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Sustainability auditing and reporting in Malaysia: Strengthening transparency, accountability, and corporate responsibility

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Abstract

This study examines how sustainability audit functions improve transparency and corporate accountability in Malaysian organizations, fight greenwashing, and build investor trust while meeting global regulatory ESG reporting requirements. Many studies have explored sustainability reporting in Malaysia, but few have critically examined the role and effectiveness of sustainability audits in maintaining report credibility. Decision-makers and environmental auditors from 200 regional and national governmental entities participated in the study. Positive correlations were found between organizations with independent sustainability and superior ESG disclosure using statistical methods (PLS). Additionally, sustainability audit frequency enhances environmental sustainability and institutional transparency. Larger companies conduct more sustainability audits. This study contributed to standardizing sustainability certification frameworks, which will create uniformity and comparable measures across industries. The paper suggests that large firms should conduct sustainability audits by legislation, financially reward institutions, and use AI and blockchain technology to optimize audit procedures and reduce costs. The research promotes Malaysian emerging market sustainability, regulatory, and financial transparency knowledge. Additionally, the findings shed light on how frequent sustainability audits in Malaysian public institutions improve environmental sustainability and institutional openness.

Keywords: Corporate accountability, Governance governance reports, Institutional transparency, Quality of environmental audits, Sustainability audit.

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1. Introduction

Sustainability has become an essential component of business strategy, requiring organizations to produce transparent reports on their environmental, social, and governance (ESG) performance to demonstrate ethical accountability [1]. The credibility of sustainability reports depends heavily on auditing because misstatements and greenwashing practices require third-party verification to maintain global standards, according to Ribeiro and Oliveira [2]. The credibility of sustainability reporting is enhanced through auditing because it provides independent ESG data verification, which maintains corporate accountability regarding sustainability commitments [3]. Businesses that use strong auditing systems to vet their reports will decrease false reporting risks, build confidence among investors, and establish a stronger sustainable business environment. Audited sustainability reports allow policymakers, along with regulatory bodies, to evaluate business involvement in national and global sustainability aims while ensuring proper adherence to sustainable development programs [4]. Sustainability reporting in Malaysia has experienced acceleration through the implementation of the Malaysian Code on Corporate Governance (MCCG) and Bursa Malaysia's Sustainability Reporting Guidelines. The frameworks require listed companies to present their ESG performance while focusing on materiality aspects, stakeholder participation, and long-term sustainability integration [5].

In addition, the Global Reporting Initiative (GRI) and the Task Force on Climate-related Financial Disclosures (TCFD) have shaped the way Malaysian corporations report their activities [6]. Voluntary Sustainability Reporting and Financial Performance: Evidence from Global Reporting Initiative [7]. Audits ensure sustainable disclosure credibility through an independent ESG data verification process that combines to minimize misleading information while supporting businesses in improving their sustainability initiatives. Auditors go beyond regulatory conformity in sustainability reporting to create value by identifying performance gaps, which enable companies to link sustainability objectives properly with operational implementation [8]. External audit services performed by independent auditors minimize the potential for sustainability fraud through their verification of company sustainability efforts. The Malaysian market shows growing interest in independent ESG assurance because both regulatory authorities and investors need reliable sustainability reporting [9].

Hence, many businesses, especially small and medium-sized enterprises, encounter significant challenges in obtaining independent assurance. SMEs that receive financial incentives, along with regulatory support and subsidies for sustainability audits, will face fewer barriers to sustainability reporting [10]. The progress of sustainability audits is obstructed because of inconsistent auditing standards, limited expertise, and the high costs of independent assurance. Sustainability auditing faces a key challenge because it operates without standardized audit criteria, which results in varying levels of reporting quality across different industries. The research by Lessambo [11] examined this subject. The standards and review procedures for auditing and engagement quality under Generally Accepted Auditing Standards. Accurate and thorough ESG assessments face obstacles because there is not enough trained auditing talent in this field. A solution for the existing gaps demands a collaboration between regulatory bodies, auditing firms, and corporations to construct standard ESG auditing frameworks and strengthen auditor training programs. Professional accounting bodies and universities must establish ESG auditing courses throughout their educational programs to prepare upcoming auditors for effective sustainability disclosure evaluation [12]. The problem of greenwashing, together with existing regulatory gaps, damages stakeholder trust, so standard ESG auditing procedures must be developed alongside training programs and rigorous enforcement systems. The regulatory agencies of Malaysia should boost their sustainability disclosures monitoring, together with mandating more severe consequences for anything inaccurate or deceptive in their sustainability disclosures [13]. The implementation of mandatory sustainability assurance from third parties would strengthen the reliability of sustainability reports and decrease deceptive ESG statements.

Therefore, companies should embed sustainability auditing systems into their overall risk management strategies while incorporating ESG factors directly into organizational decision-making instead of treating them as mere compliance measures. By implementing board oversight of ESG reporting and sustainability performance, companies gain better transparency and accountability concerning sustainability [14]. The application of both artificial intelligence solutions with blockchain technology would boost sustainability audit efficiency along with increasing their reliability. The analysis of ESG reporting data by artificial intelligence systems helps identify reporting inconsistencies as well as detect environmental misinformation and verify the accuracy of reported information. Blockchain technology provides stakeholders with trustworthy ESG data through its immutable ledger system, which improves sustainability disclosure transparency [15]. The advancement of Malaysia's sustainability agenda will benefit from implementing technological innovations for auditors,

which will enhance both auditing accuracy and efficiency in sustainability reporting. Businesses should develop live ESG reporting platforms to monitor sustainability performance continuously instead of conducting periodic tests, as dynamic risk response and ongoing sustainability tracking become possible [16]. Malaysia should work toward creating an accountable corporate environment which implements sustainability reporting as a key driver for economic stability while advancing corporate responsibility and achieving sustainable long-term goals. The relation between auditing and sustainability reporting needs ongoing regulatory development together with enhanced industry working partnerships alongside boosted ESG competence support. The auditing role will grow in importance for Malaysian companies as they pursue global sustainability alignment because it ensures transparent and trustworthy corporate sustainability reports. The combined work of Malaysian regulators and businesses alongside investors and auditing professionals will establish Malaysia as a sustainability governance leader which supports a sustainable global economy [17].

1.1. Problem of Study

The actual application and efficacy of sustainability audits and reporting in Malaysia continue to be uneven and, frequently, superficial, despite the heightened regulatory attention and international promotion of sustainability practices. Many businesses provide sustainability reports more as a formality than as an indication of their true social and environmental responsibility. Furthermore, the veracity of sustainability statements is called into question by the sometimes-inadequate audit procedures for confirming them. This leads the researchers to conclude that the study's issue is the absence of required and standardized audit procedures for gathering sustainability data. Additionally, external auditors offer limited guarantees. The uneven incorporation of sustainability data into institutional decision-making is another issue. Moreover, regulators are not doing enough to enforce the integrity and quality of reports.

1.2. Importance, Purpose and Study Gap

There are multiple reasons why this study is significant. enhancing transparency and trust: this study can clarify how sustainability audits can enhance stakeholder trust and company image by assessing present procedures. Boost corporate accountability [18]: Pointing out flaws in reporting frameworks might motivate businesses to accept greater responsibilities for their effects on the environment and society. Encourage the creation of rules and policies [19]: The results can assist policymakers in enhancing Malaysia's sustainability reporting frameworks and bringing them more closely in line with global best practices. Supporting the Goals for Sustainable Development [20]: In the context of national agendas, the advancement of corporate sustainability practices directly supports Malaysia's commitment to the Sustainable Development Goals as well as its environmental and social objectives (see, for instance, Malaysia's plan 12).

The study's objectives are to evaluate the state, difficulties, and future of sustainability auditing and reporting in Malaysia, and to offer workable suggestions to enhance accountability, transparency, and corporate responsibility across industries.

The researchers argue that while several studies have discussed sustainability in Malaysia, few have critically evaluated the function and efficacy of sustainability auditing in assuring the reliability of these reports. This represents a research gap. The majority of the research now in publication concentrates on voluntary adoption trends, reporting frameworks that do not thoroughly examine audit and verification assurance procedures, and the quantity of disclosure rather than its quality. Consequently, this study fills in the primary gaps, which are exemplified by the dearth of empirical research on the auditing effectiveness of current assurance procedures and sustainability reports. In addition, there is a lack of policy analysis on the enforcement and monitoring mechanisms that guarantee businesses adhere to Sustainability Reporting Standards, as well as a limited comprehension of how stakeholders (such as investors and regulators) view the legitimacy of sustainability disclosures in Malaysia [21].

2. Literature Review

Academic research extensively investigates the auditing of sustainability reports because this process enhances corporate sustainability information transparency and reliability while improving its credibility. Independent assurance is an essential element of corporate governance since sustainability reporting has become essential [22]. Different research investigates sustainability auditing from the perspective of its development alongside assessment methods and regulatory structures, which affect its deployment across various jurisdictions, especially Malaysia. Simnett et al. [23] reveal the rising market need for sustainability assurance services that builds stakeholder confidence in ESG disclosure information. External sustainability assurance produces firms that stakeholders see as both more credible and more responsible thus supporting the need for mandatory assurance requirements. According to KPMG [24], Independent sustainability assurance has emerged as a global increasing trend because companies demand external verification to strengthen their sustainability efforts and gain responsible investors. The research conducted by Moroney et al. [25] shows that independent assurance creates better environmental performance because it makes companies responsible for their sustainability report commitments. The Malaysian regulatory environment regarding sustainability receives analysis through research by Jamil et al. [26].

The sustainability reporting guidelines from Bursa Malaysia have become a significant advancement toward integrating ESG factors within corporate operations. The lack of standardized auditing methodologies, together with the voluntary nature of sustainability assurance, remains an ongoing challenge. Jamil et al. [26] stress that regulatory measures should boost sustainability audit quality in sectors with significant environmental and social effects. Ahmad and Gow [27] advocate for Malaysia to implement mandatory independent ESG assurance through regulatory frameworks because it will minimize greenwashing and false sustainability claims. Studies show an increasing number of Malaysian companies adopting sustainability reporting, but they face a dual challenge between mandatory compliance requirements and substantive

sustainability disclosure standards, which audits can assist in bridging [28]. Auditors encounter multiple obstacles when they need to evaluate sustainability information according to sustainability reporting literature. The complexity of sustainability audits stems from their need for scientists with expertise in environmental protection and social responsibility, as well as governance framework experience in an industry that consistently changes and advances. The research conducted by Deegan and Unerman [29] shows that sustainability reporting frameworks such as GRI, TCFD, and SASB produce inconsistent audit criteria, which results in dissimilar audit quality and scope. The lack of consistency in corporate sustainability reports stems from different interpretations of reporting standards, which Maniora [30] explains leads to the necessity of an enhanced auditing process for industry-wide standardization. The current sustainability audit models need to move away from traditional financial audit models according to Maroun [31] while developing specific ESG-related risk assessment methods [32].

However, the Academic research about technology contributions to sustainability auditing has expanded substantially. Appelbaum et al. [33] present research about how artificial intelligence (AI) together with blockchain applications lead to better audit accuracy and discrepancy detection, which enhances the reliability of ESG reporting. Through blockchain implementation, organizations can maintain an indestructible sustainability data registry that enhances visibility and decreases fraudulent activities. Through AI analytics, auditors gain improved efficiency in sustainability audits by detecting patterns of greenwashing along with ESG disclosure discrepancies. The research by Tiron-Tudor et al. [34] demonstrates the use of digital tools in auditing processes to create more data-based audits with reduced human error. Researchers exhibit how future sustainability performance analysis through data analytics enables time-sensitive auditing practices, which result in more efficient assessment methods [35].

Moreover, literature acknowledges the requirement for auditors to enhance their knowledge of ESG domains. Sustainability auditors need knowledge beyond traditional financial auditing since their work requires analysis of non-financial metrics concerning environmental effects, labor rights, and ethical organizational governance. Research shows that sustainability auditing produces better results when it unites financial, environmental, and social professionals into its methodology. The study by Pflugrath et al. [36] shows that auditors who receive ESG-specific training deliver more dependable assurance with enhanced detail, which helps organizations prevent deceptive sustainability information from reaching the public.

In addition, the current research provides sparse evidence about how corporate financial performance, investor confidence, and profitability are affected by this factor. Research needs to investigate whether mandatory regulations perform better than self-imposed assurance mechanisms in auditing. The Malaysian auditing sector has not thoroughly investigated the implementation of AI, blockchain, and big data systems. The body of research regarding auditing standards' performance effectiveness and their compliance with Malaysian laws remains insufficient. The adoption of sustainability audits by all business sectors requires research on stakeholder trust and cost-efficient solutions for SMEs .[1], [2]

3. Theoretical Framework and Hypotheses Development

3.1. Frequency of Environmental Audits

Public institutions evaluate environmental compliance through regular audits according to the frequency identified by Bebbington and Larrinaga [37] and Lawal et al. [38]. This variable demonstrates the institution's dedication to constant supervision of operations as they relate to environmental standards. Preventive audits function as a proactive system because they uncover potential risks that can develop into major environmental or administrative issues. Institutions using more frequent audits create better environmental monitoring, which enables them to tackle challenges immediately while preserving accountability in their environmental practices [39].

Furthermore, the audits that occur regularly promote the credibility of public institutions through the display of consistent sustainability standard compliance. The established audit schedule supports organizations in developing an environment that consistently enhances their performance since past audit learnings drive upcoming procedures [40]. The structured evaluation process supports effective progress tracking for extended environmental objectives which are emission reduction and ecosystem preservation together with international environmental treaty compliance [41].

3.2. Quality of Environmental Audits

Public institutions conduct environmental performance assessments through evaluations that require a combination of accuracy, thoroughness, and reliability for quality purposes. The standard of superior audits depends on both the application of specialized tools and adherence to established methodologies, with the generation of detailed technical reports [42]. These elements guarantee that the findings become practical solutions, which present specific recommendations to fix environmental weaknesses and improve environmental operations. Theoretical models about audit quality demonstrate that thorough evaluations create better environmental results and improved regulatory compliance [43, 44].

3.3. Institutional Ttransparency Using Stakeholder Theory

This study is underpinned by stakeholder theory to analyze how it boosts transparency, accountability, and responsible governance in Malaysian public institutions. Freeman [45] explains in Stakeholder Theory that organizations must address the certainties held by multiple stakeholder groups including authorities, investors, and workforce as well as public audiences to preserve their ongoing validity and operational success. Sustainability auditing draws from this theory to describe how organizations make voluntary ESG disclosure practices to meet stakeholder requirements for verified sustainability information. The Malaysian sustainability audits act as a tool to decrease information gaps and build trust between organizations and their stakeholders in the present Malaysian scenario of rising ethical and environmental governance

standards. This theory is used in this study because it emphasizes the organization's responsibility to address the expectations of diverse stakeholders, including regulators, investors, employees, and the public, who are increasingly demanding transparent and verifiable sustainability practices.

3.4. Environmental sustainability using Legitimacy Theory

Organizations fulfil social norms and regulatory frameworks so they can maintain their validity in public perception [46]. Public institutions implement sustainability audits and ESG reporting standards through Legitimacy Theory because they need to counter growing societal and governmental pressures. The regular execution of high-quality audits enables institutions to match their operations with MCCG national standards and GRI alongside TCFD global standards. The adoption of these practices enables institutions to demonstrate conformity while decreasing their exposure to greenwashing risks and attaining legitimation in the market. Environmental performance and institutional transparency receive influential transformation through the collection of sustainability audit theories which creates mutually beneficial mechanisms for impact [47]. The research findings regarding audit frequency effects on sustainability performance are supported by theoretical frameworks, which also explain how audit quality influences implementation challenges. This theory helps to elucidate how public institutions implement sustainability audits to align with prevailing societal norms and regulatory expectations. In the Malaysian context, institutions face coercive pressures from regulatory bodies (e.g., Bursa Malaysia, MCCG) as well as normative pressures from global reporting standards (e.g., GRI, TCFD).

3.5. Hypotheses Development

As can be seen from the literature discussed above, sustainability audit functions that enhance sustainability reporting standards in Malaysian organizations by improving transparency and corporate accountability have been investigated [48]. Moreover, the literature agrees that frequent sustainability audits have a significant positive impact on both environmental sustainability and institutional transparency [49]. The context of Malaysian companies is also incredibly captivating due to rapid economic development and a dynamic regulatory environment [50]. The research also revealed that although the adoption of international standards for transparency and accountability reporting has improved the quality of reports on enhancing transparency, accountability, and corporate responsibility, inadequate enforcement and administrative opportunism still allow manipulation of reports, requiring high efficiency in practicing sustainability audits on these companies [51]. This study expands the existing body of literature by investigating sustainability auditing and reporting practices in Malaysia: promoting transparency, accountability, and corporate responsibility. Hence, based on the reviewed literature, this study proposes the following framework and hypotheses to be analyzed:

H_1: The frequency of environmental audits contributes significantly to achieving environmental sustainability within Malaysian companies.

H_2: The frequency of environmental audits contributes significantly to achieving institutional transparency within Malaysian companies.

H_3: The quality of Environmental Audit contributes significantly to achieving environmental sustainability within Malaysian companies.

H_4: The quality of Environmental Audit contributes significantly to achieving institutional transparency within Malaysian companies.

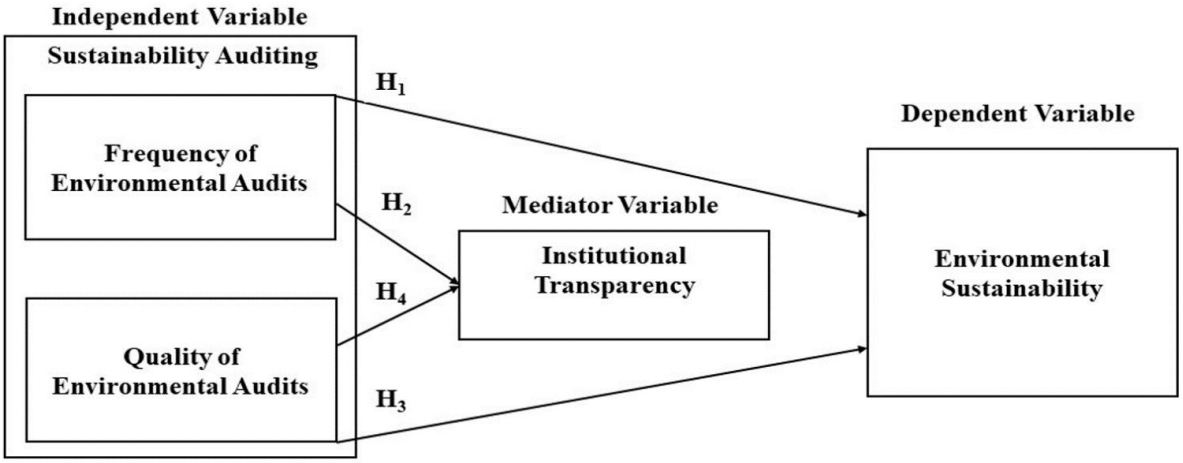

Figure 1.
Theoretical framework.

4. Methodology

This research employs a quantitative, explanatory design focused on analyzing sustainability auditing in Malaysian public institutions. Structural Equation Modeling (SEM) was employed using the Smart PLS software to examine the relationships between the latent and observed variables defined in the theoretical framework [52, 53]. This methodology allowed for the identification of both direct and indirect effects among the constructions, ensuring a comprehensive analysis of the proposed hypotheses [54]. The sample consisted of 200 participants from public institutions involved in environmental management at regional and national levels. The participants included decision-makers, environmental auditors, and

operational staff, representing diverse roles and responsibilities. The sample was stratified to include institutions with varying levels of frequency and quality in their environmental audits, providing a balanced representation in terms of demographic composition. Fifty-two percent of the participants were men, and forty-eight percent were women. A structured questionnaire served as the research instrument which used latent and observed variables according to Ferreira et al. [55]. The questionnaire had distinct parts that evaluated essential constructs such as audit frequency and audit quality, along with institutional disclosure practices and environmental sustainability elements. The survey instrument contained statements for which participants provided their agreement ratings through a 7-point Likert scale ranging from 1 (never) to 7 (always). A preliminary study with 50 participants tested the instrument for clarity and reliability, resulting in adjustments that were made before expanding the data collection process [56]. We used a questionnaire in this study to effectively collect standardized, quantifiable, and comparable data across a large and diverse sample. Given the study's quantitative and explanatory research design, a questionnaire provides a systematic method for measuring perceptions, behaviors, and practices related to sustainability auditing, including its frequency, quality, and its influence on institutional transparency and environmental sustainability. Additionally, the benefit of using a questionnaire enables the researcher to gather data from a large sample of participants across different public institutions efficiently and consistently. The Likert-scale format is particularly suitable for capturing subjective evaluations and the extent of agreement with predefined statements, allowing for the transformation of qualitative judgments into measurable quantitative variables. This approach supports the development and testing of complex structural models using Structural Equation Modeling (SEM) in Smart PLS, which requires well-defined and validated measurement items linked to both latent and observed constructs. Furthermore, the use of a questionnaire aligns with best practices in environmental management and auditing studies, where constructs like audit frequency, audit quality, and perceived transparency are inherently perceptual and experience-based, and therefore best assessed through direct input from relevant stakeholders, including decision-makers and operational staff. The preliminary pilot testing of the instrument further ensured clarity, reliability, and content validity, strengthening the overall methodological rigor of the study. The data collection period extended over two months through in-person and online surveys, which resulted in maximizing the number of respondents. Cronbach's alpha, rho A, and composite reliability tests validated the instrument alongside its reliability [37, 38]. The Smart PLS algorithm evaluated both model convergence and structural relationship testing. The research methodologies produced results that correctly reflected how environmental audits enhance public institution transparency and sustainability dynamics [42-44].

Table 1.
Constructs: Latent and Observed Variables.

Variable	Latent Variables	CODE	Observed Variables	Question
External indicators	Frequency of Environmental Audits	FA1	Number of Audits	How often are environmental audits conducted in your institution?
		FA2	Completed Audits	How often are the scheduled environmental audits fully completed?
		FA3	Planned Audits	How often are environmental audits planned in a timely manner?
	Quality of Environmental Audits	QA1	Regulatory Compliance	How often do audits ensure compliance with environmental regulations?
				How often are specialised tools used during environmental audits?
		QA2	Tools Used	
		QA3	Technical Report	How often do audits generate detailed technical reports?
Internal indicators	Institutional Transparency	IT1	Public Reports	How often are audit results published and accessible to the public?
		IT2	Citizen Perception	How often do citizens perceive transparency in the environmental processes of your institution?
		IT3	Process Clarity	How often are audited processes clear and understandable for the relevant parties?
	Environmental Sustainability	ES1	Waste Reduction	How often have audits promoted waste reduction in the institution?
		ES2	Efficient Resource Use	How often do audits contribute to the efficient use of resources like water or energy?
		ES3	Controlled Emissions	How often do audits foster the control of pollutant emissions?
		ES4	Ecosystem Conservation	How often do audits promote actions contributing to ecosystem conservation?

A table presents the link between latent variables and their observed variables, which serve as assessment tools through specific survey questions. The external indicator variables, consisting of environmental audit frequency and quality, are

measured through indicators that include audit numbers, regulatory adherence, and technical documentation. The observed aspects, which fall under internal indicator variables, consist of institutional transparency and environmental sustainability, which include public reports, waste reduction, and ecosystem conservation. These questions serve as a basis to obtain information about institutional performance regarding these constructs. The established organization maintains a direct link between conceptual elements and specific measurable results.

4.1. Model Convergence

The study evaluated model convergence to ensure both reliability and stability of the structural equation model, which focused on sustainability audits in Malaysian public institutions. The Smart PLS algorithm reached convergence at the 12th iteration after completing 300 iterations according to the specified limit. Thus, the divergence between estimated parameters across the different intervals reached a stable point. The convergence analysis demonstrates that the model correctly depicts the relationships between latent variables, which include environmental audit frequency and quality, institutional transparency, and environmental sustainability. The model's structure demonstrates appropriate alignment with empirical data because of its fast convergence process, thus creating stable results for testing hypotheses.

4.2. Ethical Aspects

The research maintained complete ethical standards to safeguard both research validity and credibility. The research study gave ethical considerations primary attention throughout the design phase as well as the data collection and the analysis phase while following national and international guidelines for research ethics. The study's main priority was to protect participant rights, privacy, and dignity, together with maintaining research transparency and reliable findings. However, the research participants gave free consent to join the study before the data collection process began. The study participants received complete information about the research purposes, along with their responsibilities and the confidentiality and anonymity protection procedures. All participants received protection against identity disclosure because their responses were assigned codes, which prevented anyone from tracing their identities. The study design allowed participants to share their thoughts without any concerns about negative outcomes.

In addition, the ethical principles guided the researchers throughout the data handling process as well as its analysis. Research purposes exclusively used the data which received secure storage to prevent unauthorized access. The study employed strict statistical procedures to minimize biases, resulting in objective findings that accurately displayed the relationships between the studied variables. The research maintained complete openness about potential conflicts before studying while upholding absolute academic integrity.

Table 2.
Construct Validity and Reliability.

Variable	Cronbach's Alpha	Rho A	Composite Reliability	Average Variance Extracted (AVE)
Environmental Sustainability	0.802	0.944	0.869	0.634
Frequency of Environmental Audits	0.818	0.895	0.892	0.737
Institutional Transparency	0.898	0.984	0.935	0.829
Quality of Environmental Audits	0.84	0.967	0.898	0.748

5. Results and Discussions

The table evaluates construct validity and reliability using Cronbach's Alpha, rho_A, Composite Reliability (CR), and Average Variance Extracted (AVE). All variables meet the thresholds of Cronbach's Alpha ≥ 0.70, CR ≥ 0.70, and AVE ≥ 0.50, indicating strong reliability, internal consistency, and convergent validity for the constructs.

Table 3.
Discriminate Validity.

Variable	Environmental Sustainability	Frequency of Environmental Audits	Institutional Transparency	Quality of Environmental Audits
Environmental Sustainability	0.796	0.476	0.413	0.349
Frequency of Environmental Audits	0.476	0.859	0.757	0.885
Institutional Transparency	0.413	0.757	0.911	0.725
Quality of Environmental Audits	0.349	0.885	0.725	0.865

The table demonstrates discriminant validity using the Fornell-Larcker criterion, where the diagonal values (square root of AVE) exceed the inter-construct correlations (off-diagonal values). This confirms that each construct shares more variance with its own indicators than with others, ensuring their conceptual distinction.

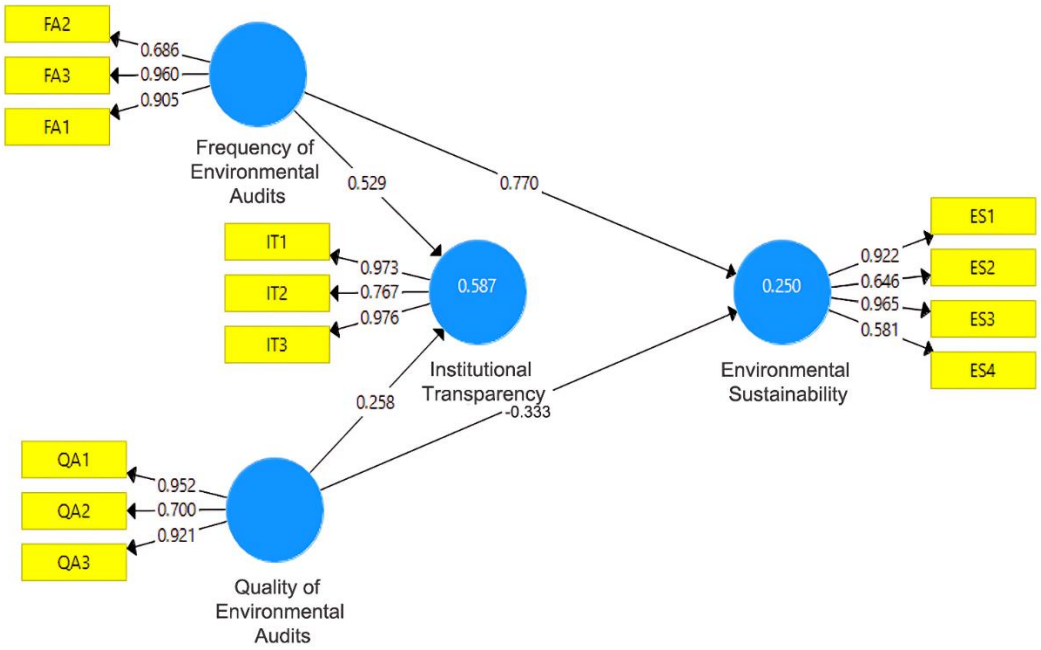

Figure 2.
Bootstrapping Of the Relationship between Variables in a Reflective Model.

5.1. Bootstrapping

The structural model presents how latent variables, Frequency of Sustainability Audits and Quality of Environmental Audits, together with Institutional Transparency and Environmental Sustainability, influence each other through their observed indicators. The rate at which companies conduct sustainability audits exerts a powerful direct impact on Institutional Transparency (0.529) and Environmental Sustainability (0.770), according to the results. The Quality of Environmental Audits demonstrates a smaller positive relationship toward Institutional Transparency (path coefficient = 0.258) and simultaneously produces a negative impact on Environmental Sustainability (path coefficient = -0.333). The outer model shows robust indicator loadings across most variables, where FA2 (Completed Audits) achieves a loading value of 0.960, and IT1 (Public Reports) reaches 0.973. Environmental Sustainability includes strong indicators that demonstrate high loading values, including ES1 (Waste Reduction, loading = 0.922) and ES3 (Controlled Emissions, loading = 0.965). The Institutional Transparency variable demonstrates a high predictive strength through its R^2 value of 58.7%, whereas the Environmental Sustainability variable possesses an R^2 value of 25%, indicating moderate predictive power. The model demonstrates that the Frequency of Sustainability Audits plays a substantial role in influencing results, but the Quality of Environmental Audits needs additional investigation to understand its conflicting relationship with Environmental Sustainability.

Table 4.
Path Coefficients.

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Frequency of Environmental Audits -> Environmental Sustainability	0.770	0.768	0.226	3.406	0.001
Frequency of Environmental Audits -> Institutional Transparency	0.529	0.530	0.165	3.212	0.001
Quality of Environmental Audits -> Environmental Sustainability	-0.333	-0.310	0.231	1.438	0.001
Quality of Environmental Audits -> Institutional Transparency	0.258	0.267	0.161	1.604	0.109

As displayed in the results, more frequent sustainability audits directly lead to better environmental sustainability (0.770, p=0.001) and institutional transparency (0.529, p=0.001). The quality of sustainability audits demonstrates a negative correlation with environmental sustainability (-0.333, p=0.001) despite causing potential analysis-requiring inconsistencies or adverse factors during implementation. The model indicates that audit quality does not significantly contribute to transparency enhancement (0.258, p=0.109) despite its relationship with other aspects. Audits represent a critical determinant that recent studies have identified through their research outcomes about audit quality effects.

6. Conclusion

The results of statistical analysis showed that sustainability audits conducted frequently have a strong positive impact on environmental sustainability through a path coefficient value of 0.770 (p = 0.001). Monitoring activities done routinely

demonstrate their effectiveness in finding room for improvement while decreasing environmental threats. Frequent audits demonstrate high predictive power regarding environmental sustainability according to the calculated AVE of 0.737 for frequency. The discovered relationship requires public institutions to adopt audit regularity as part of their strategic environmental management framework. The transparency of institutions shows substantial improvement when environmental audits become more frequent since the path coefficient reaches 0.529 (p = 0.001). The direct relationship between frequent audits produces a strong AVE of 0.859, which proves that these periodic audits improve both internal controls and public trust and accountability. The research confirms that audit frequency functions as the main contributor to institutional legitimacy, so institutions must share audit results with communities as a fundamental practice to build public trust.

However, the connection between sustainability audit quality and environmental sustainability produced unexpected negative results according to the path coefficient of -0.333 (p = 0.001). The strong quality representation indicated by the AVE of 0.748 shows elevated standards, yet these findings demonstrate that complex procedures linked to high standards might slow down implementations or restrict recommendation execution. The discovered relationship demonstrates a research complication because it shows how technical audit standards should be combined with accessible process design for optimal environmental outcomes. The evaluation of environmental audits demonstrates a substantial positive relationship to institutional transparency through a path coefficient of 0.258 and an AVE of 0.911 but maintains a moderate level of association.

7. Recommendations

The Malaysian government through regulatory bodies should establish mandatory sustainability auditing requirements for large corporations and provide benefits for institutions to use assurance services. A standardized system of ESG assurance frameworks will generate uniformity and comparable measures across different industry sectors. Institutions should obtain sustainability audits with financial help through tax deductions and government subsidies and by using digital audit technologies like AI and blockchain to lower costs and enhance operational effectiveness. The professional accounting and auditing institutions of Malaysia need to develop specialized training for sustainability auditors to provide high-quality ESG assurance services throughout all industries. Companies need to be active partners with stakeholders through detailed independent ESG report publication that combines transparency with investor trust. Sustainable ESG data transparency can be achieved through blockchain systems while AI systems should analyze data for detecting sustainability risks to improve ESG audit quality and reliability. These recommendations would enable Malaysia to develop its sustainability ecosystem through better compliance and build trust among investors in sustainability reporting. Research needs to study sustainability audit effects over time as well as develop low-cost models for small and medium enterprises and evaluate regional cooperative efforts in sustainability documentation throughout ASEAN countries. The implementation of these proposed solutions will help create an accountable and transparent corporate sector throughout Malaysia.

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