
Determinants of Internal Audit Effectiveness in Indonesian Public Sector

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Abstract

Indonesia is one of the countries that supports the role of internal auditors in government. This study aims to investigate the determinant factors that can be associated with the effectiveness of internal audits in the public sector. A survey was conducted among 142 internal auditors from 60 Ministries and Agencies in Indonesia. Data analysis and hypothesis testing were carried out using Structural Equation Modelling (SEM) in the Smart-PLS application. This study reveals that the audit committee, internal audit competence, the role of external audit, and top management support are variables that determine the effectiveness of the internal audit. The findings of this study could have implications for strengthening the formulation of regulations related to auditing, especially regarding the establishment of audit committees in the public sector. It also enriches previous studies by adding public sector audit committees as one of the determinants of internal audit effectiveness, where their presence is considered still uncommon in the public sector in Indonesia.

Keywords: *Audit Committee; Competence; Internal Audit; Public Sector; Top Management Support*

1. Introduction

The government's performance can be measured from various aspects such as gross domestic product (GDP), poverty rates, unemployment rates, and outcome-oriented approaches like procurement with value-for-money or economic, effective, and efficient performance. Government performance will improve, especially when good governance is implemented. Rahayu et al., (2020) state that good governance has a significant influence on the performance of the public sector.

Governance can be defined as all activities for governing, whether conducted by the government, markets, or networks through law, norms, power, or language based on formal or informal organizational systems, or territories (Bevir, 2012). In the context of corporate governance, the definition of governance can vary, such as the Cadbury Report (1992) defines

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corporate governance as a system that functions to direct and control organizations, while according to the OECD (2015), corporate governance is a set of relationships between corporate management (board of directors), the board of commissioners, shareholders, and other stakeholders (Utama et al., 2023). The World Bank mentions four principles of good governance including transparency, accountability, predictability, and participation (Afiah & Rahmatika, 2014).

The government is one of the actors in governance, where the effectiveness of public sector governance can support decision-making, efficient resource utilization, and enhanced accountability (Rahayu et al., 2020). One governance mechanism that can be employed to drive government performance and improve accountability is oversight functions. Oversight functions in public sector organizations can be carried out through the implementation of government internal control systems and the increased role of internal oversight units. In this context, internal auditors play a supervisory role in the execution of organizational tasks and functions and contribute to enhancing internal control effectiveness, risk management, and organizational governance (Shuwaili et al., 2023). In the public sector, internal audit has different tasks and functions compared to the private sector in terms of performance, complexity, and size (Fayyadh et al., 2021). Through public sector audit activities, internal auditors can ensure the implementation of good governance (Utami, 2018).

Indonesia is one of the countries that supports the role of internal auditors in government. Both the central and local governments have internal audit units, with a budget allocation for oversight amounting to 0.75% of the total budget. In 2008, regulations were established to support the role of internal auditors in assisting the leaders of public sector organizations in strengthening internal control effectiveness within their organizations. Internal auditors are part of the three lines of defense within organizations, where there is a supervisory agency for internal auditors that develops procedures to ensure significant internal controls, enhance the effectiveness and efficiency of organizational program implementation, reduce the risk of decision-making, and coordinate with external auditors. The Development Financial and Control Agency is the supervisory agency that develops methods and procedures for internal auditors to conduct oversight in their respective organizations. Rahayu et al., (2020) states that the role of internal auditors in the public sector in Indonesia contributes to the implementation of government governance, especially in participation, although their dominant role is still that of a watchdog rather than a consultant or catalyst.

Indonesia holds the distinction of having the largest population in Southeast Asia with a GDP of USD 1.34 trillion, ranking 16th among the world's largest economies in 2023 (BPS, 2023). However, accountability remains a significant concern in Indonesia. Transparency International Indonesia states that Indonesia's corruption perception index ranks 115th out of 180 countries in 2023. ICW's findings (2022) indicate that the country incurred losses of Rp 42 trillion due to corruption cases. On the other hand, there has been an improvement in accountability in Indonesia, as indicated by the percentage of follow-up actions on recommendations from the Supreme Audit Agency and the increasing number of Unqualified Opinions issued annually, along with the implementation of the Government Performance Accountability System, which has led to budgetary efficiency amounting to Rp 41.15 trillion (Rahayu et al., 2020). The occurrence of financial fraud and corruption cases raises questions about the effectiveness of internal auditing in the public sector in Indonesia. Therefore, this

research aims to investigate factors associated with the implementation of internal auditing in Indonesia.

The objective of this research is to investigate the extent to which the effectiveness of internal auditing is influenced by the competence of internal auditors, the role of external auditors, the presence of audit committees in the public sector, and top management support. The findings of this research are expected to offer new perspectives for updating existing policies and regulations related to internal auditing in the public sector in Indonesia.

2. Theoretical Background

Internal Audit

Internal auditing is defined as an objective and independent assurance and consulting activity aimed at adding value to an organization. It is conducted by or for the organization itself and is used to review management or other internal objectives (IIA, 2019). The role of internal auditing in an organization is to evaluate governance processes to significantly impact the governance and performance of the organization (Moodley et al., 2022). Adams (1994) refers to internal auditing as one of the costs incurred to minimize agency conflicts, where its implementation if done through other mechanisms such as audit committees, can strengthen the contractual relationship between principals and agents and help principals address information asymmetry issues while overseeing the efficiency of costs incurred by agents.

Internal auditing can provide assurance and consulting services to enhance the effectiveness of internal controls within organizations and support the implementation of risk management, financial reporting, and other governance functions (Utama et al., 2023). According to KPMG (2008) as cited by (Utama et al., 2023), the roles of internal auditors include evaluating the level of risk and the internal control framework within an organization, analyzing business processes and implementing internal controls, reviewing the value and existence of assets, informing about major fraud and irregularities, reviewing matters requiring attention such as unacceptable risk levels, evaluating compliance frameworks and related issues, assessing the financial and operational performance of an organization, evaluating and recommending more effective and efficient resource utilization, assessing the achievement of organizational objectives, and providing feedback on compliance with applicable regulations.

In the context of internal auditing, there is the 3E framework consisting of effectiveness, efficiency, and economy. Effectiveness is perceived as a key factor in achieving objectives, where the objectives of internal auditing must align with those of the organization to realize good outcomes and improve organizational performance and productivity (Badara, 2014; Ridley, 2008; Khalid et al., 2007 as cited by Alqudah et al., 2019). Therefore, it can be defined that effective internal auditing supports the organization in achieving its goals by assessing compliance with regulations, procedures, and policies, evaluating, and enhancing the effectiveness of internal control systems, and reviewing asset protection (Alqudah et al., 2019b)

This research utilizes the resource-based view theory to develop a model that explains the determinants of internal audit effectiveness. The resource-based view theory explains the

importance of valuable and rare resources for strategic development as drivers of better performance for the internal audit profession and can enhance effectiveness and efficiency (Alqudah et al., 2019). Ahmad (2015) constructs a theoretical framework using the resource-based view theory to investigate internal factors influencing internal auditor effectiveness, including organizational characteristics, departments, employees, and managerial practices. Shuwaili et al. (2023) employ the resource-based view to emphasize that management support is a significant resource for enhancing internal audit effectiveness, whereby organizations can improve their competitive advantage if senior managers hire internal auditors with adequate qualifications and provide the necessary resources for them to perform their duties optimally.

Internal Auditor Competence

Based on the Institute of Internal Auditors (IIA), competence and expertise are fundamental requirements for auditors to effectively conduct internal audits, comprising core competencies and technical as well as interpersonal skills (Bailey, 2010). Alzeban & Gwilliam (2014) assert that adequate competence is essential for internal auditors to fulfil their tasks and responsibilities. According to the resource-based theory, if an audit department possesses a high level of competence, the effectiveness of internal auditors is likely to increase, especially during task execution (Ahmad, 2015 as cited by Alqudah et al., 2019). Based on these arguments, the research hypothesis can be formulated as follows:

H1: Internal auditor competence is positively associated with internal auditor effectiveness.

Audit Committee

The presence of an audit committee is deemed significant for management as one of the elements contributing to improving the quality of financial reporting, internal oversight, and the implementation of checks and balances aimed at effectively protecting shareholders and stakeholders (Utama et al., 2023). This is closely related to the agency conflicts between principals and agents (Jensen and Meckling, 1976), where the formation of an organ is necessary to assist shareholders or principals in analyzing decisions made by agents and carrying out oversight functions over the performance of agents and management teams to align with principles of good governance. The presence of an audit committee is one of the determining factors for the effectiveness of internal audit, including coordination and cooperation between internal auditors and the audit committee, the relationship between the audit committee and top management, and ensuring the independence of internal auditors (Abdelrahim & Al-Malkawi, 2022; Oussii & Boulila Taktak, 2018; Shuwaili et al., 2023; Turetken et al., 2020). Therefore, the hypothesis is formulated as follows:

H2: The internal auditor effectiveness is higher in the ministry or agency that has audit committee.

Role of External Auditors

The role of external auditors is deemed significant in minimizing information asymmetry resulting from agency conflicts, where external auditors can offer verification services on management's assertions regarding financial statements aimed at enhancing the credibility of

financial reports, reducing bias and material errors, and protecting investors from misleading financial statements. In the context of procurement, external audits enhance accountability where procurement officials are responsible for decisions and procurement transactions within their jurisdiction. The role of external audits not only promotes efficiency and effectiveness in the procurement process but also encourages procurement officials to adopt best practices to achieve value for money (Anin et al., 2022). Previous studies argue that the interaction between internal and external auditors with the aim of joint planning and sharing audit information encourages effective internal audit implementation (Onay, 2021; Shuwaili et al., 2023; Turetken et al., 2020). Based on these arguments, the hypothesis is formulated as follows:

H3: The role of the external auditor is positively associated with internal auditor effectiveness.

Top Management Support

The utilization of internal audit as an internal control mechanism will provide direct benefits to management, hence management needs to provide sufficient resource support for the implementation of internal audits, such as recruiting competent staff and providing budgets for continuous training and development (Ganesan et al., 2021). The absence of top management support can impact auditor behavior, leading to a lack of seriousness towards the implementation and recommendations of internal audits, and the failure of management teams to follow up on improvement recommendations (Mihret & Yismaw, 2007, Van Peurse, 2005). Previous studies have concluded that top management support has a positive impact on the effectiveness of internal audits, as observed in the public sector in Malaysia (Ahmed et al., 2009 as cited by Ganesan et al., 2021) and public sector organizations in Jordan (Alqudah et al., 2019; Ta & Doan, 2022). Based on these considerations, the hypothesis is formulated as follows:

H4: Top management support is positively associated with internal auditor effectiveness.

3. Methodology

The research was conducted in the public sector in Indonesia, where the Government's Internal Supervisory Apparatus plays a crucial role as a supporting organ for institutional leadership to strengthen governance, risk management, and control within an organization. In recent years, public sector accountability in Indonesia has come under scrutiny due to the high incidence of corruption. The trend of prosecuting corruption by the Public Prosecutor's Office, the Police, and the Corruption Eradication Commission in 2022 has seen an increase in both the number of cases and suspects, as well as the potential value of state losses.

One of the efforts to address this issue, the Indonesian Government has initiated reforms in the governance of internal supervision in the public sector in Indonesia, aiming to improve supervision performance, with the hope of enhancing the performance and accountability of the public sector in Indonesia. The Indonesian Government has formulated regulations related to public supervision and appointed institutions with authority to oversee the government's internal supervisory apparatus in Ministries, Institutions, and Local Governments. To develop a model that can explain the relationship between internal audit effectiveness and sustainable

procurement, this research utilizes a quantitative method using surveys. The survey method is chosen because it is considered reliable for obtaining insights and avoiding difficulties in accessing data, especially those often experienced in developing countries. Previous studies on the determinants of internal audits have used surveys to test hypotheses, as seen in the works of Anin et al (2022), Bonollo (2019) and Essuman et al (2021).

Population and Sample

The population of this study consists of units in the public sector, namely 638 ministries/agencies/local governments in Indonesia, consisting of 87 Ministries/Agencies and 551 Local Governments. Sample selection was conducted using judgment (purposive) sampling based on the criteria of the presence of internal audit units in government agencies and the differences in characteristics between central and local governments. Therefore, the sample consists of internal auditors from 81 Ministries and Agencies. Ministries and Agencies were chosen as samples because they have a larger budget allocation compared to local governments and have a higher potential for budget misuse. Respondents must have competencies related to the implementation of internal audits in the public sector and knowledge about the competencies of auditors, public sector audit committees, top management, and external auditors. Additional criteria include respondents being civil servants and having held their position for at least one year.

The study employs SEM and has various approaches to determining sample size. Hair et al (2011) suggest that in research using PLS-SEM, the minimum sample size should be equal to the larger of ten times the number of the largest formative indicators used to measure one construct, which is 60 in this study. Meanwhile, Hair et al. (2022) state that the minimum sample size used for structural models should be 100 respondents. Data collection from respondents was conducted from January 11 to March 1, 2024. A total of 65 agencies responded, with 254 respondents. After analyzing the completeness of the questionnaires and filtering questions, 142 respondent data from 60 agencies could be used.

Variable Measurement and Data Collection Instrument

Preliminary surveys were conducted with three senior audit professionals to obtain feedback and reviews to enhance the validity of item appearance, clarity, and contextual relevance while eliminating irrelevant content. The measurement instrument was adopted and modified from similar research and has undergone readability tests as well as validity and reliability tests with a sample size of 30 respondents. The final questionnaire was divided into three parts: screening questions, respondent profiles including institution name, position, highest education level, and years of service, and core questionnaire questions. Measurements were conducted using a 5-point Likert scale, where 1 indicates "strongly disagree" and 5 indicates "strongly agree," except for the audit committee variable, which used a binary scale. Latent variable measurements are represented by indicators as explained below:

Effectiveness of Internal Audit (EAI)

The operationalization used to describe the variable of internal audit effectiveness follows the approach and definition used by Karikari Appiah et al., 2022, where effectiveness is measured

by compliance with standards, risk management in audit planning and execution, timeliness in delivering audit results, and the relationship between internal audit and the organization's internal control system. This operationalization utilizes 4 items and has been used in several previous studies, such as those conducted by Alqudah et al. (2019) and Alzeban & Gwilliam (2014).

Internal Audit Competence (COMP)

The measurement of internal auditor competence utilizes five indicators as used by Karikari Appiah et al. (2022). This is consistent with the definition of auditor competence according to the Institute of Internal Auditors (IIA), where internal auditors apply the knowledge, skills, and experience required to perform internal audit services.

Role of External Audit (EXT)

The operationalization of the role of external auditors utilizes five indicators used by (Alqudah et al., 2019b; Alzeban & Gwilliam, 2014b; Karikari et al., 2022). In this approach, the role of external auditors is assessed based on their attitudes and behaviors, coordination with internal auditors, particularly regarding planning and conducting audits with the same scope and objectives, and opportunities given to internal auditors to raise potential issues.

Top Management Support (TMS)

The operationalization of top management support utilizes five indicators used by Alqudah et al. (2019), Alzeban & Gwilliam (2014), and Karikari Appiah et al. (2022). This operationalization measures top management support for the audit organization, particularly in providing auditor staff, education, and competency development, involvement in formulating internal audit plans, and following up on recommendation results.

Audit Committee (AC)

The audit committee is measured as a binary variable, with a value of 1 if there is an audit committee and 0 otherwise if the organization has not formed an audit committee. This is in line with the recommendations of the Indonesian Government Internal Audit Standards regarding audit committees to enhance internal audit effectiveness and assist in advising management on internal oversight implementation. Previous research by Abdelrahim & Al-Malkawi (2022) and Turetken et al. (2020) supports this approach.

Hypothesis Testing

The testing of the structural model and hypotheses was conducted using the Structural Equation Modeling (SEM) method employing Smart-PLS software. In this study, the researcher utilized the PLS-SEM method to analyze the relationships between variables due to its advantages in conducting complex relationship tests involving mediation. PLS-SEM is also regarded as the most developed system and does not require excessively large sample sizes. Generally, a PLS structural model requires metric data for its dependent variables, although it is possible to include dummy variables as one of the variables in the PLS structural model.

However, nominal, or ordinal variables should be included as exogenous variables in the structural model (Henseler et al, 2015).

The first stage of analysis includes scale validation by testing discriminant and convergent validity, as well as reliability. The second stage involves testing the structural model, focusing on path coefficients. Bootstrap analysis is then conducted to obtain t-values and path coefficients used to test hypotheses. For mediation analysis, the SEM approach is also recommended by (Hair et al., 2014). SEM can accommodate various exogenous variables, mediations, and endogenous variables in one analysis (Nitzl et al, 2016; Hair et al., 2017).

4. Empirical Findings/Result

Respondents Demographic's Characteristics

Most respondents, accounting for 61.27%, hold bachelor's degrees (S1/Diploma IV), while 29.58% have master's degrees (S2), and the remaining respondents have either doctoral degrees (S3) or diploma 3. In terms of work experience, most respondents, at 34.51%, have been civil servants for 1 to less than 3 years, while those with more than 10 years of experience constitute another significant portion. Regarding respondents' positions, 100% are Internal Audit Apparatus (APIP/SPI). Table 1 provides detailed demographic information about the respondents.

Table 1.
Respondent's demographic characteristic

Variables	Frequency	
Education Qualification		
Diploma III	7	7,04%
Bachelor's Degree/Diploma IV	87	61,27%
Master's degree	42	29,58%
Doctoral	3	2,11%
Years Worked in Position		
1 - < 3 years	49	34,51%
3 - < 5 years	25	17,61%
5 - 10 years	38	26,76%
> 10 years	30	21,13%

Descriptive Analysis

As shown in Table 2, descriptive statistics for each indicator have been analyzed. The mean values for each variable range from 3.958 to 4.592, indicating a good categorization. The variable with the highest composite mean value is COMP (internal audit competence) with a value of 4.45, while the variable with the lowest composite mean value is AC (audit committee) with a value of 0.21. Overall, it can be concluded that the internal audit effectiveness in the Ministries and Institutions environment falls within the good category, supported by its determinant variables. However, analyzing the audit committee variable, the mean value of 0.21 indicates that the presence of audit committees in Ministries and Institutions in Indonesia is still limited. Generally, the descriptive results show that respondents have varied opinions.

Table 2.
Descriptive Statistics.

Variabel	Mean Value	Composite Mean Value	Likert's Scale		Responses		Std Dev
			Min	Max	Min	Max	
COMP1	4.359	4,450	1	5	3	5	0,46
COMP2	4.430				3	5	0,43
COMP3	4.423				3	5	0,42
COMP4	4.592				3	5	0,40
COMP5	4.444				3	5	0,47
EXT1	4.246	4,166	1	5	3	5	0,51
EXT2	4.289				3	5	0,50
EXT3	4.204				3	5	0,50
EXT4	4.134				2	5	0,59
EXT5	3.958				2	5	0,60
TMS1	4.246	4,124	1	5	2	5	0,50
TMS2	3.965				2	5	0,57
TMS3	4.063				2	5	0,56
TMS4	4.092				2	5	0,50
TMS5	4.254				2	5	0,50
EAI1	4.366	4,363	1	5	3	5	0,49
EAI2	4.437				3	5	0,44
EAI3	4.275				2	5	0,51
EAI4	4.373				3	5	0,49
AC	0,206	0,206	0	1	0	1	0,32

Source. Authors Estimation Using Smart PLS

Measurement Model Validation Evaluation: Convergent Validity and Discriminant Validity

Validation of the measurement model involves convergent validity and discriminant validity to assess the structure of the reflective measurement model. Convergent validity (CV) is the concept related to the appropriateness of latent variables when associated with the indicators composing those variables. According to Hair et al. (2014), convergent validity can be evaluated using composite reliability (CR) with a minimum value of 0.70 and average variance extracted (AVE) with a minimum value of 0.50.

As seen in Table 3, the CR values range from 0.926 to 1.00, exceeding the minimum threshold of 0.70. Similarly, the AVE values range from 0.716 to 1.00, surpassing the minimum threshold of 0.50. Cronbach's alpha (CA) testing was also conducted as part of the convergent validity measurement. As shown in Table 3, the CA values for all constructs vary between 0.899 and 1.00, exceeding the minimum criterion of 0.70.

Table 3.
Validation-Reliability Test Result

	CA	CR	AVE	AC	COMP	EAI	EXT	TMS
AC	1,000	1,000	1,000	1,000				
COMP	0,909	0,932	0,853	0,436	0,856			
EAI	0,942	0,959	0,733	0,541	0,705	0,923		
EXT	0,899	0,926	0,716	0,335	0,266	0,510	0,846	
TMS	0,901	0,931	0,731	0,277	0,315	0,499	0,449	0,855

Source. Authors Estimation Using Smart PLS

Discriminant validity (DV) is a statistical concept that measures the sufficiency of the differences between the constructs under examination and other constructs. Previous studies have used the Fornell & Larcker (1981) criteria to assess DV. As shown in Table 3, the bolded values on the diagonal represent the square root of the AVE, which is higher than the intercorrelation between variables, indicating that discriminant validity has been achieved. Another criterion for measuring discriminant validity is the Heterotrait-Monotrait Ratio (HTMT), developed by Henseler et al. (2015). For a research model to achieve discriminant validity, the HTMT value should be less than 0.85 for theoretically comparable structures and 0.90 for conceptually different models. The HTMT values for each variable in this research model range from 0.270 to 0.749, as shown in Table 4. These results confirm that the measurement model meets the requirements of convergent validity and discriminant validity, enabling the analysis to proceed to the structural model.

Table 4
HTMT Testing based on Henseler et al (2015)

	AC	COMP	EAI	EXT	TMS
AC					
COMP	0,448				
EAI	0,558	0,749			
EXT	0,354	0,296	0,551		
TMS	0,270	0,330	0,503	0,495	

Source. Authors Estimation Using Smart PLS

Structural Model Evaluation

The structural model in this study was evaluated using coefficients of determination (R^2), effect size (f^2), cross-validated redundancy (Q^2), and goodness of fit (GoF) (Hair et al., 2022) as the primary criteria.

Coefficients of determination R-square, effect size f^2 , and goodness-of-fit (GoF)

The R-square value is used to indicate the coefficient of determination, quantifying the extent to which variance in the endogenous variable is explained by its exogenous variables. In this model, internal auditor competence, audit committee, external auditor role, and top management support can explain 66.8% of the variance in internal audit effectiveness.

The effect size f-square is analyzed to evaluate the substantive impact of exogenous variables on their endogenous variables. The variables of the top management support, audit committee and external auditor role provide moderate effects on internal audit effectiveness, with values of 0.077, 0.087, and 0.117, respectively, while the largest effect is from the internal auditor competence variable, with a value of 0.580.

This model also considers the goodness-of-fit, obtained from the square root of the average R-square value multiplied by the average AVE value of all latent variables, resulting in a GOF of 0.626. A GOF value of 0.1 is considered small, 0.25 is considered medium, while a GOF above 0.38 is considered large.

Predictive Relevance

Q-square measures the predictive relevance of the given model by focusing on the values of endogenous variables in the model that are higher than zero, indicating that these variables have predictive relevance in the model. Predictive relevance in the model can be assessed using the Stone-Geisser criterion and tested using the blindfolding approach in PLS-SEM by testing the redundancy of cross-validated results. In this study, the Q-square for the variable "effectiveness of internal audit" is 0.561, indicating predictive relevance in the structural model. In short, the structural model of this study is considered robust.

Hypothesis Testing Results and Path Coefficient

The hypothesis testing using bootstrapping indicates that all hypotheses have been supported in this model. Table 5 shows that the audit committee has a significant and positive influence on the effectiveness of internal audit (Beta = 0.196, p-value = 0.001), internal auditor competency has a significant and positive influence on the effectiveness of internal audit (Beta = 0.501, p-value = 0.000), the role of external auditors has a significant and positive influence on the effectiveness of internal audit (Beta = 0.228, p-value = 0.001), and top management support has a significant and positive influence on the effectiveness of internal audit (Beta = 0.185, p-value = 0.013).

Table 5.
Hypothesis Testing Results

Hypothesis	Path	Beta	Sample Mean	Standard Deviation	t-statistics	p-value	Decision
H1	COMP -> EAI	0,501	0,493	0,093	5,368	0,000	Supported
H2	AC -> EAI	0,196	0,187	0,061	3,211	0,001	Supported
H3	EXT -> EAI	0,228	0,229	0,068	3,380	0,001	Supported
H4	TMS -> EAI	0,185	0,197	0,074	2,498	0,013	Supported

Source. Authors Estimation Using Smart PLS. COMP = Competence of IA; TMS = Top Management Support; EXT = External Auditors Role; AC = Audit Committee; EAI = Internal Audit Effectiveness

Discussion and Analysis

This section will discuss the research findings by comparing them with empirical literature. This study employs the resource-based view theory to explain the factors that can support effective internal audit implementation. Survey data from Indonesia support a model indicating that internal audit competence, audit committee, external auditor role, and top management support are determinants of internal audit effectiveness.

The research findings consistently support previous studies regarding the factors contributing to internal audit effectiveness. There is a significant positive influence of internal auditor competence on internal audit effectiveness, aligning with the resource-based view concept, which highlights competence as a key factor in achieving sustainable competitive advantage within an organization. Prior research has supported a strong relationship between internal auditor competence and internal audit effectiveness, as demonstrated by Karikari et al. (2022) and Alqudah et al. (2019). Moreover, Alzeban & Gwilliam (2014) concluded that competence is a prerequisite for internal auditors to fulfil their duties and responsibilities effectively.

Furthermore, this research demonstrates a significant positive influence of the audit committee on internal audit effectiveness. These findings support previous studies conducted by Turetken, Jethefer, and Ozkan (2019) and other studies that affirm the positive impact of the audit committee on internal audit effectiveness, as seen in the research by Abdelrahim & Husam-Aldin (2022) and Shuwaili, Hesarzadeh & Velashani (2022). In the context of ministries and agencies within the public sector in Indonesia, respondents feel that the presence of an independent audit committee can facilitate effective internal audit implementation. This aligns with the recommendations of the IIA supporting the establishment of audit committees in the public sector and the inclusion of audit committees in the Government Internal Audit Professional Practices Framework. These results contribute to the literature on public sector audit committees in Indonesia, which is still limited.

Additionally, the role of external auditors and top management support also has a positive impact on effective internal audit implementation. The findings of this study support previous research by Karikari et al. (2022), Onay (2021), and Shuwaili (2023), which concluded that collaboration and communication between internal and external auditors have a positive

impact on internal audit implementation, especially when conducted through joint audit planning, information sharing, and joint discussion of audit findings. Furthermore, prior studies by Alqudah et al. (2019), Ganesan et al. (2021); Sabet (2020), and Ta & Doan (2022) have documented that top management support for internal audit organizations in the form of regulatory approval, adequate budget allocation, training and development programs for auditors, and appropriate compensation also contribute to effective internal audit implementation.

5. Conclusion

The Government of Indonesia is making sustained efforts to enhance accountability in the execution of public sector tasks and functions, while also addressing the growing issues of budget misuse and corruption by improving the effectiveness of the Government's Internal Supervisory Apparatus (APIP). This research investigates factors influencing internal audit effectiveness, yielding the following conclusions.

Secondly, this study confirms previous research, concluding that audit committees can foster effective internal audits. The presence of audit committees in the public sector in Indonesia is still relatively rare, so the findings of this study could have implications for recommending the establishment of audit committees in public sector organizations in Indonesia. Additionally, internal auditor competence, the role of external auditors, and top management support are other supportive factors for internal audit effectiveness.

This study is one of the few research endeavors that successfully developed a model to enhance compliance with sustainable procurement practices within the context of the public sector. It offers perspectives for advancing Indonesia's commitment to achieving Sustainable Development Goal 12.7, which is promoting sustainable public procurement conforming with national policies and priorities. Leaders in public sector organizations need to commit to improving the effectiveness of internal audits within their organizations to promote best practices in sustainable procurement. Enhancing the competence of internal auditors and strengthening coordination with external auditors require top management support to materialize. Additionally, top management needs to provide adequate resources to develop the internal audit function and ensure that audit recommendations are implemented to benefit organizational performance.

The findings of this research also reinforce regulations related to government procurement oversight (Presidential Regulation 12/2021 and Indonesia National Government Internal Auditor Regulation Number 3 of 2019), which mandate that every agency leader must oversee government procurement in their respective agencies through the Government Internal Supervisory Apparatus. The results of this study are expected to inform policy updates and strengthen the commitments of public sector organizations in Indonesia to reinforce existing regulations and procedures, particularly concerning procurement audits and sustainable procurement. This study also underscores the importance of establishing audit committees in

the public sector for effective internal audit implementation, thus prompting regulatory bodies and internal audit professional organizations to update recommendations regarding the formation of audit committees in the public sector.

This study has limitations that need to be considered when interpreting its results. Firstly, the study has a limited sample size, with only 81 ministries and government agencies in Indonesia included. Secondly, the research employs cross-sectional survey data, which only represents the conditions at the time of the survey. Thirdly, there may be other variables that could influence sustainable public procurement that are not covered in this model. Future studies could consider using secondary data or qualitative methods such as interviews or focus group discussions to facilitate further data validation.

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