

Enhancing Esg Risk Governance In Universities: The Role Of Internal Auditors And The Iia Three Lines Model—A Pls-Sem Approach

Gihan Taha Khalil Essa*

*Department of Accounting, Faculty of Business Administration, University of Tabuk, Saudi Arabia

*Correspondence: Jissa@ut.edu.sa , <https://orcid.org/0000-0003-2269-7219>

Abstract

This research aims to analyze the role of internal audits and the application of the Institute of Internal Auditors' (IIA) Three Lines Model on the efficacy of Environmental, Social, and Governance (ESG) risk governance in universities. As the global focus on ESG integration in higher education intensifies, Saudi universities face challenges in assessing ESG risks and ensuring accurate reporting. This study utilizes Partial Least Squares Structural Equation Modeling (PLS-SEM) to explore the connections among (1) the application of the IIA Three Lines Model, (2) the collaboration between internal auditors and risk committees, and (3) the quality of ESG governance, with internal audit effectiveness as a mediating variable. The results indicate that collaboration with risk committees has a significant impact on environmental, social, and governance (ESG) governance. Additionally, the Three Lines Model strengthens the internal audit function, leading to an improvement in the quality of ESG reports. The research provides valuable theoretical perspectives on ESG risk governance frameworks and presents actionable suggestions to enhance ESG transparency, in line with the objectives of Saudi Vision 2030. The paper introduces a validated ESG risk matrix along with an adjusted structural model aimed at facilitating future institutional enhancements.

Keywords: Internal Audit; Environmental; Social; and Governance (ESG); IIA Three Lines Model; ESG Reporting; Governance; Sustainability Compliance

1. Introduction

The Environmental, Social, and Governance (ESG) report has become a cornerstone of corporate accountability and sustainability, leading universities to integrate sustainability and governance principles into their operations, curricula, and strategic frameworks. Mohd Fadhil (2023) [1] urges universities to move past conventional sustainability initiatives and integrate ESG into their fundamental governance and operational frameworks. This has led higher education institutions to take proactive measures, formulate internal ESG strategies, and align with national and global frameworks to ensure an academic environment ready for the future. Alenezi and Alanazi (2024) [2] indicates the importance of ESG considerations in higher education and encourages the integration of ESG principles into all aspects of their operations to foster responsible leadership practices, enhanced sustainability awareness, and governance.

In recent years, the internal audit function and risk committees have increased their focus on ensuring compliance with ESG standards, enhancing transparency, and managing risks.

The IIA updated the Three Lines Model to guide organizations toward effective governance, risk management and internal control. In 2021, the World Business Council for Sustainable Development (WBCSD) and IIA considered how ESG-related risks and opportunities should be embedded into the Three Lines Model process, helping to clarify roles and responsibilities while offering a systematic method for risk assessment and improved mitigation strategies (IIA, 2022) [3]. Given the growing emphasis on sustainable development in Saudi Arabia, it is crucial to assess the effectiveness of ESG risk assessment mechanisms within Saudi universities (Akopyants et al., 2024) [4]. Veritrove (2023) [5] indicates that universities can apply several ESG best practices, for example, measuring and improving ESG initiatives and communicating the importance of ESG to the university board and stakeholders, which will promote sustainability and uphold social responsibility. This encourages universities to take action as leaders in environmental, social, and governance

practices by integrating sustainability into their strategic governance and daily campus operations. In light of the increasing global emphasis on ESG adoption, Saudi universities face significant challenges in accurately evaluating and addressing ESG-related risks.

There is a gap in understanding how internal auditors and university risk committees collaborate to enhance ESG transparency, reporting, and governance (Bonrath et al., 2022) [6]. Furthermore, although the IIA Three Lines Model is acknowledged as a best practice for internal governance and risk management, its application in Saudi universities remains underexplored (Daidj, 2024) [7]. Without a structured framework for evaluating ESG risks, institutions may struggle to meet their sustainability objectives and regulatory expectations. This research aims to bridge the gap by analyzing ESG risk assessment mechanisms and evaluating the effectiveness of the IIA's Three Lines Model in internal audit functions. Researchers such as (Jambor et al., 2017) [8] aimed to assess the current state of ESG risk assessment and mitigation mechanisms in Saudi universities using the ESG risk matrix.

Al-Din (2024) [9] seeks to explore three interconnected aspects of the role of ESG sustainability indicators in improving the quality of reporting, the barriers that hinder or constrain ESG-reporting practices, and the effects of ESG reporting.

The study presents multiple theoretical and practical contributions. The enhancement of ESG governance is achieved by providing insights into the methods through which Saudi universities can improve compliance via structured internal auditing and governance mechanisms. Additionally, Chan and Hsieh (2022) [10] present C-ESG as an expansion of traditional corporate ESG frameworks, especially designed for educational institutions. They argue that institutions of higher education need to adopt structured sustainability approaches.

According to (Resende et al., 2024) [11], organizations that adopt a holistic, integrated risk approach aligned with strategy are more likely to achieve superior performance outcomes, so universities need to address gaps in ESG risk assessment by developing more effective mitigation strategies. This study aligns more closely with Saudi Vision 2030, highlighting the importance of sustainability, transparency, and governance in higher education institutions, while (Casquel et al., 2024) [12] investigate the impact of ESG scores of for-profit universities on their market and financial performance.

This research represents the initial effort to thoroughly investigate ESG risk assessment within Saudi universities, utilizing the framework of internal audit functions and the IIA Three Lines Model. Mo and Wang (2023) [13] introduced a structured ESG matrix intended to serve as a benchmarking tool for universities to improve their sustainability reporting and governance processes; the results of this study will contribute to the existing body of knowledge on ESG risk governance and internal auditing within higher education institutions.

The remainder of this paper is structured as follows. The next section provides a review of the literature on ESG risk management, internal auditing, and governance models in higher education. The methodology section details the research design, data collection methods, and analytical framework. The findings section presents an analysis of ESG risk assessment, internal audit functions, and governance mechanisms in Saudi universities. This is followed by a discussion on the impact of the IIA Three Lines Model on ESG reporting, transparency, and risk mitigation. The paper then explores the implications of the findings and offers recommendations for universities and policymakers. The final section concludes the study by summarizing key insights and suggesting future research directions.

2. Literature Review

2.1. Integrating the IIA Three Lines Model (X1) and Internal Audit Role in ESG Risk Management (M)

According to the IIA's Three Lines Model, all roles need to work together—the governing body, management and internal audit—to assure the reliability of internal control processes for ESG data disclosure and reporting (IIA, 2022) [3]. The main role of the IIA model is in evaluating and improving risk and opportunity management systems, and in providing services to all stakeholders in the organization in a way that contributes to achieving added value (AL-Shammari, 2024) [14]. When the IIA model is fully implemented, higher education institutions guarantee effective coordination among stakeholders, and it enhances ESG oversight and fosters accountability.

Additionally, it ensures the realization of the positive impact of higher education on improving corporate performance in the field of ESG (Tu & Guo, 2024) [15].

Universities should devote more attention to integrating ESG strategies into all operations, including education, research, investment management, and governance. Higher education is considered a fundamental pillar of national development in countries around the world, playing a crucial role in enhancing societal progress, supporting economic growth, and nurturing talent. Universities and higher education institutions indirectly contribute to the improvement of corporate performance in the areas of environment, society, and governance (ESG) by enhancing the quality of risk management and internal control. Additionally, the results of one study indicated that higher education plays a significant role in enhancing corporate performance in ESG, providing a new impetus for the importance of improving ESG transparency in universities through the implementation of the triple IIA model (Tu & Guo, 2024) [15].

Ridley et al. (2011) [16] referred to the effective contribution of the internal audit profession in enhancing governance mechanisms, but there is a need to strengthen the role of internal auditors in sustainability and ESG programs. Undoubtedly, the Three Lines Model of the Institute of Internal Auditors facilitates the integration of ESG by distributing roles and clarifying the interaction mechanism. Bonrath et al. (2022) [6] explored how internal auditing contributes to the evaluation and disclosure of ESG and also indicated the inconsistency of ESG reports due to the lack of unified standards. The IIA confirms that the internal auditor's role includes quality assurance, risk management, and governance oversight, making their involvement in ESG logical and valuable. They can also provide consulting services such as advice on ESG processes, key performance indicators, and risk assessment. Universities should invest in ESG training for internal auditors, since the maturity of internal audit positively influences ESG reporting. Internal auditing has evolved in recent years in response to the increasing pressure to comply with environmental, social, and governance (ESG) standards, enabling internal audits to support ESG reporting and compliance and add value. Internal auditing is in a unique position that enables it to integrate environmental, social, and governance (ESG) standards into daily risk and control oversight (Daidj, 2024; Al Hanini, 2021) [7,17]. Internal auditing can provide assurances regarding risks and controls related to ESG factors, anticipate emerging risks related to environmental, social, and governance issues, and advise on changes in the risk/control landscape. The Three Lines Model issued by the IIA involves a precise definition of roles: The first line involves the management and operational functions responsible for controlling and managing risks, including ESG. The second line refers to units for monitoring sustainability, compliance, and risk management. The third line ensures that internal audits provide impartial, independent assurance on the entire system. Universities can establish clear definitions and communication of ESG responsibilities across management levels, leading to more consistent ESG risk assessments (IIA, 2021) [18]. Saudi universities have not fully implemented the IIA Three Lines Model in ESG governance, despite its benefits. The absence of a structured framework for ESG risk governance and the restricted function of internal audits pose considerable challenges (Al-Din, 2024) [9]. Strengthening the involvement of internal auditors in ESG risk assessment via the Three Lines Model can markedly enhance ESG governance and reporting.

H1: *There is a significant relationship between the implementation of the IIA Three Lines Model (IIIA) and the Internal Audit Role in ESG Risk Management (IAR ESGRM).*

2.2. Collaboration Between Internal Auditors and Risk Committees (X2) and Internal Audit Role in ESG Risk Management (M)

Effective ESG governance requires reliable collaboration between internal auditors and university risk committees. Internal auditing is no longer a traditional function focused solely on financial matters; it has become a key player in managing sustainability risks, ensuring compliance with ESG standards, and supporting organizational transformation towards sustainable development. Internal auditors provide both assurance services regarding the integration of ESG risks into strategic planning and the impact of sustainability-related decisions on operations, and advisory services that include recommendations for improving ESG systems and supporting management in designing sustainable processes. Furthermore, integrating ESG standards into risk management is no longer an option but a strategic necessity (Choudhary & Trivedi, 2023) [19].

Sheta et al. (2025) [20] indicate a significant shift in the role of the internal auditor as a strategic partner in governance processes, ESG risk management, and sustainability assurance. Organizations that do not integrate ESG into their audit and risk management processes will face organizational and financial problems. The internal auditor is a crucial element in improving the credibility of ESG reports. Therefore, Daidj (2024) [7] emphasizes that cooperation between internal auditors and risk committees improves the alignment of risk policies with the results of internal audits, especially in the context of rapidly evolving environmental, social, and governmental risks.

Risk committees play a crucial role in the establishment of ESG policies, the enhancement of risk mitigation strategies, and the provision of timely updates regarding ESG trends. Conversely, internal auditors are tasked with the duty of ensuring compliance and transparency. The study by Bonrath et al. (2022) [6] highlights the importance of integration between internal auditors and risk committees to ensure and enhance the quality of ESG reports.

The research addresses risk assessment as one of the main elements of the COSO model; it is considered one of the essential components that enable effective ESG evaluation. According to this research, ESG risks should be addressed as strategic and not just operational risks and then evaluated by following this step to identify ESG-related risks, analyze their likelihood and impact, integrate them into formal enterprise risk management (ERM) processes, and coordinate effective responses. Therefore, universities must work on enhancing the cooperation between the risk committee and internal audit management to improve the accuracy of ESG reports and develop better strategies for risk mitigation (Moffitt et al., 2024) [21]. Improving this collaboration will enable internal auditors to take a more proactive role in ESG governance.

H2: *There is a significant relationship between the Collaboration Between Internal Auditors and University Risk Committees (CIAR) and Internal Audit Role in ESG Risk Management (IAR ESGRM).*

2.3. Implementation of the IIA Three Lines Model (X1) and Governance of ESG Reporting (Y)

It is essential to define roles within the university for report governance, as management is responsible for risk ownership and internal control, while the internal auditor's role is to provide an independent, objective opinion (Ridley et al., 2011) [16]. Another study highlights the importance of governance structures, effective risk oversight mechanisms and the role of the audit committee (Schmuck, 2021; IIA, 2022) [3,22].

Casquel et al. (2024) [12] investigates the current and potential role of internal auditors in providing assurance on ESG information, and the results indicate a skills gap among internal auditors, evident in aspects such as a lack of expertise in environmental metrics, social impact indicators, and ESG reporting frameworks.

The global focus on sustainability and environmental and social governance standards gives internal auditing a role in building trust and supporting long-term value creation. Therefore, internal auditors should expand the use and adoption of new frameworks and tools that support ESG risk management and sustainability reporting governance (de Leeuw, 2025) [23]. Adapting the IIA Three Lines Model for universities can enable ESG responsibilities to be effectively managed, where faculties oversee ESG initiatives (first line), risk committees or compliance officers identify risks and monitor and track ESG alignment with regulations (second line), and internal audit management provides an independent opinion and recommendations for improvement (third line).

H3: *There is a significant relationship between the Implementation of the IIA Three Lines Model (IIIA) and Governance of ESG Reporting in Saudi Universities (GESGR).*

2.4. Collaboration Between Internal Auditors and Risk Committees (X2) and Governance of ESG Reporting (Y)

The collaboration between the internal auditor and the risk committee supports the governance of ESG reports by enabling a precise identification of all sustainability risks and strategies to address or accept them before disclosure, thereby enhancing the integrity of the reports and boosting stakeholder trust (Bonrath et al., 2022; Daidj, 2024) [6,7]. This collaboration ensures the integration of ESG policies across all departments and units within the university and the alignment of reports with international frameworks and standards including GRI and SASB (COSO, 2022) [24]. Insufficient collaboration frequently results in disjointed ESG disclosures (Mo & Wang, 2023) [13].

H4: *There is a significant relationship between the Collaboration Between Internal Auditors and University Risk Committees (CIAR) and Governance of ESG Reporting in Saudi Universities (GESGR).*

2.5. Internal Audit Role in ESG Risk Management (M) and Governance of ESG Reporting (Y)

Baharom (2025) [25] explains the strategic role of internal audits in Environmental, Social, and Governance (ESG) governance, and how they contribute to the management of environmental, social, and corporate governance risks and the quality of sustainability reports. The internal auditor does not affect ESG governance directly, but rather indirectly through improving risk management processes, helping to ensure the quality of reports. Accordingly, universities should officially incorporate ESG governance responsibilities into the internal audit charter and annual audit plan and integrate ESG risks into corporate risk management frameworks.

The internal audit function plays a crucial role in ESG governance by evaluating the accuracy and reliability of ESG disclosures (Del Baldo et al., 2021) [26].

Arif et al. (2021) [27] sought to determine whether an active and independent audit committee can enhance both the substance and transparency of ESG reporting. The study refers to the effects of integrated internal audit roles with risk committees.

Enhanced internal audit participation in Saudi universities correlates with improved ESG transparency and policy compliance (Al Hanini, 2021; Al-Din, 2024) [9,17]. Huang and Hatab (2022) [28] indicate that the absence of ESG-specific training hinders the efficacy of internal audit departments in assessing intricate sustainability metrics. Enhancing ESG risk management capabilities within internal audit departments is crucial for reinforcing university ESG governance.

H5: *There is a significant relationship between the Internal Audit Role in ESG Risk Management (IAR ESGRM) and Governance of ESG Reporting in Saudi Universities (GESGR).*

2.6. Mediation Role of Internal Audit in Linking IIA and CIAR to ESG Reporting

ESG reports are no longer a voluntary or promotional activity; they have become an essential element in governance, risk management, and decision-making. With increasing regulatory pressures and stakeholder demands, there is an urgent need to ensure the independence, quality, and reliability of ESG data, which places internal auditing in a pivotal position. Internal audits have had historical success in verifying non-financial reports, assessing the internal control environment, and ensuring the quality of data used in public disclosures (IIA, Global perspectives and insights 2022) [29].

The role of internal audits in ESG can be categorized into two primary areas; from the perspective of the assurance role, the internal audit's role is to provide independent and objective assurance regarding the completeness of ESG data. The second area involves verifying that all material ESG metrics have been measured and disclosed without omission, in addition to ensuring that the environmental, social, and governance data are accurate, verifiable, and based on systems and controls.

Internal auditing also plays an important advisory role, especially in the early stages of ESG implementation, by participating in the selection of reporting frameworks, assisting management in aligning the chosen framework with the nature of the organization's activities, assessing the university's readiness for ESG reports, and identifying risks associated with ESG reports (IIA, Internal audit's role in ESG reporting, 2021) [18].

Then, universities must link ESG reports with the IIA Three Lines Defense Model, where

- The board of directors is responsible for the strategic oversight of ESG;
- Executive management is responsible for preparing reports and implementing control systems (first and second line);
- Internal audit is responsible for evaluating the clarity of roles and responsibilities, verifying the existence of governance structures for ESG reports presented to the board of directors and its committees.

The role of the internal auditor within the framework of the Three Lines of Defense model issued by the IIA is to provide independent assurance, collaborate with the risk committee to assess the effectiveness of ESG risk management, ensure transparency and accountability, and promote the concept of integrated reporting.

The Three Lines Model clarifies internal audit roles, improving ESG risk mediation in governance reports. Risk committee collaboration helps the audit function intervene and improve reporting (Chan & Hsieh, 2022) [10].

H6: *There is a significant relationship between the Implementation of the IIA Three Lines Model (IIIA) and Governance of ESG Reporting in Saudi Universities (GESGR) through the mediator Internal Audit Role in ESG Risk Management (IAR ESGRM).*

H7: *There is a significant relationship between Collaboration Between Internal Auditors and University Risk Committees (CIAR) and Governance of ESG Reporting in Saudi Universities (GESGR) through the mediator Internal Audit Role in ESG Risk Management (IAR ESGRM).*

3. Methodological Framework

3.1. Measures and Sample

A field study was conducted on the target population, including internal auditors, members of the risk management committee, the audit committee, and staff members. A total of 496 valid questionnaires were collected. The questionnaire included closed-ended statements, employing a Likert-type scale with five levels from “strongly agree (5)” to “strongly disagree (1)” to measure each item.

3.2. Study Variables

Independent Variables: X1—Implementation of the IIA Three Lines Model IIIA, comprising eight statements from S1 to S8; X2—Collaboration Between Internal Auditors and University Risk Committees CIAR, (10 statements from S9 to S18).

Mediating Variable: M—Internal Audit Role in EGS Risk Management IAR ESGRM (10 statements, from S19 to S28).

Dependent Variables: Y—Governance of ESG Reporting in Saudi Universities GESGR (16 statements, from S29 to S44).

4. Empirical Results

To analyze intricate relationships in path models involving latent variables, Partial Least Squares Structural Equation Modeling (PLS-SEM) path modeling will be employed to evaluate complex relationships in route models with latent variables. This approach is appropriate for exploratory studies, applicable to small and medium sizes (and large data sets), and does not necessitate multivariate assumptions. This approach evaluates multiple metrics that enhance scientific rigor, contributing to innovation within the scientific literature.

The outer loadings of an initial model in PLS-SEM are shown in Figure 1. Outer loading statistically analyzes latent-manifest correlations. The outer loadings demonstrate how strongly each manifest variable is related (Baron, 1986) [30]. For each manifest variable, linear regression calculates outer loadings on the latent variable it measures. The following phrase estimates outer loadings:

$$\text{Outer Loading} = \frac{Cov(X, Y)}{\sqrt{Var(X) * Var(Y)}} \quad (1)$$

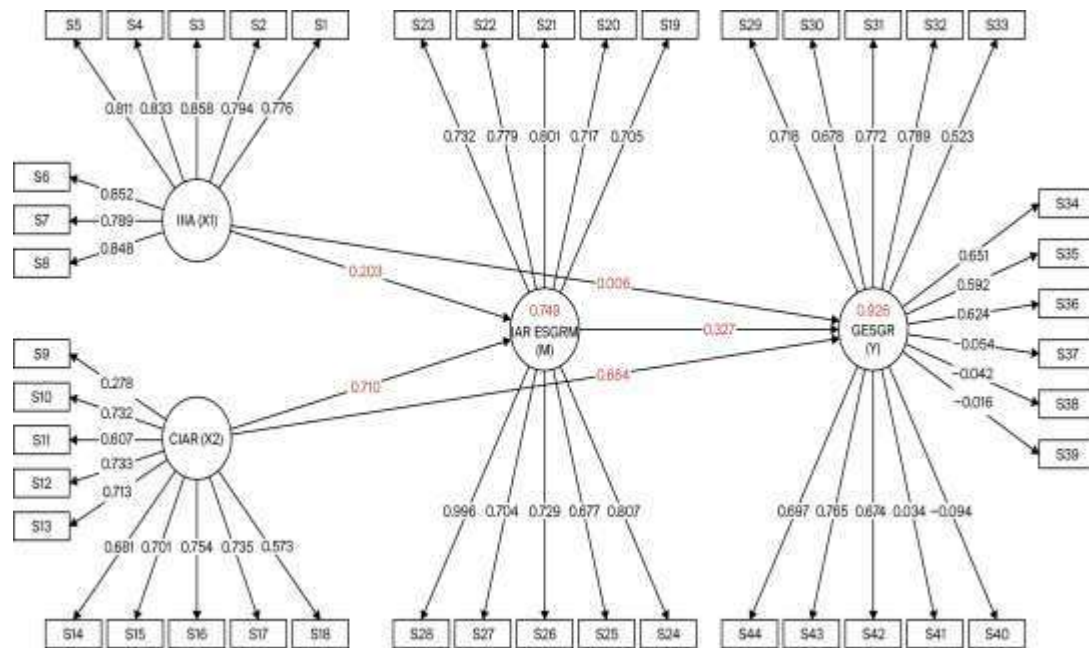


Figure 1. Initial model.

A common mathematical and statistical rule is used to determine whether a particular variable can be counted or excluded from the model based on its outer loading value (Fong, 2013) [31]. This norm is referred to as the 0.7/0.4 rule or the 0.5/0.7 rule.

4.1. Measurement Model

This section explores the relationships between the latent variables and their observable indicators. Indicators may be reflecting (resulting from the latent variable) or formative (defining the latent variable). The outer loadings are organized in ascending order, subsequently eliminating the variable with the lowest outer loading value and re-estimating the model.

Table 1. Outer loadings for each statement of the initial model and adjusted model.

Outer LoadingsInitial ModelAdjusted Model			Outer LoadingsInitial ModelAdjusted Model		
S1	0.776	0.770	S23	0.732	0.773
S2	0.794	0.790	S24	0.807	0.816
S3	0.858	0.860	S25	0.677	Removed
S4	0.833	0.835	S26	0.729	0.720
S5	0.811	0.816	S27	0.704	Removed
S6	0.852	0.850	S28	0.596	Removed
S7	0.789	0.791	S29	0.718	Removed
S8	0.848	0.849	S30	0.678	Removed
S9	0.278	Removed	S31	0.772	0.829
S10	0.732	Removed	S32	0.789	0.885
S11	0.607	Removed	S33	0.523	Removed
S12	0.733	Removed	S34	0.651	Removed
S13	0.713	Removed	S35	0.592	Removed
S14	0.681	Removed	S36	0.624	Removed
S15	0.701	0.843	S37	-0.054	Removed
S16	0.754	0.867	S38	-0.042	Removed
S17	0.735	0.894	S39	-0.016	Removed
S18	0.573	Removed	S40	-0.094	Removed
S19	0.705	0.743	S41	0.034	Removed
S20	0.717	0.741	S42	0.674	0.777
S21	0.801	0.825	S43	0.765	0.793

The modified model was attained following numerous sequential deletions of individual variables, upon concluding all processes to enhance the basic model.

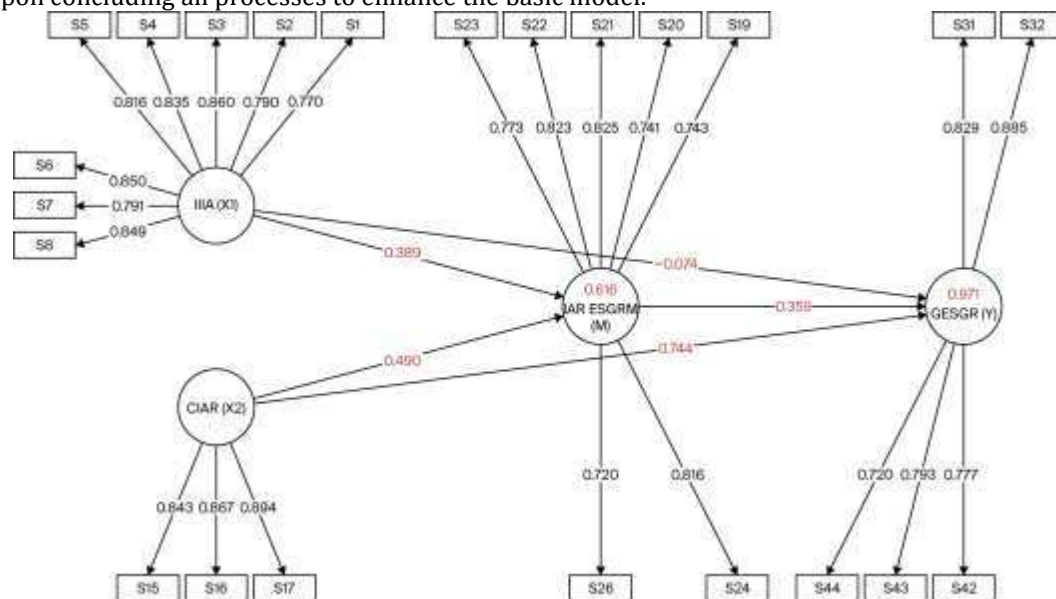


Figure 2. The adjusted model.

The total effect in Partial Least Squares Structural Equation Modeling (PLS-SEM) reflects the comprehensive impact of one latent variable on another. This encompasses both the direct effect and any indirect effects that occur through mediating variables.

According to Table 2, CIAR significantly and consistently positively impacts GESGR. After model adjustment, the effect remains substantial, showing a strong direct link. The mediator IAR ESGRM demonstrates a moderate positive effect on GESGR; however, this effect diminishes slightly following model adjustment. IIIA exerts a significant and consistent positive impact on the mediator, indicating that IIIA affects GESGR via IAR ESGRM, and CIAR (X2) serves as the most significant predictor of GESGR (Y), demonstrating a consistently high effect exceeding 0.9. IIIA (X1) loses its direct effect on GESGR (Y) after adjustment, indicating that IAR ESGRM may entirely mediate its impact. IAR ESGRM (M) enacts a partial mediation role; however, its influence on GESGR is less significant than that of CIAR.

Table 2. Comparison between the total effects of the initial model and the adjusted model.

Total Effects	GESGR (Y)		IAR ESGRM (M)	
	Initial Model	Adjusted Model	Initial Model	Adjusted Model
IIIA (X1)	0.072	0.065	0.203	0.389
CIAR (X2)	0.896	0.920	0.710	0.490
IAR ESGRM (M)	0.327	0.359		

4.2. Reliability and Validity Assessment

To compare the initial model with the adjusted model and to assess the validity of both models for selecting the most appropriate model to explain the relationships among the study variables, the researcher will conduct the following measures.

4.2.1. Internal Consistency Reliability of the Outer Model

As shown in Table 3, all constructs demonstrate good to excellent reliability in both the initial and adjusted models. The adjusted model shows improvements, particularly for GESGR (Y), and the initial model has weak validity for CIAR (X2) and GESGR (Y), but the adjusted model addresses this issue, with all constructs achieving good convergent validity (AVE > 0.5). The adjusted model is preferred as it demonstrates better reliability and validity across all constructs.

Table 3. Comparison between the outer model (initial and adjusted) assessment.

Reliability and Validity		IIIA (X1)	CIAR (X2)	IAR ESGRM (M)	GESGR (Y)
Cronbach's Alpha	Initial	0.930	0.851	0.900	0.798
	Adjusted	0.930	0.837	0.891	0.861
rho A	Initial	0.931	0.872	0.901	0.890
	Adjusted	0.932	0.843	0.892	0.869
Composite Reliability	Initial	0.943	0.884	0.918	0.832
	Adjusted	0.943	0.902	0.915	0.900
Average Variance Extracted (AVE)	Initial	0.673	0.442	0.529	0.323
	Adjusted	0.673	0.754	0.606	0.644

4.2.2. Discriminant Validity Assessment of the Outer Model

Table 4 below presents the discriminant validity (Fornell–Larcker Criterion) of the two models.

Table 4. Discriminant validity of initial and adjusted models.

Fornell–Larcker Criterion	IIIA (X1)		CIAR (X2)		IAR ESGRM (M)		GESGR (Y)	
	Initial	Adjusted	Initial	Adjusted	Initial	Adjusted	Initial	Adjusted
IIIA (X1)	0.821	0.821	0.710	0.590	0.707	0.678	0.708	0.608
CIAR (X2)			0.665	0.868				
IAR ESGRM (M)			0.854	0.719	0.727	0.778	0.898	0.844
GESGR (Y)			0.947	0.959			0.569	0.803

Only IIIA (X1) exhibits discriminant validity for the Initial Model. IAR ESGRM (M), GESGR (Y), and CIAR (X2) do not meet the Fornell–Larcker Criterion. IIIA (X1) and IAR ESGRM (M) exhibit discriminant validity for the Adjusted Model. With the majority of constructs, CIAR (X2) and GESGR (Y) exhibit discriminant validity; however, they are ineffective in predicting one another (correlation = 0.959, which is greater than 0.868 and 0.718, respectively).

4.3. The Explanatory Power of the Model

The amount of variance in the (dependent) latent variables that their predictor can explain in the structural model is known as the model's explanatory power in PLS-SEM. Assessing the explanatory power of endogenous latent variables in PLS-SEM relies on the coefficient of determination (R^2 , R-squared). The amount of variance in an endogenous latent variable explained by all directly influencing external factors is known as R^2 .

4.3.1. Coefficient of Determination of Inner Model

Table 5 demonstrates that both initial and adjusted models explain a significant part of GESGR (Y) variance. The revised model modestly improves performance, increasing R^2 from 0.926 to 0.971. The initial model explains more variance in IAR ESGRM (M) than the amended model (74.9% vs. 61.6%). Both models are effective, with the amended model exhibiting somewhat higher explanatory power ($R^2 = 0.926$ to 0.971). This implies that the amended model better explains GESGR (Y).

Table 5. Coefficient of determination of both the initial and adjusted inner models.

R Square	R^2	R^2	Adj R^2	Adj R^2
	of the Initial Model	of Adjusted Model	of the Initial Model	of Adjusted Model
GESGR (Y)	0.926	0.971	0.926	0.971
IAR ESGRM (M)	0.749	0.616	0.748	0.614

4.3.2. Effect Size (f^2) of Inner Model

The f^2 quantifies the change in R^2 value when adding or removing a specific predictor from the model. Possible boundaries of this measure are as follows: a large effect size is $f^2 > 0.35$, a medium effect size is 0.15, a small effect size is 0.02, and a negligible effect size is $f^2 < 0.02$. Table 6 provides initial and updated model outcomes for this measure.

Table 6. Effect size (f^2).

f Square	IAR ESGRM (M)		GESGR (Y)	
	Initial Model	Adjusted Model	Initial Model	Adjusted Model
IIIA (X1)	0.081	0.256	0.000	0.099
CIAR (X2)	0.994	0.407	1.491	8.854
IAR ESGRM (M)			0.364	1.707

CIAR (X2) strongly affects GESGR (Y) and somewhat affects IAR ESGRM (M). In the updated model, it affects GESGR (Y) more. Both models show a moderate influence of IAR ESGRM (M) on GESGR (Y). IIIA (X1) has a negligible to small influence on GESGR (Y) and a moderate influence on IAR ESGRM (M). Its influence on GESGR (Y) improves slightly in the adjusted model. CIAR (X2) is the most influential predictor in the model, especially for GESGR (Y). One should focus on this construct when interpreting the results or making decisions. IAR ESGRM (M) also plays a meaningful role in explaining GESGR (Y), though its effect size is smaller compared to CIAR (X2). IIIA (X1) has a limited influence on GESGR (Y) but a moderate influence on IAR ESGRM (M), so one should consider whether this construct should be retained or revised in the model.

4.3.3. Discriminant Validity of the Inner Model

The heterotrait–Monotrait Ratio (HTMT) compares the average correlations between constructs (heterotrait–heteromethod correlations) with the average correlations within constructs (monotrait–heteromethod correlations). Thresholds of HTMT can be as follows: values below 0.90 (or 0.85 in some conservative cases) indicate good discriminant validity. HTMT values above 0.90 suggest that the constructs may not be distinct from each other. Table 7 shows the HTMT ratios of both initial and adjusted models.

Table 7. Heterotrait–monotrait ratio of both models.

Heterotrait–Monotrait Ratio (HTMT)	CIAR (X2)		IAR ESGRM (M)		GESGR (Y)	
	Initial Model	Adjusted Model	Initial Model	Adjusted Model	Initial Model	Adjusted Model
IIIA (X1)	0.803	0.660	0.772	0.745	0.756	0.675
IAR ESGRM (M)	0.975	0.823			0.972	0.969
GESGR (Y)	1.040	1.114				

GESGR (Y) does not exhibit discriminant validity with IAR ESGRM (M) in the initial model (HTMT > 0.90); however, this is enhanced in the adjusted model. IIA (X1) has good discriminant validity. IAR ESGRM (M) also has good IIIA (X1) discriminant validity. IIIA (X1) has strong discriminant validity with all constructs except CIAR (X2) and GESGR (Y).

4.3.4. Goodness of Fit of the Two Models

Table 8 indicates that the adjusted model, GESGR (Y), outperforms the initial model across all model selection criteria. The modifications enhanced its fit for GESGR (Y). The initial model of IAR ESGRM (M) outperforms the adjusted model in all model selection criteria; the modifications to the model appear to have deteriorated the fit for IAR ESGRM (M).

Table 8. Goodness of fit tests.

Model Selection Criteria	IAR ESGRM (M)		GESGR (Y)	
	Initial Model	Adjusted Model	Initial Model	Adjusted Model
AIC	-680.416	-469.322	-1287.461	-1749.203
AICu	-677.407	-466.313	-1283.445	-1745.187
AICc	-182.335	-28.760	-789.339	-1251.080
BIC	-667.797	-456.702	-1270.635	-1732.377
HQ	-675.463	-464.368	-1280.856	-1742.598
HQc	-675.351	-464.257	-1280.677	-1742.419

According to the statistical analysis previously mentioned:

- There is a significant relationship between the implementation of the IIA Three Lines Model IIIA and the role of internal audit in EGS risk management (IAR ESGRM).
- There is a significant relationship between the collaboration of internal auditors and university risk committees, as well as the role of internal audit in environmental, social, and governance risk management.
- The implementation of the IIA Three Lines Model IIIA is significantly related to the governance of ESG reporting in Saudi universities (GESGR).
- The collaboration among internal auditors and university risk committees, CIAR, and the governance of ESG reporting in Saudi universities is a significant relationship.
- There is a significant relationship between the Internal Audit Role in EGS Risk Management (IAR ESGRM) and the Governance of ESG Reporting in Saudi Universities (GESGR).
- There is a significance relationship between the implementation of the IIA Three Lines Model (IIIA) and Governance of ESG Reporting in Saudi Universities (GESGR), though the mediator Internal Audit Role in EGS Risk Management (IAR ESGRM) cannot be rejected with confidence level 95%.
- There is a significance relationship between Collaboration between Internal Auditors and University Risk Committees (CIAR) and Governance of ESG Reporting in Saudi Universities (GESGR), though the mediator Internal Audit Role in EGS Risk Management (IAR ESGRM) cannot be rejected with confidence level 95%.

4.3.5. Challenges and Future Improvements

The main challenges in ESG governance at my university include:

2. The development and execution of a comprehensive ESG policy with clear objectives, responsibilities, and performance indicators to match international sustainability standards and integrate into the organization's governance framework.
3. The need to expand the internal audit's responsibility to include ESG reporting assurance and risk evaluation.
4. The establishment of formal communication channels, collaborative oversight mechanisms, and integrated reporting processes between the audit, risk, and sustainability committees to guarantee effective ESG governance.
5. The provision of enough financial, human, and technological resources for ESG compliance and reporting to collect, monitor, and disclose data by regulatory and stakeholder requirements.
6. The implementation of extensive and ongoing training programs on ESG risk management assessments for internal auditors and relevant stakeholders to improve their proficiency in recognizing, analyzing, and mitigating ESG-related risks efficiently.

The findings presented in Table 9 indicate a significant level of agreement among participants regarding the primary challenges and essential future enhancements in ESG governance at the university. Overall, 84% advocate for the prioritization of ESG training, the establishment of clear roles for internal audit in ESG assurance, and the enhancement of governance structures within ESG committees. Furthermore, 83% emphasized the importance of developing and executing a comprehensive ESG policy and establishing communication and oversight mechanisms, while 82% of respondents argue the need for expanding the internal audit's roles to encompass ESG reporting and risk assessment.

Table 9. Summary statistics of challenges and future improvements.

Challenge/Improvement Area	Yes	No
Develop and execute a comprehensive ESG policy	413 (83%)	83 (17%)
Expand internal audit responsibilities	406 (82%)	90 (18%)
Establish communication and oversight mechanisms	412 (83%)	84 (17%)
Allocate adequate resources	398 (80%)	98 (20%)
Provide ongoing ESG training	415 (84%)	81 (16%)

5. Discussion

This study aims to analyze the role of internal auditing and the application of the Three Lines of Defense model issued by the Institute of Internal Auditors (IIA) in enhancing the governance of environmental, social, and governance (ESG) risks and reporting in Saudi universities, with a focus on the mediating role of the internal audit function and integration with risk committees.

The statistical results from using PLS-SEM showed a statistically significant relationship between the application of the Three Lines of Defense model and the enhancement of the internal audit role in managing ESG risks, which supports the hypothesis that clarity of roles and responsibilities among the board of directors, executive management, and internal audit contributes to improving the efficiency of non-financial risk management within universities. This result is consistent with the literature that confirms that the Three Lines of Defense model provides an effective governance framework for the integration of risk management and internal control (IIA, 2022; Ridley et al., 2011 [3,15]).

The results also revealed that the collaboration between internal auditors and risk committees is the most influential factor in the governance of ESG reports, whether directly or indirectly. The cooperation variable (CIAR) recorded the highest overall impact on ESG report governance compared to the other variables, indicating that effective governance of sustainability reports is achieved not only through formal frameworks but also through institutional coordination and practical integration among regulatory bodies within the university. This result is consistent with the studies of Bonrath et al. (2022) [5] and Daidj (2024) [6], which confirmed that weak institutional coordination leads to fragmented and inconsistent ESG reports.

The results also indicated that the role of internal auditing in ESG risk management plays a partially mediating and significant role in the relationship between the application of the Three Lines of Defense model, ESG reporting governance, and collaboration with risk committees and reporting governance.

The application of the Three Lines of Defense model lost its direct impact on ESG report governance after the introduction of the mediating variable, indicating that the model's effect is achieved by enhancing the efficiency of internal auditing rather than directly. This result confirms that internal auditing represents the pivotal link that connects theoretical frameworks with actual practice in sustainability governance.

The results also indicate that Saudi universities are still at a medium level of maturity regarding ESG governance, with gaps emerging related to weak specialized training, the incomplete integration of ESG into annual audit plans, and a lack of technical and human resources. This explains the increasing need to expand the scope of internal audits to include the verification of ESG reports with the same rigor applied to financial reports.

6. Conclusions

This study concluded that the governance of ESG reports in Saudi universities largely depends on the effectiveness of internal auditing, the extent of application of the Three Lines of Defense model, and the level of institutional collaboration with risk committees. The results confirmed that internal auditing is no longer a traditional oversight function but has become a strategic partner in managing non-financial risks and ensuring the credibility of sustainability reports.

The study also proved that the collaboration between internal audit and risk committees is the most influential factor in improving the governance of ESG reports, while the application of the Three Lines of Defense model indirectly enhances this effect by empowering the internal audit function. The importance of the internal audit's intermediary role in transforming governance frameworks into practical practices that enhance transparency and accountability is highlighted. These results contribute to filling a clear research gap in the literature, particularly regarding the application of ESG governance frameworks in higher education institutions in developing countries, especially in the Saudi context. They also align with the objectives of Saudi Vision 2030, which emphasizes sustainability, sound governance, and institutional transparency.

7. Recommendations

The study's results recommend the formal integration of ESG into the internal audit charter and annual audit plans at universities, clearly activating the Three Lines of Defense model by defining ESG responsibilities for each line (management, risk committees, internal audit) and establishing

or supporting sustainability or ESG committees that work in conjunction with risk and audit committees.

The role of internal audits should also be expanded to include providing independent assurance on ESG reports, assessing the quality of non-financial data, and developing the skills of internal auditors through specialized training programs on ESG indicators and sustainability risk assessment, in addition to consulting technical experts in environmental and social fields, when necessary, without compromising the independence of internal audits. Adequate financial and technical resources should also be allocated to support ESG data collection and analysis systems, develop integrated information systems that link ESG data with enterprise risk management (ERM), and enhance formal communication channels between internal audit, risk committees, and senior management.

Author Contributions:

This study is one of the first to address ESG risk governance in Saudi universities from an integrative perspective that combines internal auditing, risk committees, and the Three Lines Model issued by the Institute of Internal Auditors (IIA). This is a field that remains underexplored in the previous literature, which has often focused on the private sector or profit-oriented companies. This study also contributes to expanding the theoretical framework of the Three Lines Model by applying it to the governance of ESG reports in universities, demonstrating that the model does not necessarily have a direct impact, but enhances the efficiency and role of internal auditing as a mediating variable. This adds a new analytical dimension to the relevant literature.

This study presents a modified structural model that has been statistically validated using Partial Least Squares Structural Equation Modeling (PLS-SEM), illustrating the direct and indirect relationships between

implementation of the Three Lines Model, collaboration between internal audit and risk committees, and the role of internal audit in managing ESG risks and governance of ESG reporting.

In addition to providing research results, practical guidelines for university administrations, risk committees, and internal audit units are provided on activating the role of internal audits in ESG governance, the importance of institutional coordination between risk and audit committees and integrating ESG into annual audit plans and internal audit charters.

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References

1. Mo, F., & Wang, D. D. (2023). Emerging ESG reporting of higher education institutions in China. *Heliyon*, 9(11).
2. Alenezi, M.; Alanazi, F. Integrating environmental social and governance values into higher education curriculum. *Int J Eval Res Educ* 2024, 13, 3493–3503.
3. IIA. Embedding ESG and Sustainability Considerations into the Three Lines Model. The Institute of Internal Auditors. 2022. Available online: <https://www.theiia.org/en/content/tools/advocacy/2022/embedding-esg-and-sustainability-considerations-into-the-three-lines-model/> (accessed on).
4. Akopyants, I.M.; Vartanova, K.Y.; Kiseleva, A.V.; Mikhailovskaya, I.N.; Patsora, I.V. ESG agenda in the educational process of a university. In *Ecological Footprint of the Modern Economy and the Ways to Reduce it: The Role of Leading Technologies and Responsible Innovations*; Springer Nature Switzerland: Cham, Switzerland, 2024; pp. 71–75. https://doi.org/10.1007/978-3-031-49711-7_13.
5. Veritrove. ESG in Higher Education. 10 March 2023. Available online: <https://veritrove.com/esg-in-higher-education> (accessed on).
6. Bonrath, A.; Eulerich, M.; Lopez-Kasper, V. Internal auditor's role in ESG disclosure and assurance: An analysis of practical insights. *Corp. Ownersh. Control* 2022, 20, 78–86. <https://doi.org/10.2139/ssrn.4141378>.

7. Daidj, N. The evolution of internal auditing and ESG criteria compliance. In *Research Handbook on Sustainability Reporting*; Edward Elgar Publishing: Cheltenham, UK, 2024; pp. 159–180. <https://doi.org/10.4337/9781035316267.00019>.
8. Jambor, J.; Džubáková, M.; Habanik, J. Integration of ESG 2015 and ISO 9001: 2015 standards in the higher education organization (case study). *AD ALTA J. Interdiscip. Res.* 2017, 7, 87–91.
9. Al-Din, W.M.F. The role of ESG sustainability indicators in enhancing the quality of reporting: An exploratory study of a sample of university professors specializing in accounting in the Holy Najaf Governorate. *Entrep. J. Financ. Bus.* 2024, 5, 61–70. <https://doi.org/10.56967/ejfb2024437>.
10. Chan, Y.K.; Hsieh, M.Y. An empirical study on higher education C-ESG sustainable development strategy in lower-birth-rate era. *Sustainability* 2022, 14, 12629. <https://doi.org/10.3390/su141912629>.
11. Resende, S.; Calvo, N.; Monje-Amor, A.; Nicolau, D. Enterprise Risk Management: A Strategy Enabler and Performance Enhancer. Available at SSRN 5074252. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5074252 (accessed on).
12. Casquel, J.M.; Povedano, R.; Santos, L.H.D.; Belli, M.M.; Gaio, L.E. ESG index impact on the performance of education sector companies. *Rev. Adm. UFSM* 2024, 17, e10. <https://doi.org/10.5902/1983465986171>.
13. Mo, F.; Wang, D.D. Emerging ESG reporting of higher education institutions in China. *Heliyon* 2023, 9, e22527.
14. AL-Shammari, H.F.H.; Al-Taie, B.F.K. Integrated Thinking Integration and the IIA's Three Lines Model to Improve the Value of the Economic Unit. In *Business Development Via AI and Digitalization*; Springer Nature Switzerland: Cham, Switzerland, 2024; Volume 2, pp. 773–783. https://doi.org/10.1007/978-3-031-62106-2_58.
15. Tu, K.; Guo, Y. How higher education affects corporate ESG performance: Empirical evidence from Chinese listed companies. *Financ. Res. Lett.* 2024, 68, 105812. <https://doi.org/10.1016/j.frl.2024.105812>.
16. Ridley, J.; D'Silva, K.; Szombathelyi, M. Sustainability assurance and internal auditing in emerging markets. *Corp. Gov. : Int. J. Bus. Soc.* 2021, 11, 475–488. <https://doi.org/10.1108/14720701111159299>.
17. Al Hanini, E.A. Does the environmental internal audit impact the achieving of sustainable development in industrial companies listed on the Amman Stock Exchange. *Int. J. Financ. Res.* 2021, 12, 220–229. <https://doi.org/10.5430/ijfr.v12n3p220>.
18. IIA. Internal audit's Role in ESG Reporting: Independent Assurance is Critical to Effective Sustainability Reporting. The Institute of Internal Auditors. 2021. Available online: <https://www.theiia.org/> (accessed on).
19. Choudhary, V.; Trivedi, S. The role of internal audit in risk management with a perspective of sustainability development. In *The Impact of Climate Change and Sustainability Standards on the Insurance Market*; John Wiley & Sons: Hoboken, NJ, USA, 2023; pp. 287–315. <https://doi.org/10.1002/9781394167944.ch19>.
20. Sheta, M.; Osman, M.N.; Elamer, A.A. Sustainability champions: The transformative role of internal auditors in ESG assurance—A systematic review and future directions. *J. Account. Lit.* 2025, 1–41. <https://doi.org/10.1108/JAL-09-2024-0255>.
21. Moffitt, J.S.; Patin, J.C.A.; Watson, L. Corporate environmental, social, and governance (ESG) performance and the internal control environment. *Account. Horiz.* 2024, 38, 103–124. <https://doi.org/10.2308/HORIZONS-2020-172>.
22. Schmuck, R. Comparison of the ESG guidelines used in the European higher education sector with the principles of the ISO 9001: 2015 quality management standard. *Qual.-Access Success* 2021, 22, 87–92.
23. de Leeuw, R.; de Draaijer, A. Internal Audit's Strategic Role in Sustainability and ESG Transformation. *Maandbl. Account. Bedrijfsecon.* 2025, 99, 243–250. <https://doi.org/10.5117/mab.99.167721>.
24. COSO. Guidance on Sustainability and ESG. 2022. Available online: <https://www.coso.org/SitePages/2022-02-24---COSO-Board-Approves-Study-on-Sustainability-ESG.aspx> (accessed on).

25. Baharom, Z. The Role of Internal Audit in ESG Governance: A Conceptual Framework. *Int. J. Res. Innov. Soc. Sci.* 2025, 9, 947–953. <https://doi.org/10.47772/IJRIS.2025.908000080>.
26. Del Baldo, M.; Aureli, S.; Lombardi, R. The role of the internal audit function in fostering sustainability reporting. In *Handbook of Sustainability-Driven Business Strategies in Practice*; Edward Elgar Publishing: Cheltenham, UK, 2021; pp. 352–369. <https://doi.org/10.4337/9781789908350.00034>.
27. Arif, M.; Sajjad, A.; Farooq, S.; Abrar, M.; Joyo, A.S. The impact of audit committee attributes on the quality and quantity of environmental, social and governance (ESG) disclosures. *Corp. Gov. Int. J. Bus. Soc.* 2021, 21, 497–514. <https://doi.org/10.1108/CG-06-2020-0243>.
28. Huang, S.; Hatab, E. ESG audit training perspective in Asia. *Int. J. Comput. Audit.* 2022, 4, 29–36.
29. IIA. Global Perspectives and Insights—The ESG Risk Landscape, Parts 1–3. 2022. Available online: <https://www.theiia.org/> (accessed on).
30. Baron, R.M.; Kenny, D.A. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J. Personal. Soc. Psychol.* 1986, 51, 1173–1182. <https://doi.org/10.1037/0022-3514.51.6.1173>.
31. Fong, L.; Law, R. Hair, J.F. Jr., Hult, G.T.M., Ringle, C.M., Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications. ISBN: 978-1-4522-1744-4. 307 pp. *Eur. J. Tour. Res.* 2013, 6, 211–213. <https://doi.org/10.54055/ejtr.v6i2.134>.