






“Factors affecting the effectiveness of internal audit and its impact on sustainability information disclosure: An empirical investigation in Vietnamese non-financial enterprises”

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ARTICLE INFO	Tran Kim Ngan and Ho Tuan Vu (2026). Factors affecting the effectiveness of internal audit and its impact on sustainability information disclosure: An empirical investigation in Vietnamese non-financial enterprises. <i>Problems and Perspectives in Management</i> , 24(1), 148-165. doi: 10.21511/ppm.24(1).2026.11
DOI	http://dx.doi.org/10.21511/ppm.24(1).2026.11
RELEASED ON	Tuesday, 27 January 2026
RECEIVED ON	Monday, 06 October 2025
ACCEPTED ON	Tuesday, 06 January 2026
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

45



NUMBER OF FIGURES

2



NUMBER OF TABLES

5

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BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Type of the article: Research Article

Received on: 6th of October, 2025

Accepted on: 6th of January, 2026

Published on: 27th of January, 2026

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FACTORS AFFECTING THE EFFECTIVENESS OF INTERNAL AUDIT AND ITS IMPACT ON SUSTAINABILITY INFORMATION DISCLOSURE: AN EMPIRICAL INVESTIGATION IN VIETNAMESE NON-FINANCIAL ENTERPRISES

Abstract

This study examines the determinants of internal audit effectiveness and its impact on sustainability information disclosure in Vietnamese non-financial enterprises. Drawing on agency theory, legitimacy theory, and the International Standards for the Professional Practice of Internal Auditing, the study develops and tests a structural model linking five governance-related factors (independence, objectivity, auditor competence, the scope of internal audit activities, and management support) to internal audit effectiveness and, subsequently, to sustainability information disclosure. Enterprise size is incorporated as an explanatory and moderating variable.

Empirical data were collected through a quantitative survey of 209 managers and employees in accounting, auditing, finance, and governance positions across 103 listed non-financial enterprises. The data were analyzed using reliability analysis, factor analysis, and structural equation modeling.

The results show that management support, objectivity, audit scope, and auditor competence significantly enhance internal audit effectiveness, with management support exerting the strongest influence, while independence is not statistically significant. Furthermore, both internal audit effectiveness and enterprise size positively affect sustainability information disclosure, with enterprise size playing a more dominant role, consistent with legitimacy pressures and resource-based considerations. The findings highlight the mediating role of internal audit effectiveness in translating governance practices into improved sustainability disclosure. This study contributes to the literature by providing empirical evidence from a developing-country context and demonstrating the strategic role of internal audit in enhancing transparency and supporting sustainable development.

Keywords

internal audit, effectiveness, information disclosure, sustainable development

JEL Classification

M40, M41, L25, E01

INTRODUCTION

In recent years, sustainability information disclosure has become an increasingly important component of corporate reporting, driven by rising demands from regulators, investors, and other stakeholders for greater transparency and accountability. Effective sustainability information disclosure not only enhances corporate legitimacy but also supports sustainable development by informing stakeholders about a company's environmental, social, and governance practices. However, ensuring the reliability and quality of sustainability information disclosure remain a significant challenge, especially for enterprises operating in emerging markets where regulatory frameworks and governance mechanisms are still evolving.



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Conflict of interest statement:

Author(s) reported no conflict of interest

Internal audit functions have traditionally been associated with financial control and risk management, but their role has expanded to include the assurance of non-financial information quality. The effectiveness of internal audit is thus increasingly recognized as a critical governance mechanism that can enhance the credibility and transparency of sustainability information disclosure. Despite this growing interest, empirical research on the determinants of internal audit effectiveness (IAE) and its influence on sustainability reporting, particularly in the context of non-financial enterprises in emerging economies like Vietnam, remains limited.

It is interesting to address this gap by investigating key factors affecting the effectiveness of internal audit, namely management support, auditor objectivity, competence, scope of audit activities, and independence, and examining how the effectiveness of internal audit impacts the quality of sustainability information disclosure. By surveying employees and managers in Vietnamese non-financial joint-stock companies and employing structural equation modeling, we offer new insights into the pathways through which internal audit contributes to sustainable corporate transparency.

1. LITERATURE REVIEW AND HYPOTHESES

Many previous studies have examined the factors influencing the effectiveness of internal audit and analyzed its role in enhancing corporate governance quality; however, empirical evidence on the impact of effective internal audit on sustainability information disclosure remains limited, particularly in the context of Vietnamese non-financial enterprises.

1.1. Internal audit and factors affecting the effectiveness of internal audit

Internal audit is generally defined as a function that provides independent insight into an organization's operations (IIA, 2017b). Rather than performing operational control activities, internal audit delivers assurance and advisory services that assist management in enhancing operational efficiency and organizational value. Its activities typically involve evaluating the effectiveness of risk management practices, assessing the adequacy and operation of internal control systems, and strengthening governance processes. Although internal audit practices vary across organizations and institutional contexts, international standards consistently emphasize three core responsibilities: examining the adequacy and effectiveness of internal controls, assessing how risks are identified and managed, and providing recommendations that support compliance and operational improvement. Accordingly, an internal audit as-

essment scale should comprehensively capture these functions and be appropriately aligned with the operational and institutional characteristics of each country.

The Institute of Internal Auditors emphasizes independence as a fundamental principle of professional internal audit practice. Independence enables the internal audit function to operate free from managerial influence, thereby ensuring objective and unbiased assessments of governance and compliance effectiveness. Getie Mihret and Wondim Yismaw (2007) found that the quality of internal audit activities depends on independence, while Arena and Azzone (2009) showed that auditor independence is a key factor in ensuring the internal audit effectiveness. Cohen and Sayag (2010) found that organizational independence is positively related to auditing quality and evaluation, which is an effective dimension of internal audit in the Israeli context. Moreover, both Cohen and Sayag (2010) and Alzeban and Gwilliam (2014) concluded that independence is a necessary prerequisite for internal audit effectiveness. Through an independent internal audit function, organizations are better positioned to identify sustainability-related risks, provide operational improvement recommendations, and promote greater transparency in board disclosures (Soh & Martinov-Bennie, 2011).

Another crucial principle of internal audit practice mentioned by the Institute of Internal Auditors (IIA, 2017a) is objectivity. In practice, internal auditors are expected to maintain objectivity and

effectively manage potential conflicts between professional loyalty and organizational demands. Arena and Azzone (2009) mentioned that internal audit effectiveness is enhanced when corporate members are affiliated with the Institute of Internal Auditors. Objectivity reflects the internal audit function's capacity to deliver neutral and unbiased evaluations of control and risk management systems. Fadzil et al. (2005) demonstrated that objectivity is positively associated with the monitoring dimension of internal control systems. When objectivity is high, internal auditors can strengthen the oversight role of the management board and promote greater transparency, thereby influencing firms' information disclosure practices and risk management (Tawfik et al., 2023).

The Institute of Internal Auditors emphasizes that internal auditors must possess and demonstrate adequate professional competence. Staff competency is a critical determinant of internal audit effectiveness (Alzeban & Gwilliam, 2014). Getie Mihret and Wondim Yismaw (2007) found that the quality of internal audit activities depends on auditors' capabilities, which in turn influence managerial efficiency and information transparency. Professional competence, strong analytical skills, and a thorough understanding of sustainability-related information enable internal auditors to conduct non-financial risk assessments more effectively and to provide valuable recommendations to management regarding sustainable development strategies (Zain et al., 2006). An internal audit function equipped with robust organizational knowledge is more proactive and better positioned to guide firms toward a sustainable future (IIA, 2017a).

It is recommended that the internal audit function be appropriately positioned within the organization and adequately resourced (IIA, 2017a). Arena and Azzone (2009) noted that internal audit effectiveness is positively associated with the use of appropriate audit techniques and the level of support provided to the risk management process. A broader audit scope (including sustainability risk assessments, environmental compliance, and ethical considerations) enhances the internal audit function's ability to assist management in planning and implementing sustainable development initiatives (Peters & Romi, 2013).

Management support is a critical determinant of internal audit effectiveness. Ahmad et al. (2009) reported that nearly 25% of respondents identified senior leadership support as the second-most-important factor contributing to internal audit effectiveness. This underscores that when organizational leaders endorse and value the internal audit function, its role is strengthened and better integrated into governance processes (Alzeban & Gwilliam, 2014). The Institute of Internal Auditors also emphasizes that internal auditors require strong support from senior management and the board of directors to perform their duties effectively. Furthermore, adequate resources are essential for the internal audit function to operate effectively. Support from senior management enables the department to secure sufficient resources, recruit competent staff, and invest in training and continuous improvement (Cohen & Sayag, 2010). Conversely, a lack of management support can hinder internal audit performance, particularly when auditees fail to take audit activities seriously (Mihret et al., 2010). Alzeban and Gwilliam (2014) found that leadership support is the most influential factor affecting internal audit effectiveness in Saudi Arabian public sector organizations. Enhancing internal audit effectiveness requires well-trained and experienced personnel, along with adequate resource allocation. Similarly, Alqudah (2020) demonstrated that top management empowerment of internal auditors positively influences the effectiveness of internal audit functions in Jordanian public sector organizations.

Support from senior management is highly practical and directly relevant to the quality of internal audit activities, thereby influencing governance effectiveness and information transparency (Getie Mihret & Wondim Yismaw, 2007). Such support is reflected through decisions that facilitate access to necessary information, provide timely feedback on audit recommendations, and enable the internal audit function to broaden its assessment scope, particularly in evaluating sustainability-related information. A positive relationship between leadership and internal audit effectiveness serves as an important mediating factor that enhances the implementation of sustainability information disclosure responsibilities (Alzeban & Sawan, 2013).

1.2. Internal audit effectiveness and sustainability information disclosure

Prior studies on internal audit effectiveness show that the level of effectiveness varies across countries and organizational contexts, reflecting differences in regulatory frameworks, cultural environments, and internal governance practices (Mihret et al., 2010; Cohen & Sayag, 2010). The Institute of Internal Auditors emphasizes that the effectiveness of the internal audit function is closely linked to its ability to align audit activities with organizational strategies, objectives, and key risks. In line with this perspective, Decree 05/2019/ND-CP requires Vietnamese organizations to develop an annual audit plan based on risk assessment, ensuring that audit efforts are directed toward priority areas (Government Electronic Information Portal, 2019). This requirement promotes a more strategic allocation of audit resources and reinforces compliance with international professional standards.

Beyond assurance activities, an effective internal audit function also provides recommendations intended to improve operational processes and support continuous organizational development (IIA, 2017a). This advisory role (often expressed through the analysis of process deficiencies and opportunities for improvement) has been recognized in prior research as a significant contributor to organizational learning and performance enhancement (Arena & Azzone, 2009). Internal audit effectiveness is further demonstrated through its ability to monitor the implementation of audit recommendations. Establishing formal follow-up procedures ensures that corrective actions are tracked and executed appropriately, thereby strengthening accountability and reducing control gaps (Lenz & Hahn, 2015; IIA, 2017a).

Furthermore, the internal audit function plays a central role in assessing compliance with internal policies, regulatory requirements, and operational plans – an activity regarded as fundamental to internal audit practice and particularly important within Vietnam's increasingly regulated business environment (Mihret et al., 2010). Empirical evidence from various sectors in Vietnam, including the heavy steel industry, indicates that a well-

functioning internal audit department contributes positively to organizational performance (Thanh My & Thanh Nhat, 2024).

Internal audit, through both its assurance activities and advisory responsibilities, plays a critical role in strengthening risk management, internal controls, and compliance practices. These contributions can indirectly support broader and more reliable disclosure of non-financial information, including ESG-related reporting (IIA, 2017a; Soh & Martinov-Bennie, 2011). Because internal audit is not typically responsible for preparing sustainability reports, its influence on sustainability information disclosure generally operates through enhancements to the systems and processes that underpin reporting quality rather than through direct involvement in the reporting process. Arena and Azzone (2009) argued that internal audit enhances organizational value by evaluating and improving control mechanisms – capabilities that are particularly relevant to ensuring the integrity of sustainability information disclosure. Similarly, Lenz and Hahn (2015) suggested that a strong internal audit function can promote greater transparency in non-financial disclosures and act as a supportive component within broader sustainability governance structures. Empirical evidence from Akisik and Gal (2017) further indicates that corporate sustainability information is more likely to contribute to sustained financial performance when it is independently reviewed and supported by effective internal controls. The importance of internal audit in assessing and improving sustainability performance has also been emphasized in studies of industrial firms applying performance measurement frameworks such as the balanced scorecard (Alajeli & Wahhab, 2022).

1.3. Enterprise size and sustainability information disclosure

Larger enterprises are generally more active in disclosing sustainability information than smaller firms. One explanation is that organizations with substantial scale typically face stronger expectations from key stakeholder groups (including investors, regulators, customers, and the public) regarding transparency and accountability (Kouloukoui et al., 2019). From a stakeholder theory perspective, maintaining legitimacy and sustaining long-

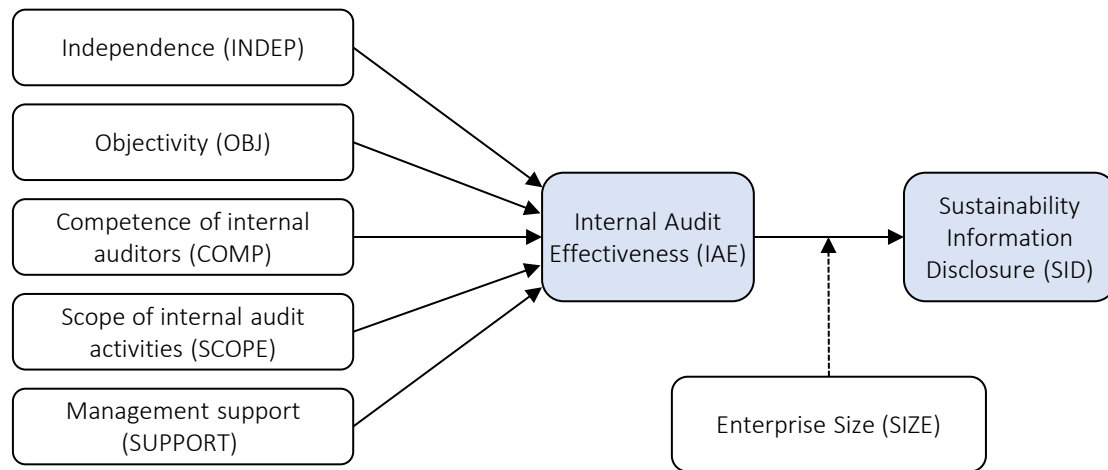


Figure 1. Conceptual research framework

term relationships require these firms to communicate their economic, social, and environmental impacts more openly (Manes-Rossi et al., 2018). A considerable body of research identifies enterprise size as a significant determinant of sustainability information disclosure, consistently demonstrating its explanatory power in adoption decisions (Kouloukoui et al., 2019). Kumar et al. (2023) also provide evidence that larger enterprises tend to disclose sustainability information more comprehensively than smaller ones. This trend is partly due to the superior financial and human resources available to large corporations, enabling them to assign dedicated personnel, engage external advisors, and adopt recognized reporting frameworks such as the GRI standards or ESG disclosure systems (PwC & VIOD, 2022). Regulatory pressures likewise vary by enterprise size. Legal reporting requirements and market-driven disclosure expectations are often introduced first for larger enterprises or firms operating in capital markets. In Vietnam, for instance, sustainability information disclosure obligations mainly apply to listed companies (Government Electronic Information Portal, 2022). Consequently, larger organizations frequently assume a leading role in adopting and institutionalizing non-financial disclosure practices.

The aim of study to synthesize prior research to identify the determinants of internal audit effectiveness and to establish a theoretical basis for examining its influence, together with enterprise size, on sustainability information disclosure.

Following the literature review, the proposed hypotheses are as follows:

- H1a: The independence of internal audit is expected to enhance internal audit effectiveness.*
- H1b: The independence of internal audit is anticipated to promote sustainability information disclosure through its influence on internal audit effectiveness.*
- H2a: Internal audit objectivity is posited to contribute positively to the effectiveness of internal audit.*
- H2b: Internal audit objectivity is predicted to indirectly strengthen the level of sustainability information disclosure.*
- H3a: The competence of internal auditors is expected to improve internal audit effectiveness.*
- H3b: The competence of internal auditors is likely to indirectly foster sustainability information disclosure.*
- H4a: The scope of internal audit activities is hypothesized to support higher internal audit effectiveness.*
- H4b: The scope of internal audit activities is believed to indirectly contribute to improved sustainability information disclosure.*

H5a: Management support is expected to reinforce internal audit effectiveness.

H5b: Management support is assumed to indirectly advance through its effect on internal audit effectiveness.

H6: Internal audit effectiveness is hypothesized to positively influence sustainability information disclosure.

H7: Enterprise size has a positive impact on the enterprises' sustainability information disclosure.

Based on the literature review and discussions, this study follows the research framework proposed in Figure 1.

2. METHODS

This study employs a quantitative research design to examine the structural relationships between internal audit effectiveness and sustainability information disclosure. All constructs were measured using established scales adapted from authoritative sources. The observed variables relating to internal auditing were developed based on

Table 1. Demographic characteristics

Factors	The profile of respondents	Frequency	(%)
Gender	Male	70	33.5
	Female	139	66.5
	Total	209	100.0
Experience in accounting/ auditing	<5 years	63	30.1
	5 – 10 years	94	45.0
	>10 years	52	24.9
	Total	209	100.0
Working positions	Accountants	99	47.4
	Chief accountant	17	8.1
	Internal auditors	22	10.5
	Head of the internal audit department	2	1.0
	Deputy head of the internal audit department	4	1.9
	Financial staff	25	12.0
	Financial managers	3	1.4
	Control board member	4	1.9
	Other middle/ senior management (non-audit specialist)	23	11.0
	Others	10	4.8
Total	209	100.0	
Education degree	Bachelor	146	69.9
	Master	59	28.2
	Ph.D.	4	1.9
	Total	209	100.0
Accounting/ auditing professional certificate	No	124	59.3
	Yes, Certificate of Vietnamese Practicing Accountant	40	19.1
	Yes, Certificate of Chief Accountant	23	11.0
	Yes, Internal Auditor Certificate (Vietnam)	19	9.1
	Yes, Certificate of international professional organizations (CPA, ACCA, CIMA, CMA, etc.)	3	1.4
	Total	209	100.0
Field of activities	Manufacture, processing	44	21.1
	Trading – Services	49	23.4
	Construction	24	11.5
	Transportation	9	4.3
	Education and training	40	19.1
	Medical	15	7.2
	Others	28	13.4
	Total	209	100.0

the International Standards for the Professional Practice of internal auditing (IIA, 2017a), relevant governmental regulations, and prior empirical studies (Fadzil et al., 2005; Arena & Azzone, 2009; Mihret et al., 2010; Alzeban & Gwilliam, 2014; Lenz & Hahn, 2015; Dellai & Omri, 2016; Alqudah, 2020; Singh et al., 2021; PwC Vietnam, 2023). Measures of sustainability information disclosure were adapted primarily from the frameworks and empirical findings of Le et al. (2019) and Auliani et al. (2023). All observed variables, detailed in Appendix A, were assessed on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). A total of 39 observed variables were included, consistent with prior research and aligned with the study's hypotheses.

To ensure an adequate sample size, Bollen's (1989) guideline of at least five respondents per observed variable was applied, establishing a minimum requirement of 195 cases. A convenience sampling approach was used to distribute questionnaires (Appendix B) to employees and managers working in non-financial joint-stock companies in Vietnam. The survey was administered through Google Forms and emails to individuals employed across accounting, internal audit, finance, and governance functions within a sampling frame of 103 companies listed as of October 10, 2024. Data collection took place from April 28 to May 28, 2025. Out of 310 distributed questionnaires, 209 valid responses were obtained, exceeding thresholds commonly recommended for structural equation modeling (Hoyle, 1995). All responses were screened, cleaned, and prepared for subsequent analyses, including reliability assessment, factor analysis, and structural modeling. Table 1 shows the demographics of the sample.

3. RESULTS

First, a reliability analysis was conducted on the initial set of 39 observed variables. Seven indicators were removed during the preliminary Cronbach's Alpha assessment, leaving 32 indicators for subsequent analysis. All retained constructs demonstrated acceptable reliability, with Cronbach's Alpha values ranging from 0.601 to 0.795 (Table 2).

The measurement model results presented in Table 3 demonstrate strong internal consistency across all constructs, with composite reliability values ranging from 0.781 to 0.866 and average variance extracted values of 0.513 or higher. These results satisfy the recommended thresholds for convergent validity (Fornell & Larcker, 1981). All item loadings exceed 0.5, which is acceptable for studies employing PLS-SEM, particularly in early-stage or exploratory research (Hair et al., 2010). The average variance extracted levels further reinforce the reliability and validity of the constructs (Hock & Ringle, 2010).

Next, discriminant validity was assessed using both the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio. As noted by Ringle et al. (2015), two widely applied approaches for evaluating discriminant validity are the Fornell–Larcker criterion (Hair et al., 2021) and the Heterotrait–Monotrait Ratio method (Garson, 2016). The square roots of the average variance extracted values for all constructs (ranging from approximately 0.66 to 0.81) were consistently higher than their corresponding inter-construct correlations, indicating clear differentiation among the latent variables. Similarly, all Heterotrait–Monotrait ratios were below 1, with the highest values observed for sustainability information disclosure–internal

Table 2. Cronbach's Alpha testing

Symbol	Variables	Number of observed variables		Cronbach's Alpha
		Before	After	
INDEP	Independence of internal audit	4	4	0.673
OBJ	Objective of internal audit	3	3	0.601
COMP	Competence of internal auditors	6	5	0.689
SCOPE	Scope of internal audit activities	6	4	0.732
SUPPORT	Management support	5	4	0.733
IAE	Internal audit effectiveness	5	3	0.728
SIZE	Enterprise size	4	4	0.795
SID	Sustainability information disclosure	6	5	0.779
	Total	39	32	

Table 3. Outer loading ratios from PLS-SEM model

Variables	Symbol	Outer Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	
Independence of internal audit	INDEP	INDEP1 ← INDEP	0.758	0.673	0.690	0.781	0.513
		INDEP2 ← INDEP	0.734				
		INDEP3 ← INDEP	0.624				
		INDEP4 ← INDEP	0.623				
Objective of internal audit	OBJ	OBJ1 ← OBJ	0.821	0.601	0.611	0.789	0.556
		OBJ2 ← OBJ	0.750				
		OBJ3 ← OBJ	0.657				
Competence of internal auditors	COMP	COMP1 ← COMP	0.623	0.689	0.687	0.794	0.516
		COMP2 ← COMP	0.692				
		COMP3 ← COMP	0.620				
		COMP5 ← COMP	0.707				
		COMP6 ← COMP	0.657				
Scope of internal audit activities	SCOPE	SCOPE1 ← SCOPE	0.761	0.732	0.739	0.833	0.555
		SCOPE4 ← SCOPE	0.803				
		SCOPE5 ← SCOPE	0.744				
		SCOPE6 ← SCOPE	0.667				
Management support	SUP-PORT	SUPPORT1 ← SUPPORT	0.828	0.733	0.769	0.831	0.554
		SUPPORT2 ← SUPPORT	0.787				
		SUPPORT3 ← SUPPORT	0.628				
		SUPPORT4 ← SUPPORT	0.547				
		SUPPORT5 ← SUPPORT	0.658				
Internal audit effectiveness	IAE	IAE1 ← IAE	0.786	0.728	0.730	0.847	0.648
		IAE2 ← IAE	0.838				
		IAE3 ← IAE	0.789				
Enterprise size	SIZE	SIZE1 ← SIZE	0.773	0.795	0.796	0.866	0.618
		SIZE2 ← SIZE	0.780				
		SIZE3 ← SIZE	0.791				
		SIZE4 ← SIZE	0.800				
Sustainability information disclosure	SID	SID2 ← SID	0.624	0.779	0.797	0.850	0.534
		SID3 ← SID	0.814				
		SID4 ← SID	0.621				
		SID5 ← SID	0.780				
		SID6 ← SID	0.790				

audit effectiveness and sustainability information disclosure–SIZE, both within acceptable limits, thereby confirming sufficient discriminant validity. Multicollinearity diagnostics further showed that all variance inflation factor values were well below the critical threshold of 3, with the highest value at approximately 2.15, indicating no evidence of collinearity concerns. Taken together, the results for reliability, convergent validity, discriminant validity, and collinearity confirm that the measurement model is statistically robust and appropriate for subsequent structural analysis.

Table 4 presents the bootstrapping results for the structural model. Six relationships were statistically significant: objectivity ($\beta = 0.236, p = 0.002$), competence ($\beta = 0.146, p = 0.025$), scope of in-

ternal audit activities ($\beta = 0.224, p = 0.015$), and management support ($\beta = 0.375, p < 0.001$) each positively affected internal audit effectiveness. Independence showed no significant effect ($\beta = -0.037, p = 0.596$). Internal audit effectiveness had a significant positive effect on sustainability information disclosure ($\beta = 0.366, p < 0.001$), and enterprise size exhibited the strongest direct impact on sustainability information disclosure ($\beta = 0.576, p < 0.001$). The relative magnitude of the effects on internal audit effectiveness shows that management support has the strongest influence, followed by objectivity, then the scope of audit activities, and finally competence. Regarding sustainability information disclosure, enterprise size has the strongest influence, followed by internal audit effectiveness.

Table 4. Hypothesis testing

Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Conclusion	
H1a	INDEP → IAE	-0.037	-0.006	0.070	0.530	0.596	Rejected
H2a	OBJ → IAE	0.236	0.223	0.077	3.078	0.002	Accepted
H3a	COMP → IAE	0.146	0.148	0.065	2.235	0.025	Accepted
H4a	SCOPE → IAE	0.224	0.234	0.092	2.442	0.015	Accepted
H5a	SUPPORT → IAE	0.375	0.365	0.086	4.347	0.000	Accepted
H6	IAE → SID	0.366	0.371	0.054	6.820	0.000	Accepted
H7	SIZE → SID	0.576	0.574	0.053	10.941	0.000	Accepted

Finally, the model demonstrates good explanatory power. The R-squared (R^2) for internal audit effectiveness is 0.573, indicating that the four significant determinants explain 57.3% of the variance in internal audit effectiveness. The R-squared for sustainability information disclosure is 0.713, showing that internal audit effectiveness and enterprise size together account for 71.3% of its variation. The adjusted R-squared

values remain close to the original R-squared values, confirming the model's stability.

Overall, the structural model (Figure 2) indicates that management support, internal audit objectivity, audit scope, and competence significantly enhance internal audit effectiveness, which in turn positively influences sustainability information disclosure. Enterprise size also strongly

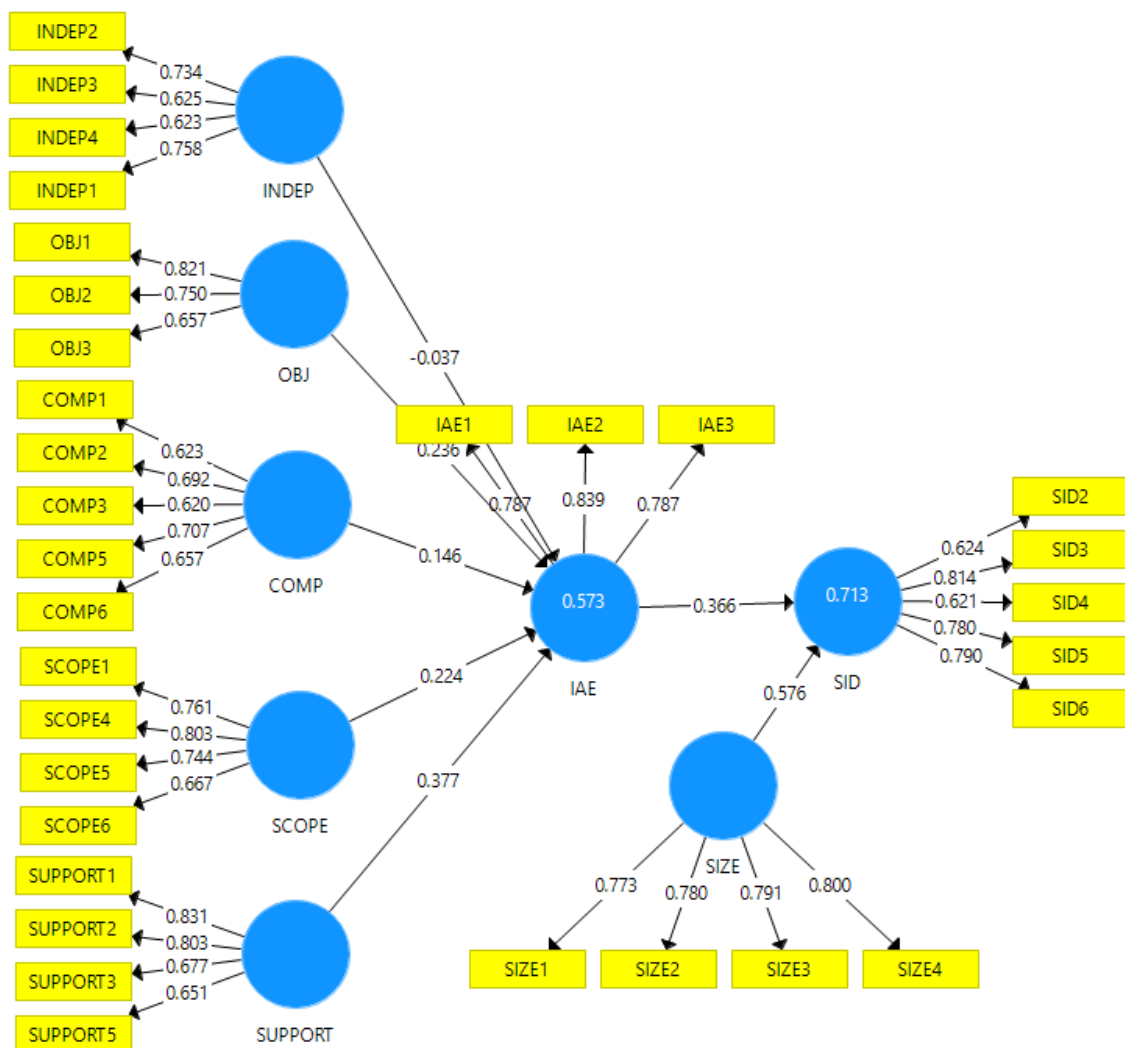


Figure 2. Experimental results model

contributes to sustainability information disclosure. These findings reinforce the importance of strengthening internal audit functions as a mechanism to improve sustainability information disclosure in Vietnamese joint-stock enterprises.

4. DISCUSSION

Drawing on the empirical results obtained from the structural model, several noteworthy insights emerge regarding the determinants of internal audit effectiveness and their subsequent influence on sustainability information disclosure.

First, management support (SUPPORT) has a strong positive and statistically significant impact ($\beta = 0.377, p < 0.001$). This result suggests that supportive governance structures (expressed through adequate policies, budgeting, and training) create the organizational conditions necessary for the internal audit function to operate effectively, thereby enhancing internal control systems and managerial decision-making. Notably, the effect of management support is stronger than that of other governance-related factors, indicating that managerial commitment serves as a key enabling mechanism for internal audit effectiveness rather than a mere formal requirement. This interpretation aligns with prior research highlighting the importance of management support (Mihret et al., 2010; Alzeban & Gwilliam, 2014; Alqudah, 2020; Ta & Doan, 2022; Nguyen et al., 2024; Thanh My & Thanh Nhat, 2024), while extending the literature by demonstrating its relative strength within local enterprise settings. In such organizations, support may be reflected through budget allocation, access to information systems, and the cultivation of an environment conducive to internal audit activities.

Next, objectivity (OBJ) has a positive and statistically significant effect on internal audit effectiveness ($\beta = 0.236, p = 0.001$). This finding indicates that objectivity remains a critical determinant of audit quality in practice, as auditors who maintain neutrality and resist managerial influence are better able to identify and communicate risks transparently. Consistent with prior studies (Mihret et al., 2010; Alzeban & Gwilliam, 2014; Ta & Doan, 2022; Pham et al., 2022; Nguyen et al., 2024; Thanh My & Thanh Nhat, 2024), our results reaffirm the

importance of objectivity while providing additional empirical evidence from small- and medium-sized enterprises, where this attribute is often presumed to be weaker. These findings further support the agency-theory perspective that unbiased monitoring enhances governance outcomes.

Beyond the objectivity factor (OBJ), the scope of internal audit activities (SCOPE) also exhibits a positive and statistically significant effect on internal audit effectiveness ($\beta = 0.224, p = 0.01$). This result indicates that firms operating across multiple industries or locations tend to require broader and more professionally structured internal audit functions. Although prior studies have recognized this relationship (Fadzil et al., 2005; Arena & Azzone, 2009; Mihret et al., 2010; Alzeban & Gwilliam, 2014; Singh et al., 2021; Ta & Doan, 2022; Pham et al., 2022; Nguyen et al., 2024; Thanh My & Thanh Nhat, 2024), our analysis suggests that complexity within local enterprises is not merely structural but also managerial. Consequently, internal audit activities must adjust more dynamically than what earlier studies with broader-scope samples have implied.

The findings also confirm that higher internal auditor competence contributes to greater internal audit effectiveness, demonstrating a statistically significant yet relatively modest positive effect ($\beta = 0.146, p = 0.025$). This moderate coefficient suggests that, although competence is a fundamental requirement, it is not sufficient on its own to ensure strong internal audit performance. Instead, technical skills must be supported by organizational conditions such as adequate managerial backing, independence, and an appropriately defined audit scope. This interpretation extends the conclusions of prior studies (Alzeban & Gwilliam, 2014; Singh et al., 2021; Ta & Doan, 2022; Pham et al., 2022), while highlighting that in the context of local enterprises, competence functions more as an enabling factor than a decisive determinant.

Conversely, the independence of the internal audit function does not exhibit a significant effect, as indicated by its non-significant p -value ($p > 0.05$). This finding contrasts with much of the existing literature, which consistently identifies independence as a fundamental prerequisite

for internal audit effectiveness. In the context of small-scale enterprises, however, independence may be largely symbolic or procedural rather than substantive, thereby failing to produce observable performance outcomes. This divergence underscores important contextual differences and suggests a potential misalignment between regulatory expectations and practical organizational realities.

Finally, regarding the dependent variable of sustainability information disclosure, both internal audit effectiveness and enterprise size exert a direct positive influence on the level of sustainability disclosure. Among these two determinants, enterprise size shows a stronger effect ($\beta = 0.576$, $p < 0.001$) compared with internal audit effectiveness ($\beta = 0.366$, $p < 0.001$). This suggests that resource availability and pressures to maintain external legitimacy (rather than internal audit functions alone) serve as primary drivers of sustainability-related disclosures. This interpretation aligns closely with legitimacy theory and is consistent with prior studies such as Brown et al. (2009), Kim and Lyon (2015), Martínez-Ferrero et al. (2016), PwC and VIOD (2022), and Kumar et al. (2023). With respect to internal audit effectiveness, the results indicate that internal audit serves as a gover-

nance mechanism that enhances transparency and the quality of non-financial reporting. This finding supports previous empirical evidence (Ahmad et al., 2009; Peters & Romi, 2013; Dellai & Omri, 2016; KPMG, 2020; PwC Vietnam, 2023) while further highlighting the mediating role of internal audit in translating governance conditions into improved sustainability disclosure outcomes. In addition, the model demonstrates that governance factors (including management support, objectivity, and audit scope) significantly influence internal audit effectiveness. These factors function as key intermediary mechanisms through which governance attributes are transformed into transparent disclosure practices, thereby contributing to sustainable development.

Overall, the model provides strong evidence for the mediating role of internal audit effectiveness, demonstrating that internal audit functions not merely as a control activity but as a mechanism through which governance practices are transformed into enhanced sustainability disclosure. This finding advances the existing literature by empirically clarifying the pathway through which governance factors influence sustainability information disclosure via internal audit effectiveness in the context of local enterprises.

CONCLUSION

This study provides empirical insights into how governance-related factors shape internal audit effectiveness and how, in turn, internal audit contributes to sustainability information disclosure among Vietnamese non-financial enterprises. The results confirm that management support, objectivity, scope of internal audit activities, and auditor competence significantly enhance internal audit effectiveness, whereas independence does not exhibit a meaningful effect. These findings suggest that in many local enterprises, the independence of internal audit may be formal rather than substantive, limiting its ability to contribute to audit quality. The strong influence of management support underscores the importance of leadership commitment, resource provision, and the creation of an enabling environment for effective internal audit operations.

Furthermore, the study demonstrates that internal audit effectiveness positively influences sustainability information disclosure, reinforcing the view that internal audit functions as an important governance mechanism that enhances the reliability, completeness, and transparency of non-financial disclosures. However, enterprise size exerts an even stronger effect on sustainability information disclosure, indicating that resource availability and external legitimacy pressures remain primary drivers of sustainability reporting in developing markets. This relationship aligns with legitimacy theory, suggesting that larger enterprises face greater scrutiny and therefore adopt more comprehensive disclosure practices.

This paper contributes to the literature by clarifying the mediating role of internal audit effectiveness in the linkage between governance factors and sustainability reporting. In doing so, it enriches the theoretical understanding of how internal audit capabilities can translate into broader organizational transparency. Practically, the findings emphasize the need for enterprises (particularly small and medium-sized firms) to strengthen internal audit structures, enhance auditor competence, and ensure genuine managerial commitment to auditing functions. Policymakers and regulators may also consider developing more detailed guidelines and monitoring mechanisms to promote substantive internal audit independence and standardized sustainability disclosure practices.

Overall, this study highlights that internal audit is not merely a compliance function but a strategic governance instrument that advances sustainable corporate behavior. By improving the conditions that enhance internal audit effectiveness, enterprises can foster better decision-making, strengthen accountability, and contribute more effectively to sustainable development goals.

AUTHOR CONTRIBUTIONS

Conceptualization: Tran Kim Ngan, Ho Tuan Vu.
 Data curation: Tran Kim Ngan, Ho Tuan Vu.
 Formal analysis: Tran Kim Ngan, Ho Tuan Vu.
 Funding acquisition: Tran Kim Ngan.
 Investigation: Tran Kim Ngan, Ho Tuan Vu.
 Methodology: Tran Kim Ngan, Ho Tuan Vu.
 Project administration: Tran Kim Ngan, Ho Tuan Vu.
 Resources: Tran Kim Ngan.
 Software: Tran Kim Ngan.
 Supervision: Tran Kim Ngan, Ho Tuan Vu.
 Validation: Tran Kim Ngan, Ho Tuan Vu.
 Visualization: Tran Kim Ngan, Ho Tuan Vu.
 Writing – original draft: Tran Kim Ngan, Ho Tuan Vu.
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ACKNOWLEDGMENT

This study is conducted within the framework of the doctoral project subject to Decision No. 3922/QĐ-ĐHDT dated August 21, 2024, Duy Tan University, Vietnam. We would like to acknowledge the reviewers and the editor-in-chief for their assistance.

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APPENDIX A

Table A1. Summary of measurement design

No.	Code	Content	References
I	INDEP	Independence of Internal Audit	
1	INDEP1	Internal auditors are sufficiently independent to carry out their professional duties and responsibilities	Alzeban and Gwilliam (2014), IIA (2017a), Alqudah (2020)
2	INDEP2	The head of the internal audit team can directly contact the Chairman of the Board of Directors of the entity	Alzeban and Gwilliam (2014), Alqudah (2020)
3	INDEP3	Internal auditors rarely face management interference while they conduct their work	Alzeban and Gwilliam (2014), Alqudah (2020)
4	INDEP4	Internal auditors have access to complete information and documents of all departments throughout the entity	Alzeban and Gwilliam (2014), Alqudah (2020)
II	OBJ	Objective of Internal Audit	
1	OBJ1	Internal auditors are not assigned to departments where close friends or relatives are working to avoid conflicts of interest	Fadzil et al. (2005), IIA (2017a), Singh et al. (2021)
2	OBJ2	Internal audit activities must be separate and not interfered with in any form	Fadzil et al. (2005), IIA (2017a), Singh et al. (2021)
3	OBJ3	Internal auditors must maintain a fair and impartial attitude in performing their duties	Fadzil et al. (2005), IIA (2017a), Singh et al. (2021)
III	COMP	Competence of Internal Auditors (COMP)	
1	COMP1	Internal auditors must have professional qualifications in internal auditing	Alzeban and Gwilliam (2014), IIA (2017a), Singh et al. (2021)
2	COMP 2	Internal auditors must have an appropriate educational level	
3	COMP 3	Internal auditors must have experience working in the field of internal auditing	Alzeban and Gwilliam (2014), Singh et al. (2021)
4	COMP 4	The annual audit plan is determined entirely by the internal auditors	
5	COMP 5	Internal auditing can perform the audit on very important aspects of the business	
6	COMP 6	Internal auditors commit to a continuous professional development	Alzeban and Gwilliam (2014), IIA (2017a), Singh et al. (2021)
IV	SCOPE	Scope of Internal Audit Activities	
1	SCOPE1	Internal audit activities can cover all units within the enterprise and all issues	Alzeban and Gwilliam (2014), Singh et al. (2021)
2	SCOPE 2	Internal audit activities involve recognizing, evaluating, and controlling internal environment	Mihret et al. (2010), IIA (2017a), PwC Vietnam (2023)
3	SCOPE 3	Internal auditing has an annual audit plan based on risk analysis	Alzeban and Gwilliam (2014)
4	SCOPE 4	Internal auditing participates in strategic planning and operations	Mihret et al. (2010), PwC Vietnam (2023)
5	SCOPE 5	Internal audit has links with external audit (audit committee) to promote the effectiveness of internal audit activities	Arena and Azzone (2009), Mihret et al. (2010)
6	SCOPE 6	Internal audit team can collaborate with other functional units within the enterprise on sustainability management (e.g., ESG or environmental impact management)	PwC and VIOD (2022)
V	SUPPORT	Management Support	
1	SUPPORT1	Management board supports the internal audit in its performance of duties and responsibilities	Mihret et al. (2010), Alzeban and Gwilliam (2014), Alqudah (2020)
2	SUPPORT 2	Management board is related to internal audit plan	Alzeban and Gwilliam (2014), Alqudah (2020)
3	SUPPORT 3	Internal audit's recommendations are implemented by the management	Mihret et al. (2010), Alzeban and Gwilliam (2014), Alqudah (2020)
4	SUPPORT 4	The internal audit team is large enough to successfully carry out its duties and responsibilities	Alzeban and Gwilliam (2014), Alqudah (2020)
5	SUPPORT 5	The internal audit team has an adequate budget to successfully carry out its duties and responsibilities	Alzeban and Gwilliam (2014), Alqudah (2020)
VI	IAE	Internal Audit Effectiveness	
1	IAE1	Internal audit develops annual audit plans based on risk	IIA (2017a), Dellai and Omri (2016)
2	IAE2	Internal audit timely communicates about audit results	Dellai and Omri (2016)
3	IAE3	Internal audit makes appropriate recommendations to improve the organization's operating procedures	IIA (2017a), Dellai and Omri (2016)

Table A1 (cont.). Summary of measurement design

No.	Code	Content	References
4	IAE4	Internal audit establishes a follow-up process to ensure that corrective actions are implemented effectively	IIA (2017a), Dellai and Omri (2016)
5	IAE5	Internal audit assesses compliance with procedures, policies, plans, and regulations	Dellai and Omri (2016)
VII	SID	Sustainability Information Disclosure	
1	SID1	Sustainability information disclosure affects the environment	Le et al. (2019)
2	SID2	Sustainability information disclosure affects society	Le et al. (2019)
3	SID3	Sustainability information disclosure affects the economy	Le et al. (2019)
4	SID4	Sustainability information disclosure is voluntary	Le et al. (2019)
5	SID5	Sustainability information disclosure is transparent and accurate	Le et al. (2019)
6	SID6	Published sustainability information is reliable	Auliani et al. (2023)
VIII	SIZE	Enterprise Size	
1	SIZE1	Enterprises with a large number of employees are required to practice sustainability information disclosure	Le et al. (2019)
2	SIZE2	Enterprises operating in many different locations need to disclose sustainable development information	
3	SIZE3	Enterprises with high revenue need to practice sustainability information disclosure	
4	SIZE4	Enterprises with a high value of total assets are required to practice sustainability information disclosure	

APPENDIX B

SURVEY QUESTIONNAIRE

Dear Sir/Madam,

I am currently conducting academic research to explore the relationship between internal audit and sustainability disclosure in joint stock enterprises. I would like to ask you to take a few minutes to complete the survey below.

All information collected will be used for academic research purposes only and will be kept strictly confidential.

Thank you very much for your valuable support!

Instructions: Please indicate your level of agreement with the following statements on a 5-point scale. 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree

No.	Survey statement	1	2	3	4	5
I. Independence of Internal Audit (INDEP)						
1	Internal auditors are sufficiently independent to carry out their professional duties and responsibilities (INDEP1)					
2	The head of the internal audit team can directly contact the Chairman of the Board of Directors in the entity (INDEP2)					
3	Internal auditors rarely face management interference while they conduct their work (INDEP3)					
4	Internal auditors have access to complete information and documents of all departments throughout the entity (INDEP4)					

No.	Survey statement	1	2	3	4	5
II. Objective of Internal Audit (OBJ)						
1	Internal auditors are not assigned to departments where close friends or relatives are working to avoid conflicts of interest (OBJ1)					
2	Internal audit activities must be separate and not interfered with in any form (OBJ2)					
3	Internal auditors must maintain a fair and impartial attitude in performing their duties (OBJ3)					
III. Competence of Internal Auditors (COMP)						
1	Internal auditors must have professional qualifications in internal auditing (COMP1)					
2	Internal auditors must have an appropriate educational level (COMP2)					
3	Internal auditors must have experience working in the field of internal auditing (COMP3)					
4	The annual audit plan is determined entirely by the internal auditors (COMP4)					
5	Internal auditing can perform the audit on very important aspects of the business (COMP5)					
6	Internal auditors commit to a continuous professional development (COMP6)					
IV. Scope of Internal Audit Activities (SCOPE)						
1	Internal audit activities can cover all units within the enterprise and all issues (SCOPE1)					
2	Internal audit activities involve recognizing, evaluating, and controlling the internal environment (SCOPE2)					
3	Internal auditing has an annual audit plan based on risk analysis (SCOPE3)					
4	Internal auditing participates in strategic planning and operations (SCOPE4)					
5	Internal audit has links with external audit (audit committee) to promote the effectiveness of internal audit activities (SCOPE5)					
6	Internal audit team can collaborate with other functional units within the enterprise on sustainability management (e.g., ESG or environmental impact management) (SCOPE6)					
V. Management Support (SUPPORT)						
1	Management board supports internal audit in its performance of duties and responsibilities (SUPPORT1)					
2	Management board is related to the internal audit plan (SUPPORT2)					
3	Internal audit's recommendations are implemented by the management (SUPPORT3)					
4	The internal audit team is large enough to successfully carry out its duties and responsibilities (SUPPORT4)					
5	The internal audit team has an adequate budget to successfully carry out its duties and responsibilities (SUPPORT5)					
VI. Internal Audit Effectiveness (IAE)						
1	Internal audit develops annual audit plans based on risk (IAE1)					
2	Internal audit timely communicates about audit results (IAE2)					
3	Internal audit makes appropriate recommendations to improve the organization's operating procedures (IAE3)					
4	Internal audit establishes a follow-up process to ensure that corrective actions are implemented effectively (IAE4)					
4	Internal audit assesses compliance with procedures, policies, plans, and regulations (IAE5)					
VII. Sustainability Information Disclosure (SID)						
1	Sustainability information disclosure affects the environment (SID1)					
2	Sustainability information disclosure affects society (SID2)					
3	Sustainability information disclosure affects the economy (SID3)					
4	Sustainability information disclosure is voluntary (SID4)					
5	Sustainability information disclosure is transparent and accurate (SID5)					
6	Published sustainability information is reliable (SID6)					
VIII. Enterprise Size (SIZE)						
1	Enterprises with a large number of employees are required to practice sustainability information disclosure (SIZE1)					
2	Enterprises operating in many different locations need to disclose sustainable development information (SIZE2)					
3	Enterprises with high revenue need to practice sustainability information disclosure (SIZE3)					
4	Enterprises with a high value of total assets are required to practice sustainability information disclosure (SIZE4)					

DEMOGRAPHIC INFORMATION

All demographic information collected will be used for academic research purposes only and will be kept strictly confidential.

1. **Gender:** Male (1) Female (2)

2. **Experience in accounting/ auditing:** <5 years (1) 5 – 10 years (2) >10 years (3)

3. **Working position:**
 - Accountants (1)
 - Chief accountant (2)
 - Internal auditors (3)
 - Head of the internal audit department (4)
 - Deputy head of the internal audit department (5)
 - Financial staff (6)
 - Financial manager / CFO (7)
 - Control board member (8)
 - Others (9)

4. **The highest education degree:**
 - Bachelor (1)
 - Master (2)
 - Ph.D. (3)

5. **Do you currently hold any of the following accounting/auditing professional certificates?**
 - No (0)
 - Yes, Certificate of Vietnamese Practicing Accountant (1)
 - Yes, Certificate of Chief Accountant (2)
 - Yes, Internal Auditor Certificate (Vietnam) (3)
 - Yes, Certificate of international professional organizations (CPA, ACCA, CIMA, CMA, etc.) (4)

6. **In which area of your business you are working:**
 - Manufacturing, processing (1)
 - Trading – Services (2)
 - Construction (3)
 - Transportation (4)
 - Education and training (5)
 - Medical (6)
 - Others (7)

Thank you for completing the survey!

We sincerely appreciate your time and valuable contributions. Your opinions will be important data to help the research achieve objective and practical results.

We wish you good health and success in your work!