



TOP MANAGEMENT SUPPORT AND INTERNAL AUDITOR COMPETENCE AS DETERMINANTS OF INTERNAL AUDIT EFFECTIVENESS: EVIDENCE FROM INDONESIA PUBLIC HIGHER EDUCATION INSTITUTIONS

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ARTICLE INFO

Article history:

Received April 02, 2026

Revised April 15, 2026

Accepted May 25, 2026

Available online June 30, 2026

Keywords:

Internal Audit Effectiveness, Top Management Support, Internal Auditor Competence, Public Higher Education, PLS-SEM, Indonesia, Resource-Based Theory



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ABSTRACT

Internal audit effectiveness is central to organizational governance, accountability, and risk management in Indonesian public higher education institutions (HEIs). Despite its strategic importance, empirical evidence isolating the direct effects of top management support (TMS) and internal auditor competence (IAC) on internal audit effectiveness (IAE)—without the confounding influence of mediating variables—remains scarce in the Indonesian public sector context. Grounded in Resource-Based Theory (RBT), this study examines the direct relationships of TMS and IAC with IAE among 183 internal auditors from Autonomous Public HEIs (PTN-BH) and Public Service HEIs (PTN-BLU) in Indonesia, using Partial Least Squares Structural Equation Modelling (PLS-SEM) via SmartPLS 4.0. The findings confirm that both variables exert statistically significant positive effects on IAE. Internal Auditor Competence emerges as the stronger predictor ($\beta = 0.317$, $t = 4.354$, $p < 0.001$), while Top Management Support also demonstrates a significant, albeit more modest, direct effect ($\beta = 0.137$, $t = 1.973$, $p = 0.049$). Together, these findings highlight that cultivating auditor competence and securing genuine managerial commitment are complementary and indispensable drivers of audit effectiveness in the Indonesian public HEI sector. The study contributes to the IA effectiveness literature by providing a focused, direct-effects model that disentangles the independent contributions of organizational support and human capital quality.

1. INTRODUCTION

Internal audit (IA) has evolved from a narrowly focused compliance activity into a strategic governance mechanism that supports risk management, operational efficiency, and institutional accountability (Lenz & Hahn, 2015). In Indonesia, the governance reform agenda in public higher education has amplified this transformation. Following Law No. 12 of 2012 on Higher Education and Government Regulation No. 4 of 2014, Indonesian public higher education institutions (HEIs) were reorganized into three categories: Autonomous Public HEIs (PTN-BH), Public Service HEIs (PTN-BLU), and Government Work Unit HEIs (PTN-Satker). These structural reforms placed the internal audit function at the forefront of institutional accountability, requiring a higher standard of audit performance and governance assurance.

Despite this elevated mandate, the effectiveness of internal audit in Indonesian public HEIs remains uneven. Reports by the Supreme Audit Board (BPK) have repeatedly cited weaknesses in follow-through on audit recommendations, deficiencies in internal control systems, and limited strategic contributions from internal audit units across public universities (BPK, 2020; Sofyani et al., 2022). These persistent challenges raise a fundamental question: what drives internal audit effectiveness in this institutional context?

The literature converges on two broad categories of determinants: organizational-level factors, particularly the support provided by top management; and human capital factors, specifically the competence of individual internal auditors. Top Management Support (TMS) ensures that internal audit functions receive adequate resources, enjoy organizational independence, and operate within a culture of accountability. Internal Auditor Competence (IAC) equips auditors with the technical expertise, interpersonal skills, and professional judgment necessary to translate audit mandates into meaningful governance improvements.

While both TMS and IAC are widely recognized as antecedents of IA effectiveness, the existing literature has predominantly examined them as part of larger models involving mediating or moderating

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variables, obscuring their independent, direct contributions. This study addresses this gap by examining the direct effects of TMS and IAC on Internal Audit Effectiveness (IAE)—without any mediating variable—within the specific institutional context of Indonesian public HEIs. This clean, two-predictor focus allows for a precise empirical assessment of the relative contribution of organizational support and human capital quality to audit effectiveness.

The study is grounded in Resource-Based Theory (RBT), which conceptualizes both TMS and IAC as organizational resources whose strategic deployment determines the competitive value and functional effectiveness of the internal audit function. Using PLS-SEM with data from 183 internal auditors at PTN-BH and PTN-BLU institutions, this paper contributes to the growing body of empirical evidence on IA effectiveness in public sector organizations in developing countries, with direct policy relevance for Indonesian higher education governance.

literature Review and Hypothesis Development

Theoretical Foundation: Resource-Based Theory

Resource-Based Theory (RBT), pioneered by Barney (1991) and enriched by subsequent scholars (Ahmad, 2015; Wernerfelt, 1984), provides the foundational theoretical lens for this study. RBT posits that an organization's sustained competitive advantage derives not from its external market position but from the deployment of valuable, rare, inimitable, and non-substitutable (VRIN) internal resources and capabilities. Applied to the internal audit context, RBT conceptualizes the IA function as a bundle of organizational resources human capital (auditor competence), financial resources (audit budgets), organizational support (management commitment), and procedural assets (standards compliance) whose effective mobilization determines audit quality and effectiveness (Alqudah et al., 2019; Ahmad, 2015).

Within this framework, Top Management Support operates as an enabling resource condition: it is the organizational mechanism through which financial, technological, and human resources are channeled into the audit function. Internal Auditor Competence, on the other hand, constitutes the core human capital asset of the audit function the accumulated knowledge, skills, and professional capabilities that allow auditors to generate value-added audit outputs. RBT predicts that both of these resource dimensions will have direct, positive effects on IAE, and that the two are complementary: management support creates the enabling conditions, while auditor competence determines how effectively those conditions are translated into superior audit performance (Alkebsi & Aziz, 2017; Nerantzidis et al., 2020).

Internal Audit Effectiveness

Internal audit effectiveness (IAE) refers to the degree to which the IA function fulfills its mandate of providing independent assurance, governance support, risk management oversight, and value-added advisory services to the organization (IIA, 2017; Mihret & Yismaw, 2007). Lenz and Hahn (2015) identify multiple dimensions of IAE including audit quality, implementation of audit recommendations, contribution to risk management, and stakeholder satisfaction with audit outputs.

In the public sector context, IAE is particularly critical because IA serves as a primary internal mechanism for ensuring public accountability, regulatory compliance, and the effective use of public funds (Coetzee & Erasmus, 2017; Al-Twaijry et al., 2003). In Indonesian public HEIs, IAE is further embedded within the broader institutional performance framework, with SPIP (Government Internal Control System) and guidelines from the Financial and Development Supervisory Agency (BPKP) establishing the normative standards against which audit effectiveness is measured. The measurement of IAE in this study employs eight validated indicators capturing audit plan fulfillment, quality of recommendations, follow-up implementation rate, independence from auditee pressure, contribution to risk management, support for governance improvement, stakeholder confidence in audit outputs, and alignment with the IPPF. These dimensions collectively reflect the multi-faceted nature of audit effectiveness in the Indonesian public HEI context.

Top Management Support and Internal Audit Effectiveness

Top Management Support (TMS) refers to the active commitment of senior organizational leaders to providing the internal audit function with adequate resources, organizational independence, strategic direction, and responsiveness to audit recommendations (Cohen & Sayag, 2010; Alzeban & Gwilliam, 2014). Within RBT, TMS is understood as the organizational enabler that converts latent resources into actual audit performance capacity.

The empirical literature consistently demonstrates a positive relationship between TMS and IAE across diverse institutional contexts. Cohen and Sayag (2010) conducted a landmark study in Israel revealing that TMS was among the most influential determinants of IAE, exerting effects across three dimensions: audit quality, auditee cooperation, and IA's contribution to organizational performance. Their study demonstrated that strong managerial support creates an organizational climate in which auditors can operate with greater independence, access to information, and credibility. Alzeban and Gwilliam (2014) further showed in the Saudi public sector that management's provision of financial resources, skilled personnel, and protected independence was crucial for effective audit functions.

The mechanisms through which TMS influences IAE are well-documented in the literature. Endaya and Hanefah (2016) identified management's responsiveness to audit recommendations as a key indicator of IAE, showing that when management actively follows through on audit findings, the functional impact of IA improves significantly. Demeke et al. (2020) highlighted that open and effective communication between auditors and top management ensures that audit recommendations are appropriately addressed. Lenz et al. (2014) demonstrated that budgetary commitment, audit planning involvement, and active managerial engagement enhance IAE by enabling auditors to work objectively and confidently.

In the Indonesian public HEI context, TMS is particularly salient. Sofyani et al. (2022) observed that in some Indonesian institutions, internal audit is still perceived as a compliance formality rather than a strategic governance tool, limiting managerial engagement and thereby constraining IAE. This suggests that the quality and depth of management commitment—not merely its formal existence—determines its effectiveness as a driver of IAE. Based on the theoretical argument and empirical evidence, the following hypothesis is proposed:

H₁: Top Management Support has a significant positive direct effect on Internal Audit Effectiveness.

Internal Auditor Competence and Internal Audit Effectiveness

Internal Auditor Competence (IAC) encompasses the technical knowledge, professional skills, practical experience, interpersonal capabilities, and ethical commitment required for internal auditors to effectively fulfill their audit responsibilities (IIA, 2013; IIA, 2017). The IIA Competency Framework identifies four core competency domains: technical expertise (audit methodology, risk assessment, regulatory knowledge, IT auditing); practical experience and professional judgment; interpersonal and communication skills; and strategic business acumen. Within RBT, IAC represents the most fundamental human capital asset of the audit function—the core capability through which all other resources are converted into effective audit outputs.

The connection between IAC and IAE is one of the most consistently supported relationships in the IA effectiveness literature. Abdelrahim and Al-Malkawi (2022) found that competent auditors are better equipped to design relevant audit plans, generate high-quality findings, and formulate implementable governance recommendations. Alzeban and Gwilliam (2014) demonstrated a strong positive correlation between auditor competence and IAE in the public sector, showing that technical skills directly improve audit quality. Bednarek (2018) further showed that competent auditors enhance internal control systems, build management confidence in audit outputs, and improve the overall credibility of the IA function.

IAC also plays a critical role in the implementation of audit recommendations—a key operational dimension of IAE. Coetzee and Erasmus (2017) found that auditor competence directly contributes to the successful execution of audit recommendations, which serves as a primary indicator of IAE. Endaya and Hanefah (2016) showed that a strong understanding of governance principles and audit standards significantly improves audit execution quality. Furthermore, Pooe et al. (2022) demonstrated that competent internal auditors strengthen governance structures and risk management practices, creating organizational value beyond the immediate audit cycle.

In addition to technical dimensions, the interpersonal and strategic competencies of auditors contribute meaningfully to IAE. Coetzee and du Plessis (2021) emphasized that auditors who effectively communicate findings, negotiate with auditees, and collaborate with stakeholders generate higher-quality recommendations that are more likely to be implemented. Roussy et al. (2020) further highlighted that competent auditors contribute to organizational learning and strategic transformation by identifying

systemic issues and proposing forward-looking solutions. Based on this evidence, the following hypothesis is proposed:

H₂: Internal Auditor Competence has a significant positive direct effect on Internal Audit Effectiveness.

2. METHODS

This study used a qualitative descriptive research design with a narrative literature review approach. The choice of this design was intended to explore, interpret, and synthesize previous findings related to the transformation of accounting information, digital business development, and digital platform-based entrepreneurship. A narrative review was considered appropriate because the study aimed to build a conceptual understanding of the topic by integrating findings from diverse scholarly sources rather than testing a hypothesis quantitatively.

The literature search was conducted using scholarly databases and academic search engines, including Google Scholar, Scopus, ScienceDirect, SpringerLink, and Garuda. The search strategy employed several relevant keywords and keyword combinations, such as “accounting information systems,” “digital transformation,” “digital entrepreneurship,” “digital platform-based entrepreneurship,” “cloud accounting,” “mobile accounting,” “business decision-making,” and “MSMEs.” Publications were selected from the period 2014–2025 in order to capture both foundational studies and the most recent developments in the digital economy.

The selection of literature followed predefined inclusion and exclusion criteria. The inclusion criteria were: (1) articles, books, or proceedings related to accounting information systems, digital entrepreneurship, or business development; (2) publications written in English or Indonesian; (3) studies published within the specified year range; and (4) sources that were relevant to the conceptual focus of this study. The exclusion criteria were: (1) duplicated articles, (2) sources unrelated to the research topic, (3) non-scientific materials without academic relevance, and (4) publications that did not provide sufficient information for analysis. After screening and filtering, 26 articles were retained as the main literature base for this study.

The data analysis procedure was carried out through three main stages: data reduction, data display, and conclusion drawing. In the data reduction stage, relevant information from each selected source was identified, summarized, and grouped according to key themes such as digital accounting transformation, decision-making, business development, and implementation challenges. In the data display stage, the findings were organized thematically to show patterns, similarities, and differences across studies. Finally, in the conclusion drawing stage, the themes were interpreted to generate a comprehensive understanding of how accounting information transformation supports business development in digital platform-based entrepreneurship.

To enhance the validity of the review, this study applied source triangulation by comparing findings from different databases and publication types. In addition, peer debriefing was used by discussing the organization and interpretation of the literature with academic colleagues to reduce bias and strengthen the credibility of the analysis. Through these procedures, the study aimed to produce a rigorous and trustworthy qualitative synthesis that reflects current developments in the digital economy.

3. RESULTS AND DISCUSSIONS

This study employs a quantitative, cross-sectional research design grounded in a positivist epistemological stance. The research setting is the internal audit function of Indonesian public HEIs operating under PTN-BH and PTN-BLU status—the two categories of public HEIs that have undergone the most substantive governance reforms and carry the most demanding internal audit accountability requirements under current Indonesian higher education regulations. The unit of analysis is the individual internal auditor, reflecting the assumption that IAE perceptions and resource utilization are experienced at the individual level. This approach is consistent with prior IA effectiveness studies in the public sector (Alzeban & Gwilliam, 2014; Endaya & Hanefah, 2016; Sofyani et al., 2022).

Sample and Data Collection

A stratified random sampling method was applied to ensure proportional representation of internal auditors from both PTN-BH and PTN-BLU institutions. The target population comprised internal auditors actively serving in the SPI (Internal Control Unit / Satuan Pengawas Internal) of their respective institutions. A structured self-administered questionnaire was distributed electronically to eligible respondents. A total of 183 valid responses were obtained, exceeding the minimum threshold of 60 respondents required for PLS-SEM analysis (Hair et al., 2021). Table 1 presents the demographic profile of respondents. The sample is characterized by a dominance of mid-career professionals: 88% of respondents are aged between 30 and 49 years, and 43% have 15 or more years of professional experience. The majority hold advanced academic qualifications (61% master's degree; 25% doctorate), and 83% are certified as Indonesian Qualified Internal Auditors (QIA).

Table 1. Demographic Profile of Respondents (n = 183)

Variable	Category	n	Variable	Category	n (%)
Gender	Female	86 (47%)	Education	Diploma	3 (2%)
	Male	97 (53%)		Bachelor's	22 (12%)
Age	20–29 years	7 (4%)	Certification	Master's	112 (61%)
	30–39 years	77 (42%)		Doctorate	46 (25%)
	40–49 years	84 (46%)	QIA	QIA	152 (83%)
	≥50 years	15 (8%)		CIA	7 (4%)
Experience	<1 year	6 (3%)	CPA	CPA	8 (4%)
	1–5 years	38 (21%)		None	16 (9%)
	5–10 years	34 (19%)	Position	Chief	36 (20%)
	10–15 years	27 (15%)		Secretary	30 (16%)
	≥15 years	78 (43%)		Member	117 (64%)

Source: Primary data (processed)

Measurement Instrument

All constructs were operationalized using reflective indicator items anchored on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree), adapted from validated instruments in the extant literature. Top Management Support was measured by four items reflecting resource allocation, auditor independence protection, commitment to implementing audit recommendations, and active involvement in audit planning (Cohen & Sayag, 2010; Alzeban & Gwilliam, 2014). Internal Auditor Competence was initially measured by fifteen items spanning technical expertise, professional experience, interpersonal skills, business acumen, and ethical standards (IIA, 2013; Abdelrahim & Al-Malkawi, 2022); three items (IAC_2, IAC_7, IAC_10) were removed during measurement model refinement due to low outer loadings, retaining twelve items.

Internal Audit Effectiveness was measured by nine items covering audit plan execution, quality of recommendations, follow-up rate, independence, risk management contribution, and stakeholder value (Mihret & Yismaw, 2007; Alzeban & Gwilliam, 2014); one item (IAE_8) was removed during refinement, retaining eight items. A pilot study was conducted with 30 internal auditors (excluded from the main sample) to assess instrument clarity and reliability. All items recorded Pearson r-values above the critical threshold of 0.361 ($n = 30$, $\alpha = 0.05$), confirming content validity. Cronbach's Alpha exceeded 0.70 for all constructs in the pilot study.

Analytical Approach: PLS-SEM

Partial Least Squares Structural Equation Modelling (PLS-SEM), implemented in SmartPLS 4.0, was used for hypothesis testing. PLS-SEM was selected for its suitability in predictive research with complex measurement models, its robustness under non-normal data conditions, and its established application in

IA effectiveness research (Al Shbail et al., 2022; Wu et al., 2017). Analysis was conducted in two sequential stages: (1) measurement model (outer model) assessment to validate reliability and construct validity; and (2) structural model (inner model) assessment to test hypotheses and evaluate predictive accuracy (Hair et al., 2017).

Measurement model evaluation criteria included: outer loadings (≥ 0.40 per Hair et al., 2021), internal consistency reliability assessed via Cronbach’s Alpha and Composite Reliability ($CR \geq 0.70$), convergent validity via Average Variance Extracted ($AVE \geq 0.50$), and discriminant validity via the Fornell-Larcker Criterion, cross-loading analysis, and the Heterotrait-Monotrait Ratio ($HTMT \leq 0.85$). Structural model evaluation used path coefficients (β), R^2 , effect sizes (f^2), predictive relevance (Q^2), and bootstrapping with 5,000 resamples at $\alpha = 0.05$ (two-tailed, critical t-value = 1.96).

Measurement Model Assessment

Table 2 presents the indicator reliability, internal consistency reliability, and convergent validity results. Following measurement model refinement—removing IAC_2, IAC_7, IAC_10, and IAE_8 due to outer loadings below 0.40—all retained indicators demonstrate outer loadings above 0.60. All three constructs achieve CR values above 0.70, Cronbach’s Alpha values above 0.74, and AVE values exceeding 0.50, confirming adequate internal consistency reliability and convergent validity.

Table 2. Measurement Model: Reliability and Convergent Validity

Construct	Cronbach’s Alpha (α)	Composite Reliability (CR)	AVE	Decision
Top Management Support (TMS)	0.740	0.740	0.560	Valid & Reliable
Internal Auditor Competence (IAC)	0.913	0.917	0.514	Valid & Reliable
Internal Audit Effectiveness (IAE)	0.905	0.908	0.602	Valid & Reliable

Source: SmartPLS 4.0 output (processed data). AVE threshold ≥ 0.50 ; CR threshold ≥ 0.70 (Hair et al., 2021).

Discriminant validity was assessed using the Fornell-Larcker Criterion, cross-loading analysis, and the HTMT ratio. Table 3 presents the Fornell-Larcker results: the square root of AVE for each construct (diagonal) consistently exceeds its highest correlation with any other construct, confirming that each construct shares more variance with its own indicators than with other constructs. All cross-loadings indicate that indicators load more strongly on their assigned construct than on any other. HTMT values between all construct pairs fall below the 0.85 threshold, confirming discriminant validity throughout the measurement model.

Table 3. Fornell-Larcker Criterion (Discriminant Validity)

Construct	TMS	IAC	IAE
Top Management Support (TMS)	0.749*		
Internal Auditor Competence (IAC)	0.689	0.717*	
Internal Audit Effectiveness (IAE)	0.674	0.777	0.776*

Note: *Diagonal values represent the square root of AVE. Off-diagonal values represent inter-construct correlations. Discriminant validity is confirmed when diagonal values exceed off-diagonal values in each row and column.

Structural Model: Predictive Accuracy and Model Fit

The structural model was evaluated for predictive accuracy and relevance using R^2 , adjusted R^2 , and Q^2 values. The model comprising TMS and IAC as direct predictors of IAE yields an R^2 of 0.742 (R^2 adjusted = 0.734) for Internal Audit Effectiveness, indicating strong predictive accuracy (Chin, 1998). Together, TMS and IAC explain 74.2% of the variance in IAE—a substantial proportion that reflects the centrality of these two variables in the audit effectiveness model. The Stone-Geisser Q^2 value of 0.681 (> 0) confirms strong out-of-sample predictive relevance of the structural model for IAE.

Table 4. Predictive Accuracy and Relevance of the Structural Model

Endogenous Variable	R ²	R ² Adjusted	Q ²	Effect Level
Internal Audit Effectiveness (IAE)	0.742	0.734	0.681	Strong

Source: SmartPLS 4.0 output (processed data). $R^2 \geq 0.67 = \text{strong}$; $0.33\text{--}0.67 = \text{moderate}$ (Chin, 1998). $Q^2 > 0$ confirms predictive relevance.

Hypothesis Testing Results

Table 5 presents the bootstrapping results (5,000 resamples, two-tailed, $\alpha = 0.05$) for the two hypothesized direct effects on IAE. Both hypotheses are supported.

Table 5. Hypothesis Testing: Direct Effects on Internal Audit Effectiveness

H	Relationship	Path Coeff. (β)	T-Statistic	P-Value	f ² (Effect Size)	Decision
H ₁	Top Management Support → Internal Audit Effectiveness	0.137	1.973	0.049	0.031 (Small)	Supported
H ₂	Internal Auditor Competence → Internal Audit Effectiveness	0.317	4.354	0.000	0.143 (Small-Med)	Supported

Note: Bootstrapping with 5,000 resamples; two-tailed test; critical t -value = 1.96 at $\alpha = 0.05$. Effect size (f^2): small = 0.02; medium = 0.15; large = 0.35 (Cohen, 1988). R^2 (IAE) = 0.742; Q^2 = 0.681.

H₁ is confirmed: Top Management Support exerts a statistically significant positive direct effect on Internal Audit Effectiveness ($\beta = 0.137$, $t = 1.973$, $p = 0.049$). The positive path coefficient indicates that higher levels of TMS operationalized through resource allocation, independence protection, management responsiveness to recommendations, and active audit planning involvement are associated with improved IAE outcomes. The small effect size ($f^2 = 0.031$) suggests that while TMS contributes meaningfully to IAE, its independent practical impact is modest, pointing to the role of other factors in the overall effectiveness equation. H₂ is confirmed: Internal Auditor Competence exerts a statistically significant and substantially stronger direct effect on IAE ($\beta = 0.317$, $t = 4.354$, $p < 0.001$). IAC demonstrates more than twice the path coefficient magnitude of TMS and a small-to-medium effect size ($f^2 = 0.143$), confirming that auditor human capital quality is the dominant direct driver of IAE in this context.

The Direct Effect of Top Management Support on IAE

The confirmation of H₁ ($\beta = 0.137$, $p = 0.049$) reinforces the well-established proposition that TMS is a foundational organizational enabler of IA effectiveness. This result is consistent with Cohen and Sayag (2010), who identified TMS as a stronger predictor of IAE than organizational independence or audit quality alone, and with Alzeban and Gwilliam (2014), who demonstrated that management's resource provision and protection of auditor independence are essential for effective public sector audit functions. The finding also aligns with Mensah et al. (2020), who confirmed TMS as having a direct impact on IAE in a sub-Saharan African public sector context, and with Endaya and Hanefah (2016), who linked management's responsiveness to audit recommendations directly to IAE outcomes.

The relatively modest path coefficient ($\beta = 0.137$), however, introduces a nuanced interpretation that enriches the existing literature. Several explanations are plausible. First, Sofyani et al. (2022) observed that in some Indonesian public HEIs, top management continues to perceive IA primarily as a compliance function rather than a strategic governance partner, limiting the depth of managerial engagement and its conversion into audit effectiveness gains. When management support is primarily symbolic or procedurally driven—providing budget allocations without active substantive involvement in audit planning or recommendation follow-up—its impact on IAE may be attenuated. Second, the modest effect size ($f^2 = 0.031$) suggests that TMS, while statistically necessary for IAE, may be more impactful as an enabling condition than as a direct performance driver. That is, management support may exert its greatest influence on IAE indirectly, by creating the resource conditions that develop auditor competence—consistent with the mediation pathways documented in the broader thesis model, but not the focus of this direct-effects analysis.

For institutional leaders and higher education administrators, this finding underscores that the quality and substance of managerial engagement with the audit function matters as much as its formal existence. Moving from compliance-based audit oversight to active strategic partnership—in which management integrates audit findings into institutional decision-making, champions audit independence, and demonstrates genuine commitment to recommendation implementation—is likely to amplify TMS's direct contribution to IAE. This is particularly relevant for the Rector's office and Board of Trustees (Majelis Wali Amanat) of PTN-BH institutions and the Supervisory Board (Dewan Pengawas) of PTN-BLU institutions, who hold direct institutional authority over the audit mandate.

The Direct Effect of Internal Auditor Competence on IAE

The strong and highly significant relationship between IAC and IAE ($\beta = 0.317$, $p < 0.001$) confirms internal auditor competence as the dominant direct driver of audit effectiveness in Indonesian public HEIs. This finding resonates across the empirical literature. Abdelrahim and Al-Malkawi (2022) established that competent auditors design more relevant audit plans and generate higher-quality findings, while Alzeban and Gwilliam (2014) demonstrated that auditor competence is among the strongest predictors of IAE in public sector contexts. Bednarek (2018) further showed that competent auditors improve internal control quality and build management confidence in audit recommendations—both critical dimensions of IAE.

The strength of this relationship ($\beta = 0.317$, $f^2 = 0.143$) relative to TMS ($\beta = 0.137$, $f^2 = 0.031$) is particularly instructive. It suggests that even in environments where organizational support is constrained, internal auditors who possess strong technical expertise, professional judgment, effective communication skills, and strategic business understanding can generate meaningful audit effectiveness. This finding carries important theoretical implications: it reaffirms, from an RBT perspective, that auditor competence is the core 'productive resource' of the IA function, and that its development and deployment cannot be substituted by organizational support mechanisms alone.

The demographic profile of the sample provides additional interpretive context. With 88% of respondents aged between 30 and 49 years, 43% having 15 or more years of experience, 86% holding advanced degrees (master's or doctorate), and 83% certified as QIA, the internal auditor workforce in Indonesian public HEIs is characterized by a well-educated, experienced professional corps. This human capital richness may explain the robustness of the IAC-IAE relationship observed in this study, and raises an important policy question: how can institutions further leverage this existing competence base, while also addressing the 9% without formal certification and the limited uptake of internationally recognized credentials such as the CIA?

The finding also contributes to the debate on audit function 'professionalization' in developing country public sectors.

Mihret and Yismaw (2007) cautioned that organizational barriers-limited resources, management interference, and inadequate regulatory support-can neutralize the effectiveness benefits of auditor competence in Ethiopian public sector contexts. The present study suggests that in Indonesian public HEIs, auditor competence is sufficiently institutionalized to exert a strong, direct, statistically significant effect on IAE even within a complex multi-predictor model, implying that the professionalization of the audit function in Indonesia's higher education sector has progressed to a point where human capital quality is a reliable performance driver.

Comparative Contribution of TMS and IAC: Organizational vs. Human Capital Drivers

A direct comparison of the two path coefficients ($\beta_1 = 0.137$ for TMS vs. $\beta_2 = 0.317$ for IAC) reveals that internal auditor competence exerts more than twice the direct effect of top management support on IAE. This comparative finding carries theoretical and practical significance that extends beyond either variable in isolation. From an RBT perspective, it suggests that in the Indonesian public HEI context, the 'productive capacity' of the audit function-i.e., the technical and professional capabilities of individual auditors-is a more proximate and powerful determinant of audit effectiveness than the 'enabling resource conditions' provided by management.

This does not imply that TMS is unimportant. On the contrary, the significant p-value for TMS ($p = 0.049$) confirms its direct relevance to IAE, and theoretical reasoning suggests that TMS and IAC are likely complementary in practice: management support provides the conditions for competence development, while competence determines the quality of audit outputs delivered within those conditions. The present

model's exclusion of mediation pathways means it captures only their independent, direct contributions. The stronger direct effect of IAC highlights that investment in auditor human capital development—through training, professional certification, and continuous professional education—yields the highest direct dividend in terms of IAE improvement.

For policymakers and institutional administrators, the practical implication is clear: strategies aimed at improving IAE should prioritize both dimensions, but should give particular emphasis to systematic, institutionalized investment in auditor professional development. Achieving the full potential of TMS requires ensuring that managerial commitment translates not only into structural and budgetary support, but specifically into high-quality, sustained professional development programs that build the competence base of the audit workforce.

4. CONCLUSION

This study provides focused empirical evidence that both Top Management Support and Internal Auditor Competence are statistically significant direct drivers of Internal Audit Effectiveness in Indonesian public HEIs, explaining a substantial 74.2% of its variance ($R^2 = 0.742$). Internal Auditor Competence emerges as the dominant direct predictor ($\beta = 0.317$, $p < 0.001$), while Top Management Support makes a significant albeit more modest contribution ($\beta = 0.137$, $p = 0.049$). Grounded in Resource-Based Theory, these findings confirm that IA effectiveness in the Indonesian public higher education sector is jointly shaped by the quality of human capital (auditor competence) and the organizational enabling conditions provided by management.

The study contributes to the IA effectiveness literature in three principal ways. First, it provides a clean, direct-effects model that isolates and quantifies the independent contributions of TMS and IAC to IAE without mediating pathways, offering a methodologically focused complement to broader models. Second, it situates these relationships within the specific institutional context of Indonesian public HEIs—an understudied setting in the global IA effectiveness literature. Third, it establishes that IAC is the stronger proximate driver of IAE, which has important implications for the sequencing of institutional investment priorities.

For institutional leaders (Rector, Majelis Wali Amanat, Dewan Pengawas) of Indonesian public HEIs, the primacy of IAC calls for substantive investment in auditor professional development: certification support (QIA, CIA), structured continuing professional education programs, technology-enabled audit skills training, and clear competency-based performance frameworks for SPI staff. The meaningful, albeit smaller, contribution of TMS calls for a shift from formal to substantive management engagement: active audit planning participation, prompt and transparent follow-up on recommendations, and positioning the SPI as a strategic governance partner rather than a compliance mechanism.

For policymakers at Kemendikbudristek and BPKP, the findings support regulatory frameworks that mandate minimum competency standards for public HEI auditors, provide centralized professional development resources, and create incentive structures—such as credential-linked career advancement pathways—that motivate ongoing auditor competence investment.

This study carries several limitations. First, the cross-sectional design precludes causal inference; longitudinal research would strengthen temporal claims about the TMS-IAE and IAC-IAE relationships. Second, the sample is confined to PTN-BH and PTN-BLU institutions; future research should extend findings to PTN-Satker to assess whether the governance structure moderates these relationships. Third, common method bias is a potential concern in self-reported data; future studies should consider multi-source designs. Fourth, by design, this study excludes mediating variables—an exclusion that enables focused measurement of direct effects but precludes examination of the mechanisms through which TMS and IAC jointly produce IAE outcomes. Future research integrating both direct and indirect pathways (particularly the TMS→IAC→IAE chain) would provide a more comprehensive explanatory model.

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