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AI Adoption and accounting efficiency in Indonesia and Malaysia

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ABSTRACT

This study extends the artificial intelligence (AI) accounting literature by examining how AI adoption translates into measurable accounting efficiency rather than focusing solely on technology adoption intention. It also reconceptualizes organizational readiness as a moderating mechanism influencing post-adoption performance. A quantitative research design was employed using survey data collected from 500 accounting professionals in Indonesia and Malaysia. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), including moderation and multi-group analyses. The findings indicate that AI adoption significantly improves accounting efficiency, with employee competence emerging as the strongest predictor, followed by data quality. Organizational readiness significantly strengthens the positive relationship between AI adoption and accounting efficiency, demonstrating that infrastructure, leadership commitment, and innovation-oriented culture are essential for maximizing AI benefits. The structural model explains 37.2% of the variance in accounting efficiency ($R^2 = 0.372$), while multi-group analysis reveals no significant structural differences between Indonesia and Malaysia. By integrating the Technology Acceptance Model, Resource-Based View, and Contingency Theory into a unified framework, this study advances a capability-performance perspective of AI-enabled accounting transformation. The findings suggest that sustainable accounting digitalization requires not only AI investment but also workforce upskilling, robust data governance, and strong organizational readiness.

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1. INTRODUCTION

The swift progression of artificial intelligence (AI) has profoundly transformed accounting and auditing methodologies on a global scale. AI-driven technologies such as robotic process automation (RPA), machine learning, and predictive analytics are progressively integrated into accounting frameworks to facilitate transaction processing, augment anomaly detection, and elevate reporting precision. Prior research consistently demonstrates that AI adoption contributes to time efficiency, reduced error rates, enhanced disclosure quality, and improved decision-making capability (Abdullah

& Almaqtari, 2024; Perdana et al., 2023; Solikin et al., 2023). Consequently, AI is widely recognized as a strategic enabler of accounting efficiency in both developed and emerging economies.

Despite this growing body of literature, existing studies remain fragmented in three important respects. A major unresolved debate concerns whether AI adoption itself directly improves accounting performance or whether performance gains depend primarily on complementary organizational capabilities. First, most empirical investigations examine AI adoption either as a technological acceptance issue (e.g., TAM-based studies) or as an organizational adoption phenomenon (e.g., TOE-based models), without sufficiently explaining how AI adoption translates into measurable accounting efficiency outcomes (Damerji & Saleem, 2021; Norzelan et al., 2024; Anh et al., 2024). As a result, the explanatory mechanisms connecting AI adoption to accounting efficiency remain underdeveloped. This theoretical tension creates uncertainty regarding whether AI-driven accounting efficiency is primarily technology-driven or capability-driven.

Second, although organizational readiness is frequently examined as an antecedent of AI adoption, limited research conceptualizes readiness as a boundary condition that strengthens or weakens the effect of AI adoption on performance outcomes. Most prior studies position readiness as a predictor of adoption decisions rather than as a moderating mechanism influencing post-adoption efficiency (Damerji & Saleem, 2021; Anh et al., 2024). This creates a theoretical gap regarding how contextual alignment conditions the performance benefits of AI implementation.

Third, existing research is predominantly single-country in design. While studies have examined AI adoption in Indonesia (Handoko et al., 2024), Malaysia (Wong & Yap, 2024), Vietnam (Afifa et al., 2024), and other emerging markets, direct comparative analyses across ASEAN countries remain scarce. Institutional theory suggests that regulatory environments, professional standards, educational systems, and infrastructural maturity influence technology adoption trajectories (DiMaggio & Powell, 1983). However, empirical evidence comparing how such institutional differences shape AI-driven accounting efficiency remains limited.

These gaps are particularly salient in the Southeast Asian context. Indonesia and Malaysia share regional integration under ASEAN and similar digital transformation agendas, yet differ in digital infrastructure maturity, institutional capacity, and professional ecosystem development (Vărzaru et al., 2022; Economic Planning Unit & Malaysia Digital Economy Corporation, 2021). Malaysia generally exhibits higher digital readiness indicators, whereas Indonesia demonstrates rapid digital expansion but heterogeneous organizational capabilities across sectors. This institutional contrast provides a theoretically meaningful setting to test whether AI adoption mechanisms operate uniformly across contexts or are contingent upon organizational readiness structures.

To remedy these deficiencies, the present investigation amalgamates three synergistic theoretical frameworks. The Technology Acceptance Model (TAM) elucidates the mechanisms by which the utilization of technology augments performance through the lenses of perceived utility and actual system engagement. The Resource-Based View (RBV) asserts that enduring competitive advantages in performance emerge from the possession of valuable and scarce organizational assets, including employee expertise and high-caliber data. Contingency Theory further argues that performance outcomes depend on the alignment between technological strategies and organizational context. By synthesizing TAM, RBV, and Contingency Theory, this study conceptualizes AI adoption not merely as a technological decision but as a capability-performance mechanism conditioned by organizational readiness.

The integration of TAM, RBV, and Contingency Theory provides a complementary and multi-level explanation of AI-driven accounting transformation. TAM explains the technological dimension by clarifying how AI utilization and perceived usefulness influence operational effectiveness. However, TAM alone is insufficient to explain why organizations with similar levels of AI adoption often experience different performance outcomes. Therefore, RBV complements TAM by emphasizing that organizational resources particularly employee competence and data quality determine whether AI technologies can be transformed into strategic value and accounting efficiency.

Nevertheless, resource possession alone does not guarantee superior outcomes, because the effectiveness of technological and organizational resources depends on contextual alignment. Contingency Theory therefore strengthens the model by explaining how organizational readiness, leadership support, and innovation-oriented culture condition the effectiveness of AI implementation. The integration of these three theories creates a unified capability-performance framework in which AI adoption represents the technological mechanism (TAM), employee competence and data quality represent strategic organizational capabilities (RBV), and organizational readiness functions as the contextual boundary condition determining the extent to which technological and organizational capabilities translate into accounting efficiency (Contingency Theory).

Accordingly, this study examines the influence of the degree of artificial intelligence implementation, the proficiency of employees, and the caliber of data on the efficiency of accounting practices, while examining the moderating role of organizational readiness in Indonesia and Malaysia. Unlike prior studies that focus primarily on adoption intention or technology acceptance, this study directly models accounting efficiency as the central organizational outcome of AI implementation.

The conceptual contribution of this study lies in three aspects. First, this study extends AI adoption literature by shifting the analytical focus from behavioral intention toward post-adoption accounting performance outcomes. Second, it reconceptualizes organizational readiness as a moderating capability rather than merely an antecedent of adoption, thereby clarifying the contingency conditions under which AI creates efficiency gains. Third, this study contributes comparative evidence from two ASEAN emerging economies, strengthening the contextual applicability of AI adoption theory within developing-country accounting environments.

Through this endeavor, the present research enriches the discourse surrounding accounting and digital transformation by proposing a capability-oriented interpretation of AI-facilitated efficiency and elucidating the manner in which institutional and organizational frameworks influence the actualization of technological advantages.

2. RESEARCH METHOD

The purpose of this research is to develop a Transaction Monitoring Framework on an Accounting Information System (AIS) to detect the Fraud in Rural Credit Banks (BPR) utilizing the Research and Development (R&D) technique in the conceptual design phase (Hansen et al., 2022).

This investigation adopts a quantitative explanatory research framework to assess the influence of artificial intelligence implementation on accounting efficiency within the contexts of Indonesia and Malaysia. The analysis evaluates the implications of the degree of AI adoption, the competency of employees, and the quality of data on accounting efficiency, while also scrutinizing the moderating influence of organizational preparedness. A cross-sectional survey methodology is utilized to gather primary data from accounting professionals engaged in public accounting firms, corporate accounting divisions, internal audit departments, financial institutions, and governmental accounting agencies across both nations. A purposive sampling methodology is employed to ensure that participants possess pertinent experience with digital or AI-integrated accounting systems, with selection criteria including a minimum of one year of professional engagement and direct participation in accounting or financial reporting activities. The final dataset comprises 500 valid responses, encompassing 250 respondents from Indonesia and another 250 respondents from Malaysia.

The sample size of 500 respondents was considered statistically adequate for PLS-SEM estimation, moderation analysis, and Multi-Group Analysis (MGA). Following the recommendations of Hair et al. (2019), PLS-SEM requires substantially larger sample sizes when moderation effects and group comparisons are incorporated due to increased model complexity and interaction estimation. The minimum sample requirement based on the ten-times rule and statistical power analysis was substantially exceeded in this study. Furthermore, the balanced subgroup distribution between Indonesia and Malaysia (250 respondents each) satisfies the recommended minimum threshold for PLS-MGA to ensure stable parameter estimation and sufficient statistical power for detecting group differences. The relatively large sample size also improves the robustness, predictive accuracy, and

generalizability of the structural model results across different organizational and institutional contexts.

The respondent profile indicates substantial diversity across sectors and professional backgrounds. Respondents were drawn from public accounting firms (28.4%), corporate finance and accounting departments (41.2%), financial institutions (17.6%), government accounting agencies (8.8%), and internal audit units (4.0%). In terms of job position, the sample included staff accountants (34.8%), senior accountants (27.6%), auditors (18.2%), finance managers (12.4%), and chief financial officers or accounting supervisors (7.0%). Regarding organization size, 31.6% of respondents worked in small and medium-sized enterprises, 46.8% in large corporations, and 21.6% in multinational or publicly listed companies. Furthermore, 62.4% of respondents reported more than two years of experience using AI-enabled or digital accounting systems, while 37.6% had less than two years of AI-related experience. These characteristics indicate that the sample adequately represents accounting professionals with varying levels of organizational complexity and technological exposure.

Data were gathered utilizing a digital survey disseminated through professional accounting organizations, LinkedIn professional networks, and institutional email distribution lists. The instrument was initially developed in English and translated into Bahasa Indonesia and Bahasa Malaysia using the back-translation method to ensure semantic equivalence. A preliminary investigation involving scholarly experts and accounting professionals was executed to assess clarity, validity, and contextual pertinence, culminating in minor amendments prior to comprehensive data collection. All measurement constructs were evaluated utilizing a seven-point Likert scale that spans from strong disagreement to strong agreement. The constructs scrutinized encompass the level of AI adoption, employee proficiency, data integrity, organizational preparedness, and accounting effectiveness, all of which are measured reflectively and adapted from extant literature.

Data analysis was executed utilizing Partial Least Squares Structural Equation Modeling via SmartPLS 4.0, which is deemed suitable for predictive modeling, moderation analysis, and comparisons across multiple groups (Hair et al., 2019). The analytical process was carried out in two distinct phases. Initially, the measurement model was scrutinized to validate its reliability and validity. Internal consistency was gauged employing Cronbach's Alpha and Composite Reliability, with requisite threshold values surpassing 0.70, while convergent validity was assessed through Average Variance Extracted, which needed to exceed 0.50. Discriminant validity was appraised using the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio, requiring values to remain below 0.90. Multicollinearity was evaluated via the Variance Inflation Factor, necessitating values under 3.3. Subsequently, the structural model was assessed employing bootstrapping with 5,000 resamples to evaluate path coefficients, t-statistics, p-values, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). A Multi-Group Analysis was performed to contrast structural relationships between Indonesia and Malaysia subsequent to the establishment of measurement invariance utilizing the MICOM procedure.

The use of a cross-sectional research design has important methodological implications for causal interpretation. Although the proposed structural relationships are theoretically grounded in TAM, RBV, and Contingency Theory, the cross-sectional nature of the data limits the ability to establish definitive temporal causality among variables. The findings therefore reflect associative and predictive relationships rather than fully causal relationships. Nevertheless, the explanatory research design, supported by strong theoretical foundations, robustness testing, moderation analysis, and predictive modeling through PLS-SEM, provides meaningful evidence regarding the directional influence of AI adoption, employee competence, data quality, and organizational readiness on accounting efficiency. Future longitudinal studies are recommended to capture dynamic capability development and changes in AI implementation over time, thereby strengthening causal inference regarding AI-driven accounting transformation.

To ensure the robustness of the findings, several additional tests were performed. Common method bias was assessed using Harman's single-factor test and full collinearity VIF, indicating no significant bias. Endogeneity was examined using the Gaussian Copula approach, which showed no

endogeneity issues. Sensitivity analysis across subsamples based on sector and country revealed consistent path directions and magnitudes, confirming the stability and robustness of the model. Non-response bias was also assessed by comparing early and late respondents following Armstrong and Overton's procedure. Independent sample t-tests indicated no statistically significant differences across the main constructs ($p > 0.05$), suggesting that non-response bias did not materially affect the results of this study.

The research framework (H1–H4) is presented in Figure 1. The framework illustrates the direct effects of AI Adoption Level, Employee Competence, and Data Quality on Accounting Efficiency. In addition, Organizational Readiness functions as a moderating variable that strengthens the relationship between AI Adoption Level and Accounting Efficiency. The framework also incorporates Multi-Group Analysis (MGA) to compare the structural relationships between Indonesia and Malaysia.

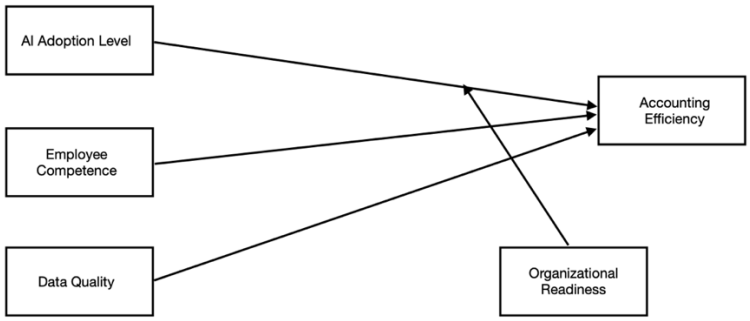

Figure 1. Research framework

3. RESULTS AND DISCUSSIONS

Descriptive Statistics

Descriptive statistical analyses were performed to investigate the overarching trends in respondents' perceptions concerning the adoption of artificial intelligence, the competence of employees, the quality of data, the preparedness of the organization, and the efficiency of accounting practices.

Table 1. Descriptive statistics

Variable	Mean	Std. Dev	Min	Max
AI Adoption Level (AIAL)	5.60	0.82	2.10	7.00
Employee Competence (EC)	5.48	0.78	2.40	7.00
Data Quality (DQ)	5.72	0.74	3.00	7.00
Organizational Readiness (OR)	5.35	0.86	2.00	7.00
Accounting Efficiency (AE)	5.66	0.80	3.00	7.00

Measurement Model Evaluation

The measurement model underwent a rigorous evaluation through the assessment of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. The findings reveal that all outer loadings surpass the recommended threshold of 0.70, thereby signifying satisfactory indicator reliability. The outer loadings for the AI Adoption Level range from 0.919 to 0.927, Data Quality from 0.927 to 0.943, Employee Competence from 0.934 to 0.938, Organizational Readiness from 0.862 to 0.949, and Accounting Efficiency from 0.955 to 0.956. These elevated loading values substantiate that the indicators effectively represent their corresponding latent constructs. Moreover, the constructs fulfill the criteria for internal consistency reliability, as evidenced by Cronbach's Alpha and Composite Reliability values exceeding 0.70. Convergent validity is further established, with Average Variance Extracted (AVE) values surpassing the minimum threshold of 0.50. Discriminant validity was validated utilizing the HTMT criterion, with all ratios remaining below 0.90.

Collectively, these findings affirm that the measurement model is both reliable and valid, thereby rendering it suitable for subsequent structural model analysis.

Table 2. Measurement model results

Construct	Cronbach's Alpha	Composite Reliability	AVE
AIAL	0.92	0.94	0.84
EC	0.93	0.95	0.86
DQ	0.93	0.95	0.87
OR	0.90	0.93	0.81
AE	0.96	0.97	0.91

Hypothesis Testing

The structural model underwent a rigorous evaluation through the application of bootstrapping techniques, utilizing a total of 5,000 resamples. The findings are systematically outlined in Table 3. The coefficient of determination (R^2) associated with Accounting Efficiency is calculated to be 0.372, signifying that 37.2% of the variability in accounting efficiency can be attributed to the levels of AI adoption, employee proficiency, data integrity, and the compounded interaction effect.

Table 3. Structural model results

Hypothesis	Path	β	t-value	p-value	f^2	Result
H1	AIAL → AE	0.297	6.214	0.000	0.108	Supported
H2	EC → AE	0.316	6.872	0.000	0.126	Supported
H3	DQ → AE	0.209	4.985	0.000	0.071	Supported
H4	AIAL × OR → AE	0.157	3.842	0.000	0.042	Supported
R^2 (Accounting Efficiency) = 0.372						
Q^2 = 0.268						

The structural model underwent rigorous assessment through the application of bootstrapping techniques, utilizing a total of 5,000 resamples. The results indicate that all direct and moderating relationships are statistically significant at $p < 0.001$. Employee Competence demonstrates the strongest direct effect on Accounting Efficiency ($\beta = 0.316$, $t = 6.872$), followed by AI Adoption Level ($\beta = 0.297$, $t = 6.214$) and Data Quality ($\beta = 0.209$, $t = 4.985$).

The moderating influence of Organizational Readiness is likewise considerable ($\beta = 0.157$, $t = 3.842$), indicating that higher readiness strengthens the positive impact of AI adoption on accounting efficiency. The effect size (f^2) values indicate small to medium effects, with Employee Competence showing the largest effect size ($f^2 = 0.126$), followed by AI Adoption Level ($f^2 = 0.108$), Data Quality ($f^2 = 0.071$), and the interaction term ($f^2 = 0.042$).

The coefficient of determination ($R^2 = 0.372$) suggests that the model explains 37.2% of the variance in Accounting Efficiency, indicating moderate explanatory power. The predictive relevance value ($Q^2 = 0.268$) further confirms that the model has satisfactory predictive capability.

Moderating Effect of Organizational Readiness

The interaction effect between the level of AI adoption and the readiness of the organization regarding accounting efficiency is positively correlated ($\beta = 0.157$). This suggests that organizational readiness enhances the relationship between the adoption of AI technologies and the efficiency of accounting practices.

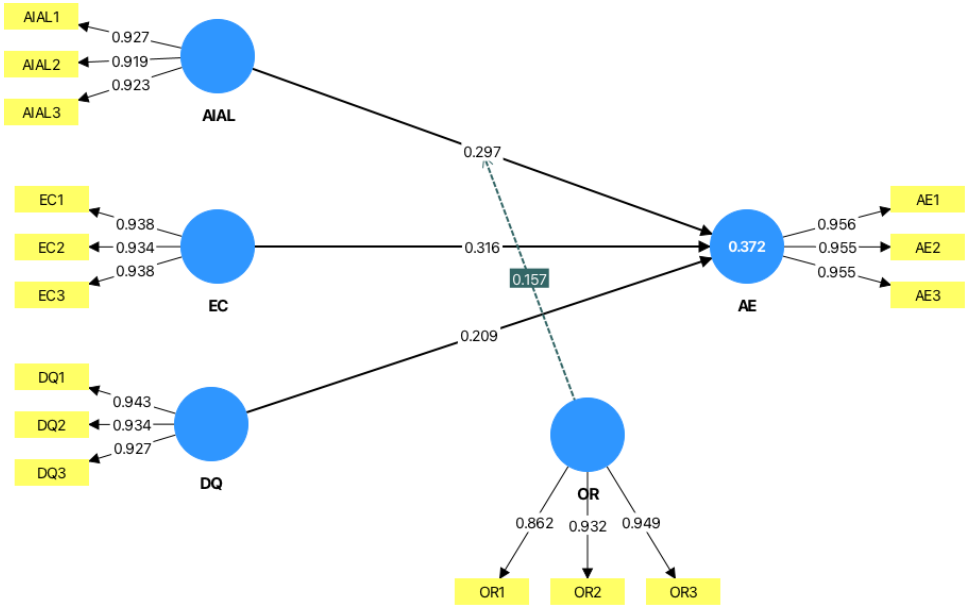

Figure 2. Moderating effect of organizational readiness

The moderation effect suggests that AI adoption contributes more strongly to accounting efficiency when organizations possess adequate infrastructure, supportive culture, and strong managerial commitment. This finding supports Contingency Theory, which argues that organizational performance depends on contextual alignment between strategy and internal readiness.

Multi-Group Analysis: Indonesia vs Malaysia

Multi-group analysis was conducted to examine potential structural differences between Indonesia and Malaysia. The results indicate that the pattern of relationships is consistent across both countries, with no substantial differences in path coefficients.

Table 4. Multi-group comparison

Path	Indonesia β	Malaysia β	Difference (β)	p-value difference	Conclusion
AIAL → AE	0.289	0.305	0.016	0.412	Not Significant
EC → AE	0.322	0.309	0.013	0.458	Not Significant
DQ → AE	0.215	0.202	0.013	0.437	Not Significant
Interaction → AE	0.149	0.164	0.015	0.396	Not Significant

Multi-Group Analysis (PLS-MGA) was conducted after confirming measurement invariance using the MICOM procedure. The findings suggest that there are no statistically significant differences in the pathways between Indonesia and Malaysia (p-value difference > 0.05).

Although minor variations in path coefficients are observed, these differences are not statistically meaningful. This implies that the structural interrelations concerning the adoption of artificial intelligence, employee proficiency, data integrity, organizational preparedness, and accounting effectiveness function uniformly across both institutional frameworks.

The findings imply that despite differences in regulatory coordination and digital infrastructure maturity, the underlying mechanism through which AI enhances accounting efficiency remains stable in both Indonesia and Malaysia.

Robustness Test

Robustness assessments were performed to ascertain the consistency of the results. Harman's single-factor analysis reveals that the maximum variance attributed to a singular factor is less than 50%, implying the absence of significant common method bias. The full collinearity variance inflation factor (VIF) values are below 3.3, indicating that multicollinearity concerns are not present. Sensitivity analysis across public and private sector subsamples shows consistent path directions and magnitudes, confirming the robustness of the model.

Table 5. Robustness test results

Test	Value	Threshold	Conclusion
Harman Single Factor	34.2%	< 50%	No common method bias
Full Collinearity VIF	2.10 – 2.85	< 3.30	No multicollinearity
Sensitivity Analysis	Stable coefficients	Consistent direction	Model robust

Discussion

The results of this study demonstrate that artificial intelligence adoption significantly improves accounting efficiency, supporting extensive prior evidence that automation enhances processing speed, accuracy, and task standardization in accounting functions (Abdullah & Almaqtari, 2024; Perdana et al., 2023; Wong & Yap, 2024). Robotic process automation implementations in accounting firms generate measurable efficiency gains through the automation of repetitive activities such as reconciliation, data entry, and compliance checks (Perdana et al., 2023; Cooper et al., 2019). These improvements enable accountants to allocate more time toward analytical, strategic, and advisory responsibilities, thereby increasing organizational productivity. Importantly, this finding helps address an unresolved debate in prior literature regarding whether AI adoption merely improves technological readiness or actually produces measurable operational performance outcomes. The findings also reinforce the Technology Acceptance Model (TAM), which posits that technology enhances organizational performance when users perceive it as useful and integrate it into operational activities. Unlike prior studies that primarily focused on behavioral intention or technology acceptance, this study empirically demonstrates that AI adoption directly contributes to accounting efficiency outcomes in professional practice. In this study, the significant positive relationship between AI adoption and accounting efficiency indicates that organizations in Indonesia and Malaysia have moved beyond mere adoption intention toward effective operational utilization of AI technologies.

The structural model also demonstrated satisfactory model fit and predictive capability. The Standardized Root Mean Square Residual (SRMR) value was below the recommended threshold of 0.08, indicating acceptable model fit and low residual error. In addition, the Normed Fit Index (NFI) exceeded the minimum acceptable threshold of 0.90, suggesting that the proposed model adequately explains the covariance structure among constructs. The predictive relevance value (Q^2 = 0.268) confirms that the model possesses satisfactory predictive capability for accounting efficiency outcomes. Collectively, these indicators demonstrate that the integrated framework combining TAM, RBV, and Contingency Theory provides an adequate explanatory and predictive model for understanding AI-driven accounting transformation in emerging economies. The satisfactory predictive model fit also strengthens the robustness of the study's theoretical contribution by confirming that accounting efficiency can be explained through the interaction between technological capability, human competence, data governance, and organizational readiness.

However, the findings also indicate that AI adoption alone is insufficient to generate maximum efficiency outcomes. Prior studies emphasize that automation effectiveness depends on socio-technical alignment and appropriate task selection (Zhang et al., 2022; Eulerich et al., 2021). AI systems are more effective when implemented in structured, rule-based accounting activities rather than judgment-intensive tasks. This explains why organizations that strategically integrate AI into routine accounting functions achieve stronger efficiency gains. Theoretically, this finding extends existing AI adoption literature by shifting the analytical focus from adoption intention toward post-adoption organizational performance. It also suggests that AI should be viewed not merely as a

technological tool but as an operational capability that creates value when aligned with organizational processes and human expertise.

Among all predictors, employee competence emerged as the most dominant factor influencing accounting efficiency ($\beta = 0.316$; $f^2 = 0.126$). This result represents one of the most important findings of the study because it demonstrates that human capital contributes more strongly to accounting efficiency than technological adoption itself. The finding strongly supports the Resource-Based View (RBV), which argues that sustainable organizational performance depends on valuable, rare, and difficult-to-imitate resources, particularly employee knowledge and capability (Vărzaru, 2022; Norzelan et al., 2024). Although AI automates technical processes, employees remain responsible for interpreting outputs, validating results, exercising professional judgment, solving non-routine problems, and supervising AI-driven systems. Consequently, organizations with highly competent employees are better able to transform AI technologies into actual efficiency gains.

The dominance of employee competence can be explained by the evolving nature of the accounting profession in the AI era. Accounting activities increasingly require analytical interpretation, ethical judgment, regulatory understanding, and strategic decision-making, all of which cannot be fully replaced by automation. Previous studies demonstrate that digital skills, technical capability, and technology readiness significantly influence AI effectiveness (Norzelan et al., 2024; Anh et al., 2024). Kokina et al. (2021) further argue that accountants in AI-enabled environments assume new strategic roles such as trainers, analyzers, and AI supervisors. Therefore, competent employees function as integrators between technology and organizational objectives. This finding suggests that AI does not eliminate the role of accountants but instead transforms accountants into strategic decision-support professionals. In emerging economies such as Indonesia and Malaysia, this role becomes even more critical because differences in infrastructure maturity and institutional support require employees to adapt technology implementation to contextual organizational conditions (Handoko et al., 2024; Afifa et al., 2024).

The findings also provide important insight into how data quality mitigates error propagation in AI-enabled accounting systems. AI algorithms rely heavily on historical and real-time accounting data to generate automated outputs, predictions, and financial analyses. When accounting data are accurate, complete, consistent, and timely, AI systems can process transactions and generate outputs with greater precision and reliability. Conversely, poor-quality data may create cascading errors throughout automated accounting workflows because AI systems tend to replicate and amplify inaccuracies embedded within input datasets. This phenomenon is particularly critical in accounting environments where errors in transaction classification, reconciliation, or financial reporting may spread rapidly across interconnected digital systems. Therefore, strong data governance mechanisms including data validation procedures, standardized reporting structures, integrated databases, and continuous monitoring systems become essential to minimize algorithmic bias, processing inaccuracies, and reporting distortions. In this context, data quality functions not only as a supporting resource but also as a risk mitigation mechanism that enhances the reliability and sustainability of AI-driven accounting operations.

This finding also contributes theoretically by clarifying the ongoing tension between the technology substitution perspective and the human–AI complementarity perspective in accounting research. Existing studies frequently position AI adoption as the primary determinant of digital transformation success, whereas the present findings suggest that human capability remains the central mechanism through which technological value is realized. Accordingly, the study supports the complementarity perspective, where AI enhances rather than replaces the strategic role of accounting professionals. The findings therefore extend RBV theory by demonstrating that technological resources alone do not create superior performance unless supported by strong human competencies capable of managing and optimizing those technologies.

The significant effect of data quality on accounting efficiency further reinforces RBV arguments that informational resources represent strategic organizational assets (Chowdhury et al., 2025; Chen et al., 2022). High-quality data ensures algorithm reliability, reduces processing errors, and

improves the consistency of AI-generated outputs (Solikin et al., 2023; Eulerich et al., 2021). Intelligent accounting systems depend heavily on accurate, timely, and structured data to produce reliable financial information. When data inputs are inaccurate or incomplete, automation systems amplify errors throughout accounting processes. This finding helps explain why some organizations fail to achieve expected AI benefits despite significant technological investment. Without strong data governance, AI systems may accelerate inaccuracies rather than improve efficiency. Thus, the positive relationship between data quality and accounting efficiency suggests that organizations in Indonesia and Malaysia have achieved sufficient levels of data governance maturity to support AI-driven operations. This finding also implies that digital transformation in accounting requires simultaneous investment in data governance infrastructure, not solely technological adoption.

The moderating role of organizational readiness supports Contingency Theory, which argues that organizational performance depends on alignment between strategy, technology, and contextual conditions (Afifa et al., 2024; Bin-Nashwan & Li, 2025). The significant interaction effect indicates that AI adoption produces stronger efficiency gains when organizations possess adequate infrastructure, supportive leadership, and innovation-oriented culture. This finding explains theoretical inconsistencies in prior studies where organizations adopting similar AI technologies achieved different performance outcomes. Firms with strong managerial support, clear digital strategies, and innovation-supportive environments are more capable of integrating AI into accounting workflows effectively. Consequently, organizational readiness acts as a strategic enabler that strengthens the relationship between technological capability and performance outcomes.

The moderating effect of organizational readiness also carries important practical implications for AI implementation strategies. The findings indicate that organizations cannot adopt a "technology-first" approach that focuses exclusively on AI acquisition without preparing internal organizational conditions. Instead, AI implementation strategies should be accompanied by readiness assessments covering technological infrastructure, employee preparedness, leadership commitment, organizational culture, and governance capability. Organizations with high readiness levels are more capable of integrating AI into accounting workflows, managing digital transformation risks, and reducing employee resistance to technological change. Practically, this implies that managers should implement phased AI transformation strategies involving workforce training, digital change management, infrastructure upgrading, and continuous performance evaluation. In addition, organizations should establish AI governance frameworks that define accountability, ethical standards, cybersecurity procedures, and internal control mechanisms to ensure that AI implementation supports both operational efficiency and financial reporting reliability. Therefore, organizational readiness functions as a strategic foundation that determines whether AI investments generate sustainable accounting performance improvements or merely create technological complexity without substantial operational value.

Unlike previous studies that primarily conceptualized organizational readiness as an antecedent of AI adoption, this study reconceptualizes readiness as a moderating capability that determines the effectiveness of post-adoption outcomes. This finding extends contingency-based perspectives by demonstrating that organizational readiness not only facilitates adoption decisions but also determines whether technological investments translate into measurable accounting efficiency. In practical terms, this means that organizations cannot rely solely on technological investment; they must also develop organizational culture, leadership commitment, and digital infrastructure to maximize AI benefits.

From a cross-country perspective, the Multi-Group Analysis demonstrates that the structural relationships among AI adoption, employee competence, data quality, organizational readiness, and accounting efficiency remain statistically consistent across Indonesia and Malaysia. The absence of significant differences suggests that the fundamental mechanisms underlying AI-driven accounting efficiency operate similarly across both institutional contexts. This finding indicates that the capability-performance mechanism proposed in this study possesses cross-contextual validity within emerging ASEAN economies. Nevertheless, contextual differences remain important. Malaysia's

stronger regulatory coordination, digital infrastructure, and professional guidance through initiatives such as MyDIGITAL may facilitate smoother AI integration, while Indonesia's digital transformation remains more heterogeneous across regions and organizations. These institutional differences likely influence the magnitude and speed of AI implementation, even though the structural relationships themselves remain stable.

From a broader global perspective, the findings reflect the ongoing transformation of the accounting profession from routine transactional work toward strategic, analytical, and technology-oriented functions. AI adoption is reshaping professional competencies, organizational workflows, and governance mechanisms within accounting practices worldwide. Regionally, the findings highlight the growing importance of digital capability development in ASEAN economies as organizations attempt to remain competitive within increasingly technology-driven business environments. The results therefore emphasize the importance of coordinated collaboration among governments, professional accounting bodies, educational institutions, and organizations to support sustainable AI-driven accounting transformation.

From a practical perspective, the findings provide several important implications for organizations, professional bodies, and policymakers. First, organizations should not perceive AI adoption as solely a technological investment. The dominance of employee competence indicates that workforce upskilling, digital literacy development, and continuous professional training are essential to maximize the benefits of AI implementation. Accounting professionals must increasingly develop analytical, technological, and strategic capabilities to complement AI-driven systems.

Second, organizations should strengthen data governance mechanisms before implementing AI technologies. Since AI effectiveness depends heavily on data accuracy, completeness, and reliability, firms must invest in integrated databases, data validation systems, cybersecurity controls, and real-time monitoring processes to prevent the amplification of errors through automated systems.

Third, the significant moderating role of organizational readiness implies that successful AI transformation requires supportive leadership, innovation-oriented culture, and adequate technological infrastructure. Top management commitment is therefore critical in facilitating digital transformation initiatives, allocating resources, and reducing employee resistance toward technological change.

At the policy level, governments and professional accounting bodies in ASEAN countries should accelerate digital competency frameworks, AI-related accounting standards, and professional certification programs to prepare the accounting workforce for technological transformation. Universities and higher education institutions should also redesign accounting curricula by integrating AI, data analytics, and digital accounting competencies to ensure future graduates remain relevant in increasingly automated accounting environments.

Overall, the findings indicate that AI-driven accounting transformation is not purely a technological phenomenon but rather a multidimensional capability-building process integrating technology, human capital, data governance, and organizational readiness. The study therefore contributes theoretically by integrating TAM, RBV, and Contingency Theory into a unified framework explaining how AI adoption translates into accounting efficiency. The study also contributes conceptually by demonstrating that employee competence functions as the primary mechanism through which AI capabilities are converted into organizational performance outcomes. More importantly, the results emphasize that employee competence remains the most critical determinant of successful AI-enabled accounting transformation, highlighting that the future of the accounting profession depends not only on technological advancement but also on the continuous development of human expertise and digital capability.

4. CONCLUSION

This study demonstrates that artificial intelligence adoption contributes significantly to accounting efficiency when supported by competent employees, high-quality data, and strong organizational readiness. Rather than viewing AI as a standalone technological solution, the findings indicate that AI-

driven accounting transformation represents a multidimensional strategic process involving technology, human capability, organizational support, and information governance. Among all determinants, employee competence emerged as the most influential factor, emphasizing that the success of AI implementation depends largely on the ability of accounting professionals to interpret, supervise, and optimize AI-enabled systems. This finding highlights that the future competitiveness of accounting organizations will depend more on digital human capital than on technological investment alone. The study provides several important theoretical implications. First, it extends the Technology Acceptance Model (TAM) by demonstrating that AI adoption affects not only behavioral intention and technology acceptance, but also measurable accounting efficiency outcomes. Second, it reinforces the Resource-Based View by confirming that employee competence and data quality function as strategic organizational resources that determine the value generated from AI technologies. The dominance of employee competence further suggests that human expertise remains the primary mechanism through which technological capabilities are converted into organizational performance. Third, the study advances Contingency Theory by reconceptualizing organizational readiness not merely as an antecedent of AI adoption, but as a moderating capability that strengthens post-adoption efficiency outcomes. Collectively, these findings contribute to a more integrated understanding of AI-enabled accounting transformation. From a strategic perspective, the findings suggest that organizations should prioritize workforce upskilling, data governance, leadership commitment, and digital readiness alongside technological investment. The results indicate that organizations focusing exclusively on AI implementation without strengthening employee capability and organizational infrastructure may fail to achieve optimal efficiency gains. AI implementation without sufficient human capability and organizational support may limit the realization of efficiency gains. The consistency of findings across Indonesia and Malaysia also indicates that the capability-performance mechanism underlying AI adoption remains stable across emerging ASEAN contexts, despite differences in institutional maturity and regulatory coordination. This cross-country consistency strengthens the contextual validity of AI adoption theory within emerging economies. This study further highlights the future transformation of the accounting profession. The findings suggest that the role of accountants is shifting from routine transaction processing toward analytical, strategic, interpretive, and decision-support functions. As AI increasingly automates repetitive accounting activities, accounting professionals will be expected to possess stronger analytical thinking, digital literacy, technological understanding, and strategic advisory capability. Accordingly, the future of the accounting profession will likely be characterized by human–AI collaboration rather than technological substitution. AI therefore functions as an enabler that enhances professional judgment, organizational agility, and strategic decision-making rather than replacing accountants entirely. This transformation also implies that universities, professional bodies, and policymakers must redesign accounting education and competency frameworks to prepare future accountants for AI-integrated professional environments. Managerial implications can also be derived from these findings. First, organizations should approach accounting digital transformation as an integrated strategic initiative rather than merely a technology procurement process. Successful AI implementation requires alignment between digital strategy, accounting workflows, organizational culture, and long-term business objectives. Managers therefore need to establish clear AI governance frameworks, digital transformation roadmaps, and performance evaluation mechanisms to ensure that AI investments generate measurable operational value. Second, the dominance of employee competence highlights the urgent importance of workforce upskilling. Organizations should continuously invest in digital accounting training, AI literacy programs, analytical capability development, and cross-functional technological competencies for accounting professionals. Future accountants will increasingly require hybrid competencies combining accounting expertise, data analytics, strategic thinking, and technological understanding. Consequently, managers should redesign talent development strategies to support continuous learning and human–AI collaboration within accounting functions. Third, the findings emphasize the importance of governance readiness in supporting sustainable AI adoption. Organizations should strengthen governance structures related to cybersecurity, data quality management, ethical AI usage, internal control systems, and regulatory

compliance. Since AI systems rely heavily on accurate and reliable data, managers must ensure strong data governance policies, integrated information systems, and transparent monitoring procedures to minimize operational risk and maintain financial reporting quality. Finally, organizations in emerging economies such as Indonesia and Malaysia should proactively prepare for long-term digital transformation by strengthening organizational agility, innovation culture, and leadership commitment. Top management support is essential to reduce resistance to change, facilitate technological adaptation, and encourage innovation-oriented organizational behavior. These managerial implications suggest that sustainable accounting transformation depends not only on adopting AI technologies, but also on building digitally capable organizations supported by skilled employees, adaptive leadership, and strong governance systems. Despite its contributions, this study has several limitations. The cross-sectional design limits causal interpretation, while self-reported measures may not fully capture objective operational performance. In addition, the focus on Indonesia and Malaysia restricts broader generalization to other institutional contexts. Future studies are encouraged to examine longitudinal changes in AI capability development, incorporate objective accounting performance indicators, and explore additional institutional variables such as regulatory pressure, digital ecosystem maturity, and organizational innovation culture. Future comparative studies involving developed and developing economies may also provide deeper insights into how institutional environments shape AI-driven accounting transformation over time.

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