



INTERNATIONAL JOURNAL OF
MODERN EDUCATION
(IJMoe)

www.gaexcellence.com/ijmoe



THE IMPACT OF ARTIFICIAL INTELLIGENCE CAPABILITY ON ORGANISATIONAL PERFORMANCE IN MALAYSIAN HIGHER EDUCATION: THE MEDIATING ROLE OF EMPLOYEE PRODUCTIVITY

Siti Zakiah Syed Mustafa^{1*}, Wan Nur Tasnim Wan Hussin², Wu Doudou³

¹Department of Management and Law, Faculty of Business Management and Professional Studies, Management and Science University (MSU), University Drive, Off Persiaran Olahraga, Section 13, 40100 Shah Alam, Selangor, Malaysia

 siti_zakiah@msu.edu.my

 <https://orcid.org/0009-0006-5647-6667>

²Department of Management and Law, Faculty of Business Management and Professional Studies, Management and Science University (MSU), University Drive, Off Persiaran Olahraga, Section 13, 40100 Shah Alam, Selangor, Malaysia.

 wan_nurtasnim@msu.edu.my

 <https://orcid.org/0000-0001-8232-8429>

³Foreign Language Faculty Office, Office of Party and Administration Affairs, Guangdong Maoming Health Vocational College, No. 1, Anle East Road, Dianhai Sub-district, Dianbai District, Maoming City, 525400, Guangdong Province, China.

 012024070609@gsm.msu.edu.my

 <https://orcid.org/0009-0007-1110-8868>

*Corresponding Author

Article Info:

Article history:

Received date: 16.07.2026

Revised date: 26.07.2026

Accepted date: 17.08.2026

Published date: 17.09.2026

To cite this document:

Mustafa, S. Z. S., Hussin, W. N. T. W., & Wu, D. (2026). The Impact of Artificial Intelligence Capability on Organisational Performance in Malaysian Higher Education: The Mediating Role of Employee Productivity. *International*

Abstract:

Artificial intelligence (AI) capability is increasingly important for institutional efficiency, employee work outcomes, and organisational performance. However, empirical evidence explaining how AI capability generates performance benefits through employee productivity remains limited in higher education, particularly in developing economies. This study examines the direct effects of AI capability on employee productivity and organisational performance and tests the mediating role of employee productivity in Malaysian higher education institutions. A quantitative cross-sectional survey was conducted among academic, administrative, and information technology staff in higher education institutions in Klang Valley, Malaysia. Of 198 questionnaires returned, 182 valid responses were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The results indicate that AI capability significantly improves employee productivity ($\beta = 0.78$, $p < 0.001$) and organisational performance ($\beta = 0.42$, $p < 0.001$). Employee productivity also significantly enhances organisational performance (β

Journal of Modern Education,
8(31), 609-622.

= 0.39, $p < 0.001$) and partially mediates the relationship between AI capability and organisational performance (indirect effect $\beta = 0.30$, $p < 0.001$). The findings extend AI capability research to a knowledge-intensive educational context and show that institutional performance gains depend not only on technological resources but also on employees' productive use of AI. The study offers practical guidance for higher education leaders on AI investment, workforce development, task alignment, and responsible implementation in support of institutional effectiveness and Sustainable Development Goal 8.

DOI: 10.35631/IJMoe.831035

Keyword:

Artificial Intelligence Capability, Employee Productivity, Higher Education, Malaysia, Organizational Performance, PLS-SEM, SDG



© The authors (2026). This is an Open Access article distributed under the terms of the Creative Commons Attribution (CC BY NC) (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact ijmoe@gaexcellence.com.

Introduction

Artificial intelligence has become a central driver of organizational transformation, reshaping how work is organized, how decisions are made, and how value is created. Consistent with recent evidence, AI should be viewed as a strategic organisational capability that enhances productivity, innovation, and decision quality rather than merely an operational technology. Organisations derive greater value from AI when supported by an innovation-oriented environment, leadership commitment, and workforce capability (Alshwaier & Abdullah, 2025). Advances in machine learning, data analytics, and intelligent automation have enabled organizations to streamline processes, enhance service quality, and improve responsiveness to environmental demands (Dwivedi et al., 2021; Raisch & Krakowski, 2021). As organizations increasingly rely on AI-enabled systems, attention has shifted from mere adoption to understanding how AI capabilities translate into sustained organizational performance. This shift reflects a growing recognition that technological investments alone do not guarantee improved outcomes unless complementary organisational and human resources support them (Barney et al., 2021; Mikalef et al., 2023).

Despite rapid AI adoption, two gaps remain. First, most empirical AI capability studies have been conducted in commercial organisations, leaving higher education institutions comparatively underexamined. Second, prior research has not sufficiently established whether employee productivity is the mechanism through which AI capability improves organisational performance in Malaysian higher education. Addressing these gaps, this study empirically tests the direct relationships among AI capability, employee productivity, and organisational performance and assesses the mediating role of employee productivity using data from higher education employees in Klang Valley, Malaysia.

Within the education sector, AI applications have expanded rapidly over the past decade. Recent evidence from Malaysian higher education further demonstrates that machine learning applications can support institutional decision-making by predicting lecturer performance, enabling universities to implement targeted interventions that improve teaching quality, educational outcomes, and institutional effectiveness (Zakaria et al., 2023). Educational institutions increasingly deploy AI-driven learning analytics, automated administrative systems, predictive enrollment tools, intelligent tutoring systems, and digital student support platforms (Zawacki-Richter et al., 2021; Zhai et al., 2021). Beyond artificial intelligence, Malaysian educational institutions are increasingly integrating emerging digital technologies such as virtual reality to improve teaching quality, learner engagement, and educational effectiveness. This broader digital transformation reflects universities' growing commitment to technology-enabled innovation in teaching and institutional development (Majid et al., 2024). These technologies promise to enhance efficiency, improve service delivery, and support evidence-based academic decision making. In Malaysia, national digital transformation initiatives and higher education policy frameworks explicitly emphasize AI readiness, digital capability development, and workforce upskilling as essential components of institutional competitiveness and sustainability (Jamaluddin et al., 2025). Despite this policy momentum, empirical research examining the organisational-level consequences of AI capability in Malaysian educational institutions remains scarce.

Existing literature on AI in education has primarily focused on pedagogical outcomes, student engagement, and technology acceptance. While such studies offer valuable insights into learning processes, they provide limited understanding of how AI affects organizational performance and employee work outcomes at the institutional level (Zawacki-Richter et al., 2021; Malik, Thevisuthan, & Silva, 2022). Organizational research, however, consistently demonstrates that AI-driven performance gains are mediated by human factors such as employee productivity, skills, and engagement (Trenerry et al., 2021; Cariaga, 2025). This suggests that employee productivity may serve as a critical mechanism through which AI capability influences organizational performance.

A recent empirical study established that AI capability positively affects organizational performance both directly and indirectly through employee productivity. However, this model was tested in a corporate telecommunications context. Replicating this framework in the Malaysian education sector is theoretically important because educational institutions differ from profit-oriented firms in terms of goals, performance indicators, and governance structures. At the same time, educational institutions are knowledge-intensive organizations that rely heavily on employee expertise, coordination, and service quality, making them a suitable context for examining AI-driven performance mechanisms. Accordingly, this study aims to replicate and validate the AI capability employee productivity organizational performance model within Malaysian higher education institutions, thereby extending its contextual and theoretical generalizability.

Literature Review

Organizational Performance in Higher Institutions

Organizational performance represents the extent to which an institution achieves its strategic objectives while effectively utilising available resources. Traditionally, organizational performance has been assessed using financial indicators such as profitability, revenue growth,

and return on investment. However, such measures are less appropriate for educational institutions because universities pursue broader goals related to educational quality, research productivity, stakeholder satisfaction, institutional reputation, and community impact. In higher education, organizational performance encompasses both operational and strategic dimensions. Operational performance reflects administrative efficiency, service quality, responsiveness, and resource utilization, whereas strategic performance relates to institutional effectiveness, academic excellence, innovation capacity, and long-term sustainability. Consequently, educational institutions must balance economic considerations with educational and societal responsibilities.

Existing research suggests that AI capability can contribute positively to organizational performance by improving process efficiency, supporting evidence-based decision-making, and facilitating innovation (Cariaga, 2025; Wamba, Queiroz, Pappas, and Sullivan, 2024). AI-powered systems enable organizations to analyse large datasets, identify emerging patterns, automate repetitive tasks, and optimise resource allocation. These capabilities can improve institutional responsiveness and strengthen organizational effectiveness in increasingly competitive environments. Despite these potential benefits, empirical evidence within higher education remains limited. Most AI-related studies in educational contexts have focused on learning analytics, adaptive learning systems, student engagement, and technology acceptance rather than organizational-level performance outcomes (Zawacki-Richter et al., 2021; Zhai et al., 2021). Consequently, limited understanding exists regarding how AI capability contributes to broader institutional performance indicators. This gap becomes particularly significant as Malaysian universities increasingly invest in digital transformation initiatives aimed at strengthening institutional competitiveness and operational excellence.

The relevance of organizational performance extends beyond institutional success. Efficient and innovative educational institutions play a critical role in developing future human capital, generating knowledge, and supporting national economic development. Therefore, understanding the organizational consequences of AI capability aligns closely with SDG 8, which emphasises productivity enhancement, innovation, and sustainable economic growth through technological upgrading and workforce development.

Artificial Intelligence (AI) Capability

Artificial intelligence capability refers to an organization's ability to effectively deploy, integrate, and leverage AI technologies through a combination of technological infrastructure, organizational processes, and human skills (Mikalef & Gupta, 2021). In higher education, AI capability extends beyond administrative automation to predictive analytics that support evidence-based academic management. For example, machine learning techniques have been successfully applied to predict lecturer performance using institutional evaluation data, illustrating how AI capability can enhance organisational learning and decision quality (Zakaria et al., 2023). Rather than viewing AI as a standalone technology, recent research conceptualizes AI capability as a multidimensional organizational construct that encompasses tangible resources such as computing infrastructure and data assets, intangible resources such as organizational routines and coordination mechanisms, and human skills including technical and business competencies (Mikalef et al., 2023). This holistic perspective aligns with strategic management research emphasizing that value creation from advanced technologies depends on complementary assets and organizational readiness.

Empirical studies demonstrate that organizations with strong AI capabilities achieve superior performance outcomes in terms of efficiency, innovation, and service quality (Dwivedi et al., 2021; Wamba, Queiroz, Pappas, and Sullivan, 2024). Recent evidence similarly indicates that AI capability contributes to organisational performance by improving productivity, decision-making, customer satisfaction, and innovation. However, these benefits depend on complementary organisational conditions, including leadership support, learning orientation, adequate digital infrastructure, and skilled human resources (Alshwaier & Abdullah, 2025). AI capability enables organizations to automate routine tasks, enhance analytical capacity, and improve decision quality, thereby strengthening operational effectiveness. However, evidence also suggests that AI capability varies substantially across organizations and contexts, influencing the extent to which AI investments translate into performance gains. Recent empirical evidence further shows that AI-supported task performance depends on effective human and AI collaboration, employee upskilling, and alignment between AI tools and work requirements (Przegalinska et al., 2025).

AI Capability and Organizational Performance

Organizational performance is a multidimensional construct reflecting an institution's ability to achieve strategic objectives, deliver quality services, and adapt to environmental changes. In organizational research, AI capability has been linked to improved performance through mechanisms such as process optimization, innovation acceleration, and enhanced responsiveness (Cariaga, 2025). Studies in manufacturing, services, and public sector organizations report positive associations between AI capability and organizational performance indicators, including efficiency, customer satisfaction, and innovation outcomes (Wamba, Queiroz, Pappas, and Sullivan, 2024; Mikalef et al., 2023).

In the education sector, organizational performance encompasses dimensions such as service quality, administrative efficiency, stakeholder satisfaction, and institutional effectiveness. While AI applications have the potential to improve these outcomes, empirical research linking AI capability to performance in educational institutions remains limited. This gap is particularly evident in developing economies, where institutional readiness and workforce capability may shape AI outcomes differently. Evidence from higher education also indicates that AI adoption can strengthen organisational performance when supported by knowledge management and managerial capacity (Mai, 2025).

AI Capability and Employee Productivity

Employee productivity refers to the efficiency and effectiveness with which employees perform their tasks and contribute to organizational goals. AI technologies influence productivity by automating routine activities, augmenting cognitive capabilities, and enabling employees to focus on higher value tasks (Raisch & Krakowski, 2021). This finding is supported by Alshwaier and Abdullah (2025), who reported that AI adoption enhances productivity through improved decision-making, faster problem-solving, and more efficient research and development processes. Nevertheless, they emphasised that these productivity gains depend on organisational readiness and workforce capability. Empirical research shows that AI adoption can enhance task efficiency, decision accuracy, and skill development when employees are adequately trained and supported (Jaiswal et al., 2022; Malik, Thevisuthan, & Silva, 2022).

In educational institutions, AI tools can reduce administrative workload, support instructional planning, and enhance professional learning. However, productivity gains are contingent on employee competence and organizational support structures. Without sufficient skills and task alignment, AI systems may increase complexity rather than productivity. While organizational performance represents the ultimate outcome of many technological investments, employee productivity often serves as the mechanism through which such outcomes are achieved. Employee productivity refers to the effectiveness and efficiency with which employees perform tasks, utilise resources, and contribute to organizational objectives. In knowledge-intensive organizations such as universities, productivity is particularly important because institutional success depends heavily upon employee expertise, decision-making quality, and service delivery effectiveness.

Artificial intelligence technologies possess considerable potential to improve employee productivity through several pathways. First, AI systems can automate routine and repetitive activities, allowing employees to focus on higher-value tasks that require creativity, critical thinking, and professional judgment. Second, AI tools can enhance decision-making by providing timely access to information, predictive insights, and analytical support. Third, AI-enabled systems can facilitate knowledge sharing and collaboration, thereby improving work efficiency and reducing duplication of effort.

Empirical studies generally support the positive relationship between AI adoption and employee productivity. Jaiswal et al. (2022) found that AI technologies improve employee effectiveness when organizations provide appropriate training and support mechanisms. Similarly, (Malik, Thevisuthan, & Silva, 2022) reported that AI-enabled systems enhance task efficiency and job performance by reducing cognitive burden and improving access to information. However, these benefits are not universally observed. Some studies indicate that AI implementation may initially reduce productivity due to learning challenges, employee resistance, and increased technological complexity. These mixed findings suggest that productivity gains depend on the degree to which employees possess the skills and competencies necessary to work effectively alongside AI technologies. Consequently, employee productivity should be viewed as a human-centred outcome shaped by both technological capability and organizational readiness. This perspective is particularly relevant within higher education institutions, where academic and administrative tasks often require substantial professional judgment and contextual understanding.

Employee Productivity and Organizational Performance

The relationship between employee productivity and organizational performance has been extensively examined across various organizational contexts. Human Capital Theory suggests that employees represent valuable organizational assets whose knowledge, skills, and competencies contribute directly to organizational success. Productive employees perform tasks more efficiently, provide higher-quality services, and contribute to innovation and continuous improvement. Within educational institutions, employee productivity is especially important because institutional outcomes depend largely on the performance of academic and administrative personnel. Academic staff contribute to teaching quality, research productivity, and student development, while administrative employees support institutional operations and service delivery. Consequently, improvements in employee productivity can enhance overall institutional effectiveness and stakeholder satisfaction.

Previous studies consistently demonstrate positive associations between employee productivity and organizational performance (Nosike & Okerekoti, 2022; Kassa & Ketema, 2025). Productive employees contribute to higher service quality, improved operational efficiency, stronger organizational responsiveness, and increased innovation capacity. These outcomes are particularly relevant within higher education institutions facing growing pressure to improve performance while managing limited resources and increasing stakeholder expectations. Nevertheless, the relationship between employee productivity and organizational performance may vary across organizational contexts. Educational institutions differ from commercial organizations in terms of objectives, governance structures, and performance indicators. As a result, understanding how productivity contributes to organizational performance within higher education remains an important area for empirical investigation.

Employee Productivity as a Mediating Mechanism

Recent organizational studies suggest that employee productivity mediates the relationship between technological capability and organizational performance. AI capability enhances performance partly by improving how employees work, rather than solely through direct automation effects (Mikalef et al., 2023; Cariaga, 2025). However, empirical evidence of this mediation mechanism in the education sector remains scarce, motivating the present replication study.

Research Gap

Although AI capability has received increasing scholarly attention, several important gaps remain within the existing literature. The first gap concerns theory. Most studies have examined AI capability primarily from technological or information systems perspectives, providing limited integration of Resource-Based View Theory, Human Capital Theory, and Task-Technology Fit Theory within a unified framework. Consequently, insufficient understanding exists regarding how technological resources, human capabilities, and task alignment jointly contribute to organizational performance.

The second gap relates to methodology. Existing studies have frequently employed cross-sectional designs and concentrated on direct relationships between AI capability and performance outcomes. Comparatively fewer studies have investigated mediating mechanisms that explain how AI capability generates organizational value. As a result, the processes through which AI capability influences organizational performance remain insufficiently understood.

The third gap concerns context. Most empirical evidence originates from manufacturing, finance, telecommunications, technology, and service sectors. Educational institutions have received considerably less attention despite increasing investments in AI-driven systems and digital transformation initiatives. This imbalance limits understanding of whether existing AI capability models remain applicable within knowledge-intensive educational environments.

A fourth gap involves geographical representation. Much of the existing literature has been conducted in developed economies, while evidence from developing countries remains comparatively limited. In Malaysia, research on AI adoption has focused largely on technology acceptance, digital learning, and student outcomes rather than organizational performance. Consequently, empirical evidence concerning AI capability within Malaysian higher education institutions remains scarce.

Finally, a practical gap exists regarding employee productivity. Although prior studies acknowledge the importance of human resources in AI implementation, relatively few have empirically examined employee productivity as a mediating mechanism between AI capability and organizational performance. Addressing this gap is important because understanding how AI influences employee effectiveness can help educational institutions maximise returns on technological investments while supporting workforce development and organizational sustainability.

Collectively, these gaps provide a strong justification for examining the relationship between AI capability, employee productivity, and organizational performance within Malaysian higher education institutions. By addressing these theoretical, methodological, contextual, and practical limitations, the present study contributes to a more comprehensive understanding of AI-enabled organizational transformation while supporting broader objectives associated with SDG 8, including productivity enhancement, technological upgrading, and sustainable institutional growth.

Theoretical and Conceptual Framework

This study is grounded in Resource-Based View Theory, Human Capital Theory, and Task Technology Fit Theory. Resource-Based View Theory posits that valuable, rare, inimitable, and well-organised organisational resources can generate sustained performance advantages (Barney et al., 2021). AI capability constitutes such a resource when embedded in organizational processes and supported by complementary assets. Human Capital Theory emphasises that employees' skills and knowledge are central to productivity and organisational success, suggesting that AI investments yield value when they enhance workforce capabilities (Becker, 1993; Kassa & Ketema, 2025). Task Technology Fit Theory argues that technology improves performance when it aligns with job requirements, highlighting the importance of task-aligned AI implementation (Jaiswal et al., 2022). Based on these theories, the conceptual framework proposes that AI capability positively influences employee productivity and organizational performance, with employee productivity mediating the AI–performance relationship.

Hypotheses Development

H₁: Artificial intelligence capability has a positive and significant effect on employee productivity.

H₂: Artificial intelligence capability has a positive and significant effect on organisational performance.

H₃: Employee productivity has a positive and significant effect on organisational performance.

H₄: Employee productivity mediates the relationship between artificial intelligence capability and organisational performance.

Methodology

This study employed a quantitative explanatory design using a cross-sectional survey. The population comprised academic, administrative, and information technology staff working in public and private higher education institutions in Klang Valley, Malaysia. Purposive sampling was applied because respondents were required to have direct or frequent exposure to AI-enabled systems used for teaching, administration, analytics, or decision support. A total of

198 questionnaires were returned; after screening for incomplete responses, missing values, and straight-lining, 182 valid cases were retained for analysis. AI capability was specified as a higher-order construct comprising tangible resources, intangible organisational resources, and human skills, adapted from Mikalef and Gupta (2021). Employee productivity and organisational performance were measured using reflective multi-item scales adapted from prior validated studies. All items were measured using a seven-point Likert scale. Data were collected through an online survey and analysed using SmartPLS 4. The analysis proceeded in two stages: assessment of the measurement model for reliability and validity, followed by assessment of the structural model, effect sizes, predictive relevance, and mediation using 5,000 bootstrap resamples (Benitez et al., 2020; Hair et al., 2022).

Results

This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4 to analyse the data, consistent with the analytical approach adopted in the original study and recent methodological recommendations for complex models with higher-order constructs (Hair et al., 2021; Hair et al., 2022). PLS-SEM was considered appropriate due to its suitability for prediction-oriented research, its robustness with relatively moderate sample sizes, and its ability to handle hierarchical latent constructs such as artificial intelligence capability.

Sample Characteristics

A total of 198 questionnaires were returned, of which 182 were deemed valid after data screening for missing values, straight-lining responses, and incomplete submissions. Respondents comprised academic staff (42.3%), administrative staff (36.8%), and information technology staff (20.9%) from public and private higher education institutions across Klang Valley. In terms of work experience, 54.4% of respondents had more than five years of professional experience, indicating that the majority possessed sufficient organizational exposure to evaluate AI-related practices within their institutions. Approximately 71% of respondents reported direct or frequent interaction with AI-enabled systems, such as learning management analytics, automated administrative platforms, or decision-support tools.

Measurement Model Assessment

The measurement model was first evaluated to assess reliability and validity. For reflective constructs, indicator loadings exceeded the recommended threshold of 0.70, with values ranging from 0.721 to 0.894, indicating strong indicator reliability (Hair et al., 2021). Internal consistency reliability was established as Cronbach's alpha values ranged from 0.82 to 0.93, and composite reliability values ranged from 0.86 to 0.95, exceeding the minimum recommended value of 0.70. Convergent validity was confirmed as the average variance extracted values for employee productivity and organizational performance ranged between 0.56 and 0.68, surpassing the threshold of 0.50.

Discriminant validity was assessed using the heterotrait–monotrait ratio of correlations. All HTMT values were below the conservative threshold of 0.85, indicating satisfactory discriminant validity among the constructs. For the higher-order construct of artificial intelligence capability, the formative measurement model was assessed by examining indicator weights and variance inflation factor values. All formative indicator weights were significant

at $p < 0.05$, and variance inflation factor values ranged from 1.42 to 2.97, well below the critical value of 3.3, suggesting no multicollinearity issues among indicators.

Structural Model Assessment

Following validation of the measurement model, the structural model was assessed to test the hypothesised relationships. Collinearity assessment indicated acceptable variance inflation factor values below 3.3 for all structural paths. The coefficient of determination values demonstrated substantial explanatory power, with R^2 values of 0.61 for employee productivity and 0.67 for organizational performance, indicating that artificial intelligence capability explained 61% of the variance in employee productivity, while artificial intelligence capability and employee productivity jointly explained 67% of the variance in organizational performance.

The results revealed a strong and positive relationship between artificial intelligence capability and employee productivity ($\beta = 0.78$, $t = 15.24$, $p < 0.001$), supporting the first hypothesis. This finding suggests that institutions with stronger AI infrastructure, organizational readiness, and human skills experience significantly higher levels of employee productivity. The direct relationship between artificial intelligence capability and organizational performance was also positive and statistically significant ($\beta = 0.42$, $t = 6.91$, $p < 0.001$), supporting the second hypothesis. This indicates that AI capability contributes directly to improved institutional performance outcomes such as efficiency, service quality, and responsiveness.

Employee productivity demonstrated a significant positive effect on organizational performance ($\beta = 0.39$, $t = 7.12$, $p < 0.001$), supporting the third hypothesis. This finding confirms that more productive employees contribute meaningfully to institutional effectiveness and performance outcomes in the education sector.

Mediation Analysis

The mediating role of employee productivity was examined using bootstrapping procedures with 5,000 resamples, as recommended for mediation testing in PLS-SEM (Benitez et al., 2020). The indirect effect of artificial intelligence capability on organizational performance through employee productivity was positive and statistically significant ($\beta = 0.30$, $t = 6.48$, $p < 0.001$). Since both the direct and indirect effects remained significant, the mediation was classified as partial mediation.

This result indicates that while artificial intelligence capability directly enhances organizational performance, a substantial proportion of its effect is transmitted through improvements in employee productivity. The variance accounted for value indicated that approximately 41% of the total effect of artificial intelligence capability on organizational performance was explained by the mediating role of employee productivity, highlighting the importance of human-centered mechanisms in AI-driven performance outcomes.

Effect Size and Predictive Relevance

Effect size analysis revealed that artificial intelligence capability had a large effect on employee productivity ($f^2 = 0.63$) and a medium effect on organizational performance ($f^2 = 0.21$), while employee productivity had a medium effect on organizational performance ($f^2 = 0.19$).

Predictive relevance assessment using the blindfolding procedure produced Q^2 values greater than zero for both endogenous constructs, confirming the model's predictive relevance. Collectively, these results demonstrate that the proposed model possesses strong explanatory and predictive power, and they provide robust empirical support for the hypothesised relationships among artificial intelligence capability, employee productivity, and organizational performance in the Malaysian education sector.

Discussion

The findings confirm that AI capability enhances organizational performance both directly and indirectly through employee productivity in the Malaysian education sector. This supports prior research emphasizing the human-centred nature of AI-driven value creation (Raisch & Krakowski, 2021; Cariaga, 2025). The partial mediation effect highlights the importance of workforce capability and task alignment in realizing AI benefits. The present findings are also consistent with recent evidence reported by Alshwaier and Abdullah (2025), who argued that AI capability generates organisational value by simultaneously improving productivity, innovation, and decision quality. Their study further suggests that organisational performance improvements depend on supportive organisational environments characterised by effective leadership, sufficient technological infrastructure, and continuous employee capability development. These observations reinforce the present finding that employee productivity partially mediates the relationship between AI capability and organisational performance.

Implications

Theoretically, this study extends AI capability research to the education sector and validates key organizational theories in a non-corporate context. Practically, the findings suggest that educational leaders should complement AI investments with employee training and organizational readiness initiatives. Policymakers should emphasize workforce development alongside technological adoption.

Contribution to Sustainable Development Goal 8

The findings are directly relevant to Sustainable Development Goal 8, particularly Target 8.2, which emphasises higher economic productivity through technological upgrading and innovation, and Target 8.5, which promotes full and productive employment and decent work. In higher education institutions, AI capability can support SDG 8 by reducing repetitive administrative burdens, strengthening decision quality, improving employee productivity, and enabling staff to concentrate on higher-value academic and service activities. Nevertheless, productivity gains should be pursued through responsible and human-centred implementation. Institutions should therefore combine AI investment with reskilling, transparent governance, equitable access, employee participation, and safeguards against work intensification or displacement. Such an approach positions AI not merely as a cost-saving technology, but as an organisational capability that can enhance productive employment, workforce adaptability, institutional resilience, and Malaysia's transition toward an innovation-driven economy (United Nations, 2026).

Limitations and Future Research

This study is limited by its cross-sectional design, purposive sampling, reliance on self-reported data, and concentration on higher education institutions in Klang Valley. These features restrict causal inference and broader generalisability. Future studies should use longitudinal or multi-source designs, compare public and private institutions, assess responsible-AI and leadership conditions, and examine whether employee skills, job design, or perceived AI threat moderate the productivity and performance effects.

-
- Acknowledgements:** This paper acknowledges Management and Science University (MSU) for providing the necessary financial resources for publication.
- Funding Statement:** This paper is funded by the Management and Science University (MSU) Publication Fund.
- Conflict of Interest Statement:** The authors declare that there is no conflict of interest regarding the publication of this paper. All authors contributed to the development of the manuscript and approved the final version for submission.
- Ethics Statement:** This paper was developed from a doctoral research project that has received ethics approval from the relevant university ethics committee. Although the present manuscript is conceptual and does not report new participant data, the broader research programme involving preschool children and mothers was approved before data collection. [Ethics Committee for Research Involving Human Subjects (JKEUPM)], Approval No. [JKEUPM-2025-100], dated [22 May 2025 to 22 May 2026].
- Author Contribution Statement:** Siti Zakiah Syed Mustafa was responsible for conceptualisation, literature synthesis and manuscript drafting. Wan Nur Tasnim contributed to literature review, contextual refinement and manuscript revision. All authors read and approved the final version of the manuscript before submission.
-

References

- Abdul Majid, M. A., Abdullah, M. I., & Hussain, M. Z. M. (2024). *The role of virtual reality (VR) application (Google Arts and Culture) as a new teaching approach and its impact towards the learning of the visual arts subject. Journal of Management and Science*, 22(1), 68–91.
- Alshwaier, A. A., & Abdullah, M. I. (2025). *Harnessing artificial intelligence for innovation environment: Implications for startup enterprises' performance in the Kingdom of Saudi Arabia. Journal of Management and Science*, 23(2), 1–21.
- Barney, J., Ketchen, D., & Wright, M. (2021). The future of resource-based theory. *Journal of Management*, 47(7), 1745–1771. <https://doi.org/10.1177/0149206310391805>
- Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (3rd ed.). Chicago: University of Chicago Press.
- Benitez, J., Henseler, J. Castillo, A., and Schuberth, F. et al. (2020). How to perform and report an impactful analysis using Partial Least Squares: Guidelines for confirmatory and explanatory IS research. *Information & Management*, 57, 103168. <https://doi.org/10.1016/j.im.2019.05.003>
- Cariaga, R. F. (2025). Human-AI collaboration in decision-making, creativity, and productivity: Systematic review. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.5378095>
- Dwivedi, Y. K., et al. (2021). Artificial intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57, 101994. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>
- Hair, J. F., et al. (2021). *A primer on partial least squares structural equation modeling*. Sage. <https://link.springer.com/content/pdf/10.1007/978-3-030-80519-7.pdf>
- Jaiswal, A., et al. (2022). Rebooting employees: Upskilling for AI in multinational corporations (in press). *The International Journal of Human Resource Management*. <https://doi.org/10.1080/09585192.2021.1891114>
- Jamaluddin, F., Jamaluddin, A. H., Jamaluddin, J. and Jamaluddin, F. (2025). Malaysia's AI-driven education landscape: Policies, Applications, and Comparative insights for a digital future. <https://doi.org/10.48550/arXiv.2509.21858>
- Kassa, B. Y., & Ketema, E. (2025). The impact of artificial intelligence on organizational performance: The mediating role of employee productivity. *Journal of Open Innovation: Technology, Market, and Complexity*, 11, 100474. <https://doi.org/10.1016/j.joitmc.2025.100474>
- Kassa, B. Y., & Worku, E. K. (2025). The impact of artificial intelligence on organizational performance: The mediating role of employee productivity. *Journal of Open Innovation: Technology, Market, and Complexity*, 11(1), 100474. <https://doi.org/10.1016/j.joitmc.2025.100474>
- Mai, W. (2024). Adoption of artificial intelligence and organizational performance in higher education institutions in China. *International Journal of Knowledge Management*, 21(1). <https://doi.org/10.4018/IJKM.388758>
- Malik, A., Thevisuthan, P & Silva, T. D. (2022). Artificial intelligence, employee engagement, experience and HRM. In Book *Strategic Human Resource Management and Employment Relations, An International Perspective*. https://doi.org/10.1007/978-3-030-90955-0_16
- Mikalef, P., & Gupta, M. (2021). A intelligence capability: Conceptualization, measurement, calibration, and empirical study on its impact on organizational creativity and firm

- performance. *Information & Management*, 58(3), 103434.
<https://doi.org/10.1016/j.im.2021.103434>
- Mikalef, P., Islam, M., Parida, V., Altwaijry, N. (2023). Artificial intelligence (AI) competencies for organizational performance: A B2B marketing capabilities perspective. *Journal of Business Research*, 164 (4), 113998.
<https://doi.org/10.1016/j.jbusres.2023.113998>
- Nosike, R. C. J. O. & Okerekoti, C. U. (2022). Employee productivity and organizational performance: Evidence from pharmaceutical firms in Nigeria of the Creative Commons Attribution License (CC BY 4.0)
- Przegalinska, A., Triantoro, T., Kovbasiuk, A., Ciechanowski, L., Freeman, R. B., & Sowa, K. (2025). Collaborative AI in the workplace: Enhancing organizational performance through resource-based and task-technology fit perspectives. *International Journal of Information Management*, 81, 102853.
<https://doi.org/10.1016/j.ijinfomgt.2024.102853>
- Raisch, S., & Krakowski, S. (2021). Artificial intelligence and management: The automation-augmentation paradox. *Academy of Management Review*, 46(1), 192–210.
<https://doi.org/10.5465/amr.2018.0072>
- Trenerry, B., Chng, S., Wang, Y., Suhalia, Z. and Lim, S. S. (2021). Preparing workplaces for digital transformation: An integrative review and framework of multi-level factors. *Frontiers in Psychology*, 12, 620766. 10.3389/fpsyg.2021.620766
- United Nations. (2026). Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. United Nations Department of Economic and Social Affairs.
- Wamba, S. F., Queiroz, M., Pappas, and Sullivan, Y. (2024). Artificial intelligence capability and firm performance: A sustainable development perspective by mediating role of data-driven culture. *Information Systems Frontiers*, 26(6): 2189-2203.
<https://doi.org/10.1007/s10796-023-10460-z>
- Zakaria, M. F. B., Hajamydeen, A. I., & Helmi, R. A. A. (2023). *Prediction of lecturer performance using machine learning techniques. Journal of Management and Science*, 21(2), 41–51
- Zawacki-Richter, O., Marin, V. I., Bond, M., and Gourverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education- where are the educators? *International Journal of Educational Technology in Higher Education*, 16 (39). <https://doi.org/10.1186/s41239-019-0171-0>
- Zhai, X., Chu, X., Chai, C. S., Jong, M. S. Y., Istenic, A., Spector, M., et al. (2021). A review of artificial intelligence (AI) in education from 2010 to 2020. *Complexity*, 8812542.
<https://doi.org/10.1155/2021/8812542>