research is designed to address the following core inquiries: (1) whether AI has a significant effect on employee performance; (2) whether digital literacy positively influences employee performance; (3) whether AI impacts employee motivation; (4) whether digital literacy influences motivation in the workplace; (5) whether motivation directly affects employee performance; (6) whether AI has an indirect effect on performance through employee motivation; and (7) whether digital literacy affects performance through its influence on motivation.

By exploring these relationships, the study aims to provide empirical insights into how organizations can strategically integrate AI and foster digital literacy while nurturing employee motivation to optimize overall performance outcomes in a rapidly evolving digital economy.

LITERATURE REVIEW

2.1. Artificial Intelligence

Artificial Intelligence (AI) has experienced significant breakthroughs, driven by three major technological advancements: increased computational power, the availability of large annotated datasets, and theoretical progress in machine learning algorithms (Benhamou, 2020). These developments have not only expanded the capabilities of AI systems but have also enabled the handling of increasingly complex tasks that approach human cognitive abilities.

AI continues to emerge as one of the most transformative technologies in both industrial and societal contexts. Originally designed to address human cognitive challenges—such as learning, reasoning, and pattern recognition—AI is now widely integrated into various aspects of daily life and professional environments (Fitria, 2023a). Far from being limited to formal or technical use, AI also enhances recreational activities and user interaction experiences. While public discourse around AI often centers on automation and algorithmic bias, AI also has the capacity to augment human experience, making it a critical tool in modern organizational operations. AI plays a key role in machine learning processes, particularly in making high-accuracy predictions from complex datasets. In the context of business operations, the incorporation of AI into employee workflows has led to increased demands for efficiency and performance, requiring employees to adapt to new technological paradigms (Suwandita et al., 2023). Moreover, AI supports strategic human resource management by analyzing employee data, forecasting workforce needs, and informing decision-making processes.

In practice, AI integrates domains such as logical reasoning, knowledge representation, and natural language processing (NLP). Its applications range from conversational agents and voice synthesis to automated translation. Additionally, AI contributes to pattern recognition in large-scale data, such as image analysis, facial recognition, and predictive maintenance, allowing organizations to operate in a more proactive and informed manner (Benhamou, 2020). These uses demonstrate how AI is rapidly becoming a critical factor in digital transformation across sectors. The growing integration of AI into organizational systems has sparked academic debate about whether AI will ultimately replace or complement human labor. Benhamou

(2020) emphasized that this dynamic varies across sectors, depending on how AI reshapes the required skill sets and work conditions. Some AI applications may automate routine tasks, while others enhance human capabilities, requiring a redefinition of job roles and organizational workflows.

Among AI tools, ChatGPT, short for Chat Generative Pre-trained Transformer, has gained prominence as a generative language model capable of producing coherent and contextually relevant text. Built on transformer architecture, ChatGPT predicts subsequent words in text-based conversations, enabling it to simulate human-like interactions in real time (Eysenbach, 2023). Its usability across platforms has made it a valuable asset in marketing, business operations, and financial communications (Amaliah et al., 2023). ChatGPT is trained on massive text datasets, enabling it to support diverse tasks such as entity recognition, word segmentation, and semantic understanding. These capabilities position ChatGPT as a leading NLP tool with high linguistic accuracy and cohesion (Alexander, 2023; Supriyadi, 2022). Its deployment in organizations allows for the automation of administrative tasks, such as order tracking, billing, and data entry—freeing employees to focus on more strategic responsibilities.

However, the successful implementation of ChatGPT requires careful evaluation of its practical benefits and limitations. Some firms have reported challenges stemming from a lack of understanding of the model's architecture, insufficient domain-specific training data, and an overall reluctance to adopt new systems (Raj et al., 2023; Chuma & De Oliveira, 2023). These challenges underscore the need for organizational readiness, infrastructure support, and continuous digital training. Despite such barriers, ChatGPT remains a powerful tool for mapping competencies, providing training support, and assisting in decision-making processes related to employee development. In this regard, ChatGPT does not serve as the final arbiter of decisions but functions as a support system, enriching HR practices through predictive analytics and personalized insights (Nur, 2023).

In conclusion, the literature underscores that while AI and tools like ChatGPT offer substantial potential for improving organizational performance, their practical use depends on the digital literacy of employees and the motivational environment fostered by management. As AI continues to reshape the workplace, organizations must balance automation with human-centered design to ensure that these technologies serve to enhance rather than displace human productivity.

2.2. Digital Literacy

Digital literacy refers to an individual's ability to navigate and manage digital information effectively through a combination of technical skills and cognitive competence. This includes the capacity to identify, access, evaluate, integrate, and create digital content using a variety of tools and technologies (Izzuddin & Ilahiyyah, 2022). Aulia et al. (2021) highlight that digital literacy encompasses not only the use of information and communication technology (ICT) tools but also the competence to assess and utilize digital content effectively for problem-solving, communication, and knowledge creation. Gilster, as cited in Rizal et al. (2019), expands this definition by emphasizing the importance of understanding, appreciating, and applying information in various digital formats presented through computer-based media.

Modern literacy demands the integration of traditional skills—such as reading, writing, listening, and speaking—with digital competencies. This multidimensional approach positions digital literacy as a comprehensive skill set required to interact, communicate, and make informed decisions in digital environments (Anggraeni et al., 2019). According to Sumiati and Wijonarko (2020), digital literacy functions as a vital life skill that goes beyond basic technology use. It includes the ability to learn effectively, socialize, think critically and creatively, and act ethically in a connected digital world.

Julien (2017) emphasizes that digital literacy is both a cognitive and technical capacity that enables individuals to process and interpret digital information meaningfully. Eshet-Alkalai (2004) adds that it includes critical thinking, motor skills, and emotional readiness in facing online interactions. Laksono et al. (2019) further underscore the importance of operational mastery over digital devices in order to manage and produce information productively. In the workplace context, Marsh (2019) argues that digital literacy is not merely a skill but a mindset and awareness that empowers individuals to use digital tools confidently and responsibly for problem-solving, collaboration, content creation, and personal development.

Based on the integration of these perspectives, digital literacy should be viewed as a holistic, adaptive competence that includes technical skills, cognitive judgment, and ethical awareness. A digitally literate individual is capable of navigating diverse platforms, selecting and processing digital content, and transforming it into relevant knowledge. Moreover, they demonstrate critical thinking, creativity, and ethical behavior in digital interactions—abilities that are essential in modern professional settings.

2.3. Work Motivation

Work motivation plays a critical role in influencing employee behavior, productivity, and organizational success. Motivation can be broadly understood as a set of internal attitudes and values that drive individuals to achieve specific goals (Pasaribu & Arfusau, 2023; Hendra, 2020). It provides the necessary energy and direction for individuals to act, shaping their commitment and persistence in pursuing objectives. In the workplace context, motivation is considered one of the primary psychological forces that underpin employee performance. Highly motivated employees are more likely to approach their tasks with enthusiasm and determination, thereby achieving optimal results and contributing meaningfully to organizational objectives.

Motivation is not only essential for individual self-development but also serves as a strategic lever for enhancing organizational productivity. When work motivation is well-internalized, employees often exhibit improved performance, greater work efficiency, and a proactive, goal-oriented mindset. This manifests in a heightened willingness to contribute, seek advancement, and align personal goals with organizational missions. As a result, motivation is not merely a psychological state but a vital component of organizational dynamics that supports long-term growth and sustainability. The concept of work motivation can be analyzed using David McClelland's Achievement Motivation Theory, which identifies three primary socially developed motives: the need for achievement, the need for power, and the need for affiliation (Dinibutun, 2014). These dimensions offer a nuanced understanding of individual motivational drivers in professional settings: The Achievement Motive, The Power Motive, and The Affiliative Motive.

Individuals with a high need for achievement are driven to succeed and derive satisfaction from accomplishing challenging tasks. They prefer tasks with moderate difficulty—those that offer a reasonable chance of success—and often seek feedback to evaluate their performance. These individuals are goal-oriented and strive for excellence, making them valuable assets in performance-driven environments. People with a high need for power are motivated to influence or control others. They are drawn to roles involving persuasion, leadership, and authority, such as teaching or public speaking. However, McClelland (in Dinibutun, 2014) emphasized the importance of controlled power—effective managers, for example, exhibit a strong need to influence others in a disciplined and socially constructive manner. This dimension reflects the motivation to build and maintain warm, close interpersonal relationships. Individuals high in affiliative needs prioritize social harmony,

emotional support, and belonging. In team settings, they often serve as mediators and morale boosters, promoting cooperation and cohesion among coworkers.

Understanding these motivational dimensions is crucial for managers and organizational leaders. Tailoring tasks, incentives, and communication styles to align with employees' dominant motivational drivers can lead to improved engagement, job satisfaction, and ultimately, enhanced organizational performance.

2.4. Work Performance

Work performance reflects the outcomes achieved by employees within a specific period and is often assessed through indicators such as growth, productivity, and profitability (Yusuf Iis et al., 2022). As a multidimensional construct, work performance encompasses both the efficiency with which tasks are carried out and the degree to which they align with organizational goals. According to Maria Yustina Inosensia et al. (2023), performance evaluation provides insight into an organization's ability to respond to environmental changes, meet business targets, and sustain long-term viability. These include financial metrics, employee satisfaction, corporate social responsibility, and operational resilience.

At the employee level, performance is closely associated with the magnitude of an individual's contribution to organizational objectives (Asmini et al., 2023). Ivancevich (Idrus et al., 2022) defines work performance as the outcome that aligns with organizational expectations. Wibowo (in Idrus et al., 2022) similarly views performance as both a process and a result, reflecting the completion of job responsibilities with measurable output. Hence, performance is not limited to the execution of duties but also represents a standard of excellence in accountability, discipline, and professionalism.

Employees with high performance levels tend to complete tasks on time, comply with instructions, and contribute positively to the organizational mission. Their efforts are marked by effective communication, responsible decision-making, and consistent output that aligns with the company's strategic vision (Ginoga & Suhairi, 2024). High performers are more likely to earn promotions and professional recognition, which further motivates them to enhance their knowledge and skill sets. Koopmans (in Achmad Pradana et al., 2023) proposes a three-dimensional model to evaluate individual work performance, encompassing task performance, adaptive performance, and contextual performance.

Task performance refers to behaviors that are directly involved in the execution of job-specific duties. Conway (in Achmad Pradana et al., 2023) explains this as the capacity of an individual to complete tasks based on their skills and experience. In an organizational context, task performance is the most immediate measure of how well employees fulfill their core job functions as stipulated in their job descriptions. Adaptive performance emphasizes an individual's ability to respond to changes in work processes, technologies, and organizational structures. As Hesketh & Neal and Griffin et al. (in Achmad Pradana et al., 2023) suggest, this form of performance is essential in dynamic environments, where employees must be flexible, proactive, and capable of continuous learning. The increasing digitalization of the workplace makes adaptability a critical competency, not only for coping with change but also for thriving in technologically driven job roles.Contextual performance entails voluntary behaviors that support the organizational environment beyond assigned tasks. According to Brief & Motowidlo (in Achmad Pradana et al., 2023), such behaviors include helping coworkers, supporting organizational initiatives, and promoting a positive workplace culture. Coleman and Borman (in Pradhan & Jena, 2017) emphasize behaviors such as taking on additional tasks, encouraging teamwork, and showing organizational citizenship. These actions foster collective morale and cooperation, which are critical for long-term organizational success.

In sum, work performance is not solely determined by technical proficiency, but also by the individual's ability to adapt, collaborate, and engage meaningfully within the organization. A holistic understanding of employee performance, therefore, should consider both measurable outputs and interpersonal contributions that enhance team and organizational functioning.

2.5. Hypothesis

This study aims to examine the influence of Artificial Intelligence (AI) and digital literacy on employee performance, both directly and indirectly through work motivation, at PT Semen Indonesia Logistik Group. Specifically, it investigates whether AI (H1) and digital literacy (H2) have a direct effect on employee performance. Furthermore, the study explores the extent to which AI (H3) and digital literacy (H4) contribute to enhancing work motivation, which itself is hypothesized to influence employee performance (H5) significantly. In addition, the research examines the mediating role of work motivation in the relationship between AI (H6) and digital literacy (H7) on employee performance. Collectively, these hypotheses are designed to provide a comprehensive understanding of how technological and cognitive competencies interplay to drive employee outcomes in a logistics-based organizational setting.

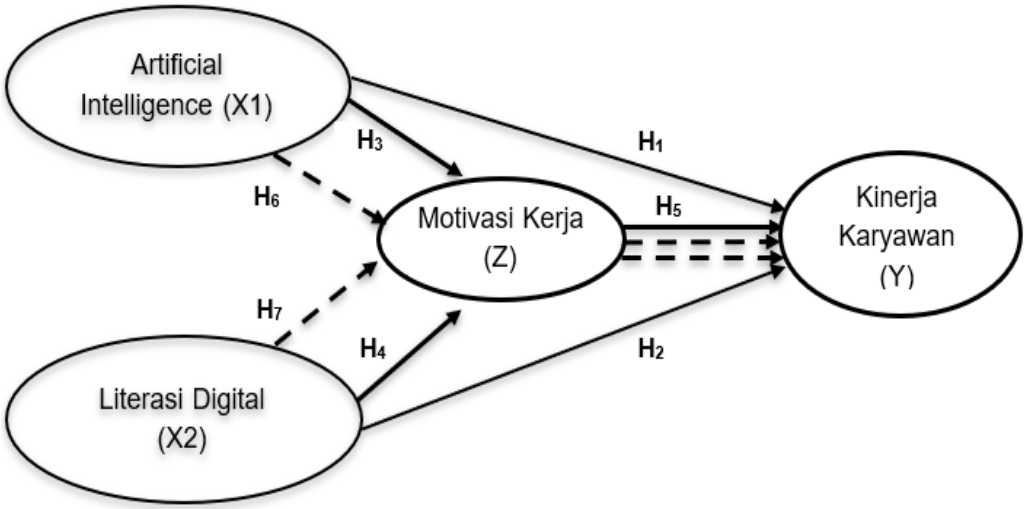

Figure 1. Conceptual Framework

METHOD

This study employed a quantitative survey approach to examine the influence of artificial intelligence and digital literacy on employee performance, with work motivation as a mediating variable, at PT Semen Indonesia Logistik Group. The research was conducted over five months, from February to June 2025, targeting a population of 354 managerial-level employees, including managers, senior managers, general managers, and senior vice presidents. Data were collected using close-ended questionnaires designed to measure perceptions related to artificial intelligence, digital literacy, motivation, and performance. Given the geographical spread and time limitations, questionnaires were chosen as the most efficient method. The collected data were analyzed using path analysis, which enables testing of both direct and indirect relationships among variables and is especially suitable for complex causal models involving mediators. This technique allowed the researcher to validate the proposed theoretical framework by examining how artificial intelligence and digital literacy affect performance, both independently and through work motivation.

RESULT AND DISCUSSIONS

The analysis in this study was conducted using a quantitative approach, combining descriptive statistical techniques with hypothesis testing through the Partial Least Square (PLS) method. The model involved four key variables: Artificial Intelligence (X1) and digital literacy (X2) as independent variables, work motivation (Z) as the mediating variable, and employee performance (Y) as the dependent variable. Descriptive analysis of respondent demographics was used to provide an overview of the sample's basic characteristics, including gender, age range, and length of employment. As shown in Table 5.1, the gender distribution of respondents was dominated by males, with 168 individuals or 89.36%, while females accounted for only 20 individuals or 10.64%. This demographic overview is crucial in contextualizing the responses and understanding how these characteristics may relate to the study's main variables.

Table 1. Sample Characteristics

Jenis Kelamin	**Jumlah**	**Persentase**
Laki-laki	168	89,36%
Perempuan	20	10,64%
Usia	**Jumlah**	**Persentase**
20 - 29 tahun	27	14,36%
30 - 39 tahun	81	43,09%
40 - 49 tahun	65	34,57%
diatas 49 tahun	15	7,98%
Total	188	100%

The structural model (inner model) was tested after confirming the validity and reliability of the measurement model (outer model), using R^2 values, path coefficients, and significance testing via bootstrapping in SmartPLS 4. The analysis showed that Artificial Intelligence (X1) and Digital Literacy (X2) significantly influenced Work Motivation (Z) and Employee Performance (Y), both directly and indirectly through motivation as a mediating variable. The R^2 value for Work Motivation was 0.521, while for Employee Performance it was 0.648, indicating strong explanatory power. Path coefficients confirmed positive and significant relationships across all variables, with T-statistics above 1.96 and P-values below 0.05. Work Motivation was found to partially mediate the effects of both AI and Digital Literacy on performance. These results support all hypotheses (H1–H7) and emphasize the importance of integrating digital initiatives with efforts to boost employee motivation. For PT Semen Indonesia Logistik Group, this implies that enhancing digital infrastructure and AI implementation should be complemented with human resource development strategies to optimize employee performance and organizational productivity.

The Goodness of Fit (GoF) test serves as a critical indicator in assessing the extent to which the structural model adequately fits the empirical data. In the context of Partial Least Squares Structural Equation Modeling (PLS-SEM), GoF provides a holistic validation by integrating both the measurement model and the structural model's explanatory power. One of the commonly applied indices for evaluating model fit is the Normed Fit Index (NFI), which compares the proposed model with a null or baseline model to determine the degree of improvement. According to the results presented in Table 2, the calculated NFI value exceeds the threshold of 0.90, indicating a strong alignment between the theoretical model and the observed data patterns. This suggests that the model is capable of explaining the variance in the data with a high degree of accuracy. In addition to NFI, other supporting indices such as the Standardized Root Mean Square Residual (SRMR) and the Chi-square statistics may also be reviewed to provide complementary insights into the overall model fit.

Table 2. Goodness of Fit Indices

Variable	Saturated Model	Estimated Model
SRMT	0,050	0,050
d-ULS	0,303	0,303
d-G	0,279	0,279
Chi square	317,279	317,279
NFI	**0,886**	**0,886**

The satisfactory GoF values obtained reaffirm the robustness of the model, validating that the structural relationships proposed—namely the influence of Artificial Intelligence and Digital Literacy on Employee Performance, mediated by Work Motivation—are empirically supported. Therefore, the goodness-of-fit analysis confirms that the model is both statistically sound and theoretically coherent, thus providing a reliable basis for further interpretation and managerial recommendations.

The analysis of the structural model (inner model) using the SmartPLS application aims to identify and evaluate the strength of the estimated relationships among constructs within the developed model. In the context of this study, the discussion focuses on two key components: the assessment of the structural model's overall feasibility and the hypothesis testing. Together, these components serve to evaluate the causal relationships between latent variables as outlined in the study's conceptual framework. The structural model analysis allows the researcher to examine both the direct and indirect effects among variables such as Artificial Intelligence, Digital Literacy, Work Motivation, and Employee Performance, thereby validating the theoretical assumptions and determining the explanatory power of the proposed model.

This assessment aims to evaluate the feasibility of the model in representing the strength of the data cumulatively, particularly in illustrating the magnitude of influence among variables in terms of percentage contribution. The evaluation is conducted through the R Square (R^2) value, which is a key component in the inner model analysis of the PLS-SEM approach. The coefficient of determination is used to measure the extent to which the exogenous variables can explain the variance of the endogenous variable within the proposed model.

The coefficient of determination (R-Square) is used to assess the strength of influence among variables in this study, where a value above 0.75 indicates a substantial contribution, 0.50 to 0.75 reflects a moderate contribution, and 0.25 to 0.50 indicates a weak contribution.

Based on the results, variables X1 (Artificial Intelligence) and X2 (Digital Literacy) jointly explain 74.0% of the variance in Y (Employee Performance), indicating a moderate level of influence, while the remaining 26% is presumed to result from other external factors beyond the model. In the case of variable Z (Work Motivation), the same exogenous variables explain 37.9% of its variance, categorized as weak influence, suggesting that 59.4% of its variation may be attributed to factors not included in this research. Furthermore, the predictive relevance (Q^2) was evaluated using the blindfolding procedure to determine the model's capacity to predict endogenous constructs accurately over time. A Q^2 value greater than zero indicates that the dependent constructs exhibit adequate predictive relevance concerning the independent constructs, thus supporting the model's usefulness for future applications. The Q^2 results are summarized in the following table.

Table 3. Model Quality

Variable	*R Square*	*R Square Adjusted*	*Q^2 (=1-SSE/SSO)*
Work Performance (Y)	0,740	0,736	0,616
Work Motivation (Z)	0,379	0,372	0,326

The hypothesis testing in this study was conducted using a 5% significance level ($\alpha = 0.05$), with statistical significance determined by a t-statistic exceeding the critical value of 1.96 and a p-value below 0.05. The results show that Artificial Intelligence (X1) does not have a significant direct effect on Employee Performance (Y), with a p-value of 0.096 and a t-statistic of 1.664. Therefore, H_0 is accepted and H_1 is rejected. Conversely, Digital Literacy (X2) has a significant direct effect on Employee Performance (Y), as indicated by a p-value of 0.000 and a t-statistic of 3.928, leading to the rejection of H_0 and acceptance of H_1. Furthermore, Artificial Intelligence (X1) does not significantly influence Work Motivation (Z) ($p = 0.174$; $t = 1.361$), while Digital Literacy (X2) significantly affects Work Motivation (Z) ($p = 0.000$; $t = 7.374$). In addition, Work Motivation (Z) significantly impacts Employee Performance (Y) ($p = 0.000$; $t = 13.373$), confirming the importance of motivation as a mediating variable. Regarding indirect effects, Artificial Intelligence (X1) does not exert a significant indirect effect on Employee Performance (Y) through Work Motivation (Z) ($p = 0.184$; $t = 1.327$). In contrast, Digital Literacy (X2) shows a significant indirect effect on Employee Performance (Y) through Work Motivation (Z) ($p = 0.000$; $t = 6.662$), indicating the mediating role of motivation in the relationship between digital literacy and performance.

Table 4. Hypothesis Testing

Hypothesis	T statistics (|O/STDEV|)	P values	Result
X1 -> Y	1,664	0,096	Not Supported
X2 -> Y	3,928	0,000	Supported
X1 -> Z	1,361	0,174	Not Supported
X2 -> Z	7,374	0,000	Supported

Z -> Y	13,373	0,000	Supported
X1 -> Z -> Y	1,327	0.184	Not Supported
X2 -> Z -> Y	6,682	0.000	Supported

The findings of this study reveal a nuanced relationship between artificial intelligence (AI), digital literacy, work motivation, and employee performance within PT Semen Indonesia Logistik Group. AI (X1) was not found to significantly affect either employee performance (Y) or work motivation (Z), diverging from previous research (Pratama et al., 2023) that suggested AI enhances productivity through automation and efficiency. The discrepancy may stem from contextual differences, including a lack of AI integration, limited employee engagement, and the absence of training, which reduces employees' perception of AI as a tool for improving performance or motivation. In contrast, digital literacy (X2) demonstrated a significant direct effect on both motivation and performance, with five key competencies—data and information handling, communication and collaboration, content creation, safety, and problem-solving—shown to enhance employees' psychological readiness, adaptability, and efficacy in digital environments. This aligns with prior findings (e.g., Celik, 2023; Nikou et al., 2022) and supports McClelland's motivation theory, where digital literacy strengthens the need for achievement, power, and affiliation. Work motivation (Z) also significantly mediated the relationship between digital literacy and employee performance, reinforcing the idea that technical skill must be accompanied by internal drive. However, motivation did not mediate the AI–performance link, indicating that without a human-centered implementation strategy, AI alone cannot trigger the motivational mechanisms necessary for performance enhancement. Overall, the study suggests that while digital literacy is a powerful driver of both motivation and performance, AI's impact depends heavily on the organizational context, employee perception, and the extent of strategic integration.

CONCLUSION

Based on the analysis conducted at PT Semen Indonesia Logistik Group, this study concludes that AI does not have a significant effect on either employee motivation or performance, while digital literacy shows a significant direct and indirect influence on performance through increased motivation. These results highlight that in this organizational context, strengthening digital literacy is more effective in enhancing human resource performance than the current implementation of AI, which may be perceived as disruptive due to a lack of training, communication, and employee involvement. Demographic factors—such as the dominance of male employees in operational roles, the concentration of employees in the 30–39 age group, and those with 5–10 years of tenure—reveal that perceptions of AI as a threat to job security can hinder motivation, especially when AI is not integrated with a human-centered management approach. Conversely, digital literacy is perceived as an empowering skill, increasing confidence, adaptability, and intrinsic motivation. These findings align with the Technology Acceptance Model (TAM), which underscores the importance of perceived usefulness and ease of use in technology adoption. The study emphasizes that the success of digital transformation relies not solely on technology but on the psychological readiness and

competence of employees, factors shaped by inclusive, participatory, and empowering organizational strategies.

Limitation and Further research

This study has several limitations that should be acknowledged. First, the research was conducted exclusively within PT Semen Indonesia Logistik Group and involved only respondents at the managerial level, including Managers, Senior Managers, and Senior Vice Presidents, which limits the generalizability of the findings to broader populations or other organizational levels. The demographic concentration may not fully capture the perceptions and experiences of operational or non-managerial employees. Second, the data collection relied on self-administered questionnaires, and the researcher could not verify the seriousness or complete comprehension of the respondents when answering, which may have affected the accuracy of the data. Additionally, while the study intended to examine the role of Artificial Intelligence in the workplace, the operational definition was limited to the use of ChatGPT; however, the questionnaire did not specifically refer to ChatGPT, which may have caused ambiguity in respondents' interpretation of the AI construct.

For future research, several recommendations are proposed. First, PT Semen Indonesia Logistik Group is encouraged to review its AI implementation strategy, particularly by strengthening communication, employee training, and adopting a more human-centered approach to technology adoption, to enhance understanding and acceptance. Second, the company should intensify efforts to improve digital literacy among employees, as the limited impact observed may stem from inadequate knowledge of AI's supportive role in work processes. Third, organizational culture and psychological factors, such as fear of job displacement, distrust of automation, or resistance to change, must be addressed by cultivating an environment that supports collaboration between humans and technology through inclusive change management practices. Finally, future studies should consider segmenting AI integration strategies based on job characteristics, as not all roles are equally suitable for automation. A more tailored, job-specific approach may yield clearer insights into where AI can most effectively enhance employee performance and motivation.

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