Sustainability Auditing and Corporate Social Responsibility: Experience from Listed Manufacturing Firms in Nigeria

OWOEYE Taiwo Omolade[1]
ODIGUN Grace Oluwafunmilayo[2]
ONOJA Paul Festus[3]
FAPETU Taiwo Adeola[4]
AJISAFE Olarewaju Ayodele[5]

[1, 2, 3, & 5]Department of Accounting, Federal University Oye-Ekiti, Ekiti state. Nigeria.
[4]Department of Accounting, Adekunle Ajasin University, Akungba Akoko, Ondo State, Nigeria.

Corresponding Author: [1]taiwo.owoeye@fuoye.edu.ng
[2]oluwafunmilayo.adeyeye@fuoye.edu.ng, [3]paul.onoja@fuoye.edu.ng,
[4]taiwoadeolafapetu@gmail.com, [5]olarewaju.ajisafe@fuoye.edu.ng

https://doi.org/10.63725/ijhrm.v10i2.03

Abstract

This study evaluated the effect of sustainability auditing on Corporate Social Responsibility (CSR) disclosure practices among listed manufacturing firms in Nigeria over a ten-year period from 2015 to 2024. The specific objective was to examine the effect of sustainability auditing (SA) across disaggregated CSR dimensions Corporate Social Disclosure (CSD), Corporate Environmental Disclosure (CED), and Corporate Economic Disclosure (ECOD) as well as on an aggregate CSR Index. The study adopted an ex-post facto research design, data were extracted from annual financial statements and sustainability reports across a purposively selected sample of 10 consumer goods manufacturing firms listed on the Nigerian Exchange Group (NGX). The econometric findings revealed high explanatory power, but demonstrated that sustainability auditing showed no statistically significant within-firm association with the aggregate CSR Index (β=0.0061, t=0.9236, p=0.3583), CSD (β=0.0587, t=0.6883, p=0.4931), CED (β=0.0847, t=0.7027, p=0.4842), or ECOD (β=0.0388, t=0.4206, p=0.6751), whereas Firm Size (FSIZE) consistently emerged as the sole dominant, highly significant predictor (β=0.1361 to 1.4474, p=0.0000). The study concluded that positive cross-sectional associations between sustainability auditing and CSR disclosures are driven largely by pre-existing structural differences between firms, particularly firm size, rather than within-firm adoption of sustainability auditing. Consequently, the study recommended that the Nigerian Exchange Group (NGX) and SEC transition to a mandatory sustainability assurance regime, develop sector-specific environmental reporting guidelines, and build professional capacity for sustainability auditors in Nigeria.

Keywords: Sustainability Auditing, Corporate Social Responsibility, Corporate Social Disclosure, Corporate Environmental Disclosure, Corporate Economic Disclosure, Listed Manufacturing Firms, Nigeria

Introduction

In contemporary corporate governance, sustainability auditing is defined through various perspectives as the systematic operational oversight, internal control evaluations, and compliance monitoring conducted by an organization's internal audit function regarding environmental and social management systems (Hazaea et al., 2021). The internal audit oversight and external assurance as separate, complementary dimensions. Operationalized through these dual mechanisms, Corporate Social Responsibility (CSR) further defined through its core dependent dimensions of corporate social disclosure, corporate environmental disclosure, and corporate economic disclosure has evolved into a strategic imperative for modern enterprises seeking long-term sustainability and stakeholder trust (Almashhadani & Almashhadani, 2023). Globally, the robust CSR practices associate with enhanced financial performance, risk mitigation, and greater organizational legitimacy, particularly when verified by credible assurance mechanisms (Bonsu et al., 2025). However, the international landscape faces severe challenges, the subjective nature of self-reported CSR data creates acute information asymmetry, leaving disclosures vulnerable to greenwashing the practice of overstating or formulating non-financial impacts without substantive operational changes (Gorovaia, 2025; Riguen Rakia, 2024). Consequently, about 94% of global investors express scepticism toward unsupported sustainability claims, which undermines capital allocation and slows progress toward the United Nations Sustainable Development Goals (SDGs) (Janik, 2025).

The severity of this challenge differs significantly across economic contexts. In developed economies, regulators and markets are increasingly transitioning toward mandatory non-financial assurance frameworks, such as the Global Reporting Initiative (GRI) and the European Sustainability Reporting Standards (ESRS), positioning sustainability auditing as a critical intermediary to enforce transparency and elevate firm value (Bonsu et al., 2026; Kasmanhuber, 2023). On the contrary, in developing economies, institutional frameworks and regulatory enforcement mechanisms remain nascent, leaving CSR execution fragmented and predominantly voluntary (Obasan, 2025; Ubandawaki, 2024). In Nigeria, this vulnerability is particularly pronounced within the listed manufacturing sector. Although manufacturing firms generate substantial environmental externalities including industrial effluents, resource depletion, and community disruption sustainability disclosure quality among Nigerian listed firms averages an alarmingly low 20% (Alabi, 2024; Elaigwu, 2024). Despite voluntary guidelines issued by the Nigerian Exchange Group and the Securities and Exchange Commission, reporting in Nigeria remains superficial, sporadic, and largely unassured, allowing persistent greenwashing risks to erode investor confidence and stakeholder accountability (Aguguom, 2024; Nwekwo et al., 2025).

To enhance the credibility and transparency of CSR disclosures, this study examines internal sustainability auditing and external sustainability assurance as standalone mechanisms grounded in stakeholder, legitimacy, and accountability theories to align corporate actions with societal expectations and curb information asymmetry (Erin et al., 2021; Karaki, 2025). Empirical evidence highlights that internal audits boost environmental compliance while external audits enhance financial performance and more than double the likelihood of yielding high-quality reporting (Bonsu et al., 2025; Erin et al., 2021; Hariyani, 2025), offering manufacturing firms a structured pathway toward substantive CSR. However, critical research gaps remain, as existing studies broadly aggregate high-impact sectors or foreign multinationals, overlook domestic listed manufacturers, neglect the specific impact of auditing over general governance, fail to separate internal auditing from external assurance, and treat CSR as a monolithic concept without evaluating its distinct dimension trade-offs (Bonsu et al., 2025; Erin et al., 2021; Karaki, 2025; Oware & Mallikarjunappa, 2022). Empirical evidence shows that while social and community disclosures often yield positive financial returns, environmental disclosures in developing contexts can exhibit mixed or negative short-term outcomes due to high compliance costs (Nwobu, 2021; Yahaya & Yusuf, 2020). A critical empirical gap therefore remains regarding how internal sustainability auditing and external sustainability assurance, evaluated separately, influence corporate social, environmental, and economic disclosures within Nigeria's listed manufacturing sector.

To address these gaps, the primary objective of this study is to evaluate the distinct, independent effects of internal sustainability auditing and external sustainability assurance on the corporate social, environmental, and economic disclosure practices of listed manufacturing firms in Nigeria. Specifically, the study intends to address the following research questions: How does internal sustainability auditing influence corporate social disclosure, corporate environmental disclosure, and corporate economic disclosure among listed manufacturing firms in Nigeria? How does external sustainability assurance influence corporate social disclosure, corporate environmental disclosure, and corporate economic disclosure among listed manufacturing firms in Nigeria? How do the impacts of internal sustainability auditing and external sustainability assurance differ across the distinct dimensions (social, environmental, and economic) of corporate disclosure? Ultimately, by systematically isolating these relationships into independent variables, the study bridges international assurance standards with local emerging-market realities to guide regulatory policy, audit practice, and corporate governance in Nigeria.

Literature Review and Hypotheses Development

The integration of Corporate Social Responsibility (CSR) into corporate governance has transformed non-financial reporting from voluntary philanthropy into a verified strategic imperative. Grounded in Stakeholder Theory, Legitimacy Theory, and Accountability Theory, firms utilize CSR disclosures spanning social, environmental, and economic dimensions to maintain their social license to operate and reduce information asymmetry among capital market participants (Carroll, 2021; Fatemi et al., 2021). However, self-reported CSR disclosures remain highly susceptible to greenwashing and selective reporting, particularly in

developing economies where enforcement mechanisms are weak and reporting remains predominantly voluntary (Gorovaia, 2025; Obasan, 2025). Within Nigeria's listed manufacturing sector, firms generate significant social and environmental externalities, yet disclosure quality remains alarmingly low (Alabi, 2024; Elaigwu et al., 2024). Sustainability Auditing encompassing both internal systematic evaluations and independent external assurance engagements (such as those guided by ISAE 3000 or ISSA 5000) serves as a vital governance mechanism to verify non-financial information, align corporate actions with societal expectations, and enhance disclosure reliability (Evans, 2025; Hazaea et al., 2021). The first core dimension of CSR, Corporate Social Disclosure, captures a firm's communication regarding human resources development, employee welfare, occupational health and safety, community engagement, and human rights practices (Maqbool & Zameer, 2021; Rahman & Masum, 2021). Consequently, sustainability auditing is expected to exert a positive effect on social disclosure practices. The second dimension, Corporate Environmental Disclosure, focuses on communicating quantitative and qualitative data regarding greenhouse gas emissions, waste management, energy efficiency, water usage, and regulatory compliance (Orazalin & Mahmood, 2021; Zhang et al., 2022).

In high-impact sectors like manufacturing, environmental disclosures are vital for maintaining organizational legitimacy in the face of resource depletion and industrial pollution (Abam et al., 2024; Nwobu, 2021). Legitimacy Theory posits that sustainability auditing acts as a verification mechanism that validates environmental claims, discouraging selective disclosure and greenwashing (Janik, 2025; Sneideriene, 2025). Empirical evidence demonstrates that internal sustainability audits account for significant variance in environmental performance and compliance, while external assurance significantly increases the odds of publishing high-quality environmental reports (Bonsu et al., 2025; Erin et al., 2021). By evaluating operational adherence to standards like GRI, sustainability auditing compels listed manufacturing firms to provide structured, objective disclosures on effluents, energy mix, and carbon management. The third dimension, Corporate Economic Disclosure, addresses how an enterprise generates and distributes sustainable economic value to society through value-added statements, local infrastructure investments, tax payments, and economic development initiatives (Buallay, 2020; Khan et al., 2021).

Under the framework of Accountability Theory and Shared Value creation, economic disclosures illustrate how firms balance profit generation with broader societal wealth distribution (Okoye et al., 2021). In Nigerian manufacturing, economic disclosures have historically been superficial or limited to basic financial metrics, failing to capture holistic sustainable capital contributions (Effiong, 2022). Sustainability auditing bridges this gap by applying rigorous assurance criteria to non-financial economic indicators, ensuring that statements regarding local procurement, tax compliance, and community value creation are transparent and reliable. External audits leverage client financial infrastructure to verify economic contribution metrics, thereby enhancing investor confidence and stakeholder trust (Bonsu et al., 2025; Oware & Mallikarjunappa, 2022).

Theoretical Frameworks

Stakeholder Theory

Stakeholder theory is highly relevant to understanding the relationship between sustainability auditing and CSR because it provides a framework for explaining why organizations engage in responsible practices and why they seek independent verification of their CSR information. According to stakeholder theory, organizations adopt CSR practices and seek sustainability auditing as mechanisms for responding to stakeholder demands for transparency, accountability, and responsible behavior. From a stakeholder theory perspective, sustainability auditing serves as a mechanism for demonstrating responsiveness to stakeholder concerns. Bonsu et al. (2025) employed stakeholder theory in their study of sustainability auditing in high-impact industries, arguing that sustainability audits provide a structured method for organizations to assess their environmental and social impacts, ensuring alignment with stakeholder priorities. The study found that engaging in sustainability auditing allows organizations to show their responsiveness to climate change and ethical governance, helping to reduce reputational risks and improve stakeholder relationships. Stakeholder theory explains the increasing demand for sustainability auditing as a response to stakeholder pressures. The International Federation of Accountants, AICPA, and CIMA (2022) documented that the number of companies obtaining independent assurance on their ESG information increased from 51% to 58% in 2020, reflecting growing stakeholder demand for credible sustainability information. Stakeholder theory suggests that this trend represents organizational responses to the demands of diverse stakeholder groups, including investors, regulators, customers, employees, and civil society organizations.

The instrumental aspect of stakeholder theory is particularly relevant to understanding how sustainability auditing affects CSR outcomes. According to the instrumental perspective, organizations that effectively manage stakeholder relationships through practices such as sustainability auditing achieve superior performance outcomes. Bonsu et al. (2025) found that external sustainability auditing positively influences financial performance and long-term firm value, providing empirical support for the instrumental proposition that stakeholder-oriented practices contribute to organizational performance. The normative aspect of stakeholder theory provides a moral foundation for sustainability auditing, suggesting that organizations have an ethical obligation to be accountable to all stakeholders who are affected by their activities .This normative perspective implies that sustainability auditing is not merely a strategic tool for managing stakeholder relationships but a moral imperative rooted in the recognition that stakeholders have legitimate claims on organizational accountability.

Legitimacy Theory

The application of legitimacy theory to corporate social responsibility and environmental accounting was advanced by Deegan and colleagues (2002), who used legitimacy theory to explain the environmental disclosure practices of Australian mining companies. Their study demonstrated that organizations use social and environmental disclosure as a mechanism for

maintaining legitimacy in response to public pressure and adverse events. Legitimacy theory has become one of the most widely applied theoretical frameworks in CSR and sustainability accounting research. The theory posits that organizations operate within a social contract with society, which grants them the right to exist and operate in exchange for meeting societal expectations. When organizations fail to meet these expectations, their legitimacy is threatened, prompting responses aimed at restoring or maintaining legitimacy. Legitimacy theory is highly relevant to understanding the relationship between sustainability auditing and CSR because it explains why organizations voluntarily disclose CSR information and seek independent assurance. According to legitimacy theory, organizations adopt these practices to demonstrate that their actions are consistent with societal expectations and to maintain their social license to operate. From a legitimacy theory perspective, sustainability auditing serves as a mechanism for aligning organizational actions with societal norms and expectations. Bonsu et al. (2025) applied legitimacy theory in their study, arguing that sustainability audits enhance transparency, accountability, and ethical practices, fostering trust and improving governance credibility. The study found that regular audits help organizations comply with environmental regulations and societal expectations, addressing concerns about carbon emissions and resource depletion.

Legitimacy theory suggests that organizations respond to legitimacy threats by engaging in symbolic and substantive actions. Sustainability auditing represents a substantive action that demonstrates organizational commitment to transparency and accountability, signaling to stakeholders that the organization is taking its responsibilities seriously. The independent verification provided by sustainability auditing enhances the credibility of CSR information, making it more effective as a legitimacy-maintaining mechanism. The concept of the "social contract" is central to legitimacy theory and provides a foundation for understanding the relationship between sustainability auditing and CSR. Organizations are granted a social license to operate based on their adherence to societal expectations. When organizations fail to meet these expectations, their legitimacy is threatened, potentially leading to regulatory intervention, consumer boycotts, or other sanctions. Sustainability auditing serves as a mechanism for demonstrating adherence to the social contract, thereby maintaining organizational legitimacy.

Agency Theory

Agency theory provides a framework for understanding how mechanisms such as auditing, performance measurement, and incentive systems can reduce agency costs and align the interests of principals and agents. The application of agency theory to auditing is well established, with the theory providing the primary explanation for the demand for independent assurance. According to agency theory, independent auditing reduces information asymmetry between principals and agents, providing assurance that agents have acted in the interests of principals. This application extends naturally to sustainability auditing, where principals (stakeholders, including shareholders) seek assurance that agents (managers) have acted responsibly with respect to environmental and social matters. Agency theory is relevant to

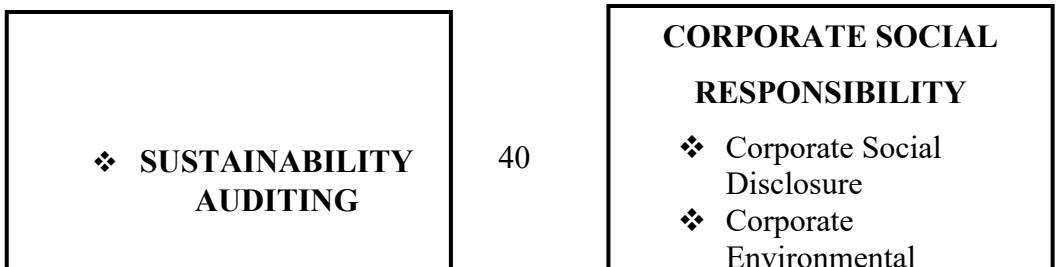
understanding the relationship between sustainability auditing and CSR because it explains the demand for independent verification of managerial actions in relation to sustainability matters. According to agency theory, managers (agents) may have incentives to pursue their own interests rather than the interests of stakeholders (principals), particularly in areas such as sustainability where performance measurement is complex and information asymmetry is high. From an agency theory perspective, sustainability auditing serves as a monitoring mechanism that reduces information asymmetry and aligns managerial actions with stakeholder interests.

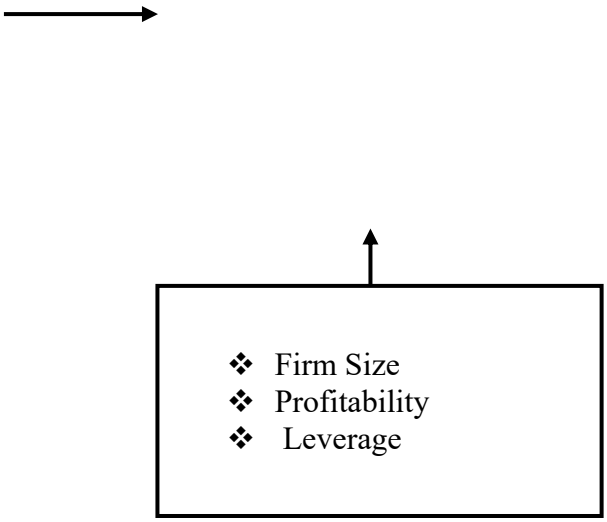
Bonsu ,et al(2025) incorporated agency theory in their multi-theoretical framework, arguing that sustainability auditing supports ESG data disclosure to enhance corporate transparency and accountability, helping firms identify initiatives, ensure compliance, manage risks, demonstrate ethical governance, build trust, protect reputation, and strengthen stakeholder relationships. Agency theory explains why organizations that adopt sustainability auditing may achieve superior financial outcomes. By providing independent verification of CSR information, sustainability auditing reduces the information asymmetry between managers and investors, enabling more efficient capital allocation. Bonsu et al. (2025) found that external sustainability auditing positively influences financial performance and long-term firm value, providing empirical support for the agency theory prediction that monitoring mechanisms contribute to organizational performance. Agency theory also illuminates the potential limitations of sustainability auditing. Because sustainability auditing is voluntary in many jurisdictions, including Nigeria, organizations may selectively adopt auditing practices to signal their commitment to sustainability while avoiding scrutiny in areas where their performance is weak. This selective adoption creates the potential for "greenwashing" or symbolic compliance, where auditing serves to manage perceptions rather than substantively improve performance.

To empirically evaluate the relationship between sustainability auditing and corporate social responsibility dimensions among listed manufacturing firms in Nigeria, the following null hypotheses (H 0) are formulated:

H_{01}: Sustainability Auditing has no significant effect on the level of Corporate Social Disclosure in listed Nigerian manufacturing firms.
H_{02}: There is no significant relationship between Sustainability Auditing and then quality of Corporate Environmental Disclosure in the Nigerian manufacturing sector.
H_{03}: Sustainability Auditing does not significantly influence the transparency and extent of Corporate Economic Disclosure among listed manufacturing companies.

Conceptual Framework
Figure 2.1 shows the interactions between the Independent Variable (Sustainability Auditing) and the Dependent Variable (Corporate Social Responsibility**)**





Source: Authors' Concepts (2026)

Research Method

This study adopted a quantitative ex-post facto panel research design spanning a ten-year period from 2015 to 2024, yielding 100 firm-year observations across a purposively selected sample of 10 consumer goods firms listed on the Nigerian Exchange Group (NGX), representing approximately 48% of the 21-firm target population. Purposive (judgmental) sampling was employed because it targets firms that have consistently published annual reports, standalone sustainability reports, or integrated reports containing verifiable CSR and assurance information. The selected firms also have operated throughout the study window and belong to high-impact sub-sectors (e.g., food & beverages, breweries, and household products). Secondary data was extracted from audited annual financial statements, integrated reports, and standalone sustainability reports, using a GRI-aligned content analysis checklist to score disclosure depth across the social, environmental, and economic CSR dimensions. Data analysis involved both descriptive statistics (mean, standard deviation, minimum, maximum) to summarize data distributions and inferential techniques specifically correlation analysis for multicollinearity checks and panel regression analysis (Fixed and Random Effects models) tested at a 5% significance level. To ensure statistical validity, the Hausman test was determined the optimal panel specification, complemented by diagnostic tests for Heteroskedasticity and autocorrelation.

Model Specification

The study adopts a panel regression model to examine the effect of sustainability auditing on CSR disclosures. The functional relationship is expressed as:

CSR = f(SA, FSIZE, ROA, LEV)

The econometric models are specified as follows:

Model 1 (Aggregate CSR):
CSRit = β0 + β1SAit + β2FSIZEit + β3ROAit + β4LEVit + μit …… (i)
Model 2 (Corporate Social Disclosure):
CSDit = β0 + β1SAit + β2FSIZEit + β3ROAit + β4LEVit + μit …… (ii)
Model 3 (Corporate Environmental Disclosure):
CEDit = β0 + β1SAit + β2FSIZEit + β3ROAit + β4LEVit + μit …… (iii)
Model 4 (Corporate Economic Disclosure):
ECODit = β0 + β1SAit + β2FSIZEit + β3ROAit + β4LEVit + μit …… (iv)
Where: i = firm; t = time period; β0 = intercept; β1 to β4 = coefficients; μit = error term

Table 1 Measurement of Variable

Variable Type	Variable Name	Proxy/Measurement	Description	Source
Dependent Variable	Corporate Social Responsibility (CSR)	CSR Index	Number of social disclosure items disclosed (maximum 10 items) based on content analysis of annual reports and sustainability reports.	Yahaya and Yusuf (2020).
Dependent Variable	Corporate Social Disclosure(CSD)	Number of Disclosure Items	Items include: employee health and safety, training and development, diversity and inclusion, community. engagement, philanthropic donations, consumer protection, stakeholder engagement, human rights,	Effiong (2022)

			labour relations, and employee welfare..	
Dependent Variable	Corporate Environmental Disclosure (CED)	Number of environmental disclosure items	Number of environmental disclosure items disclosed (maximum 10 items) based on content analysis of annual reports and sustainability reports. Items include: carbon emissions, energy consumption, water usage, waste management, pollution control, environmental compliance, environmental investments, biodiversity, resource efficiency, and climate change initiatives.	Bonsu et al. (2025)
Dependent Variable	Corporate Economic Disclosure (ECOD)	Number of economic disclosure items	Number of economic disclosure items disclosed (maximum 10 items) based on content analysis of	

			annual reports and sustainability reports. Items include: value-added statement, economic value distributed, tax contributions, employee compensation, supplier payments, community investments, infrastructure development, local procurement, job creation, and economic development initiatives.	
Independent Variable	Sustainability Auditing (SA)	Dummy variable (1 = presence of sustainability audit/assurance, 0 = otherwise)	Measures whether firm engages in sustainability auditing	Hazaea et al. (2021)
Control Variable	Firm Size (FSIZE)	Natural log of total assets	Controls for firm scale	Carroll (2021)
Control Variable	Profitability (ROA)	Return on Assets	Measures firm performance	Fatemi et al. (2021)
Control Variable	Leverage (LEV)	Total debt/total assets	Measures financial risk	Evans (2025)

Source: Authors' Compilation (2026)

Result and Discussion of findings

Descriptive Statistics

Descriptive statistics provide a preliminary understanding of the central tendency, dispersion, and distribution characteristics of all variables used in the study. Table 4.1 presents the descriptive statistics for the dependent variables the Corporate Social Responsibility Index

(CSR Index), Corporate Social Disclosure (CSD), Corporate Environmental Disclosure (CED), and Corporate Economic Disclosure (ECOD) as well as the independent variable Sustainability Auditing (SA) and the control variables, namely Firm Size (FSIZE), Return on Assets (ROA), and Leverage (LEV), across 100 observations.

Table 2 Descriptive Statistics of Study Variables

Statistic	CSR Index	CSD (0–10)	CED (0–10)	ECOD (0–10)	SA	FSIZE [Ln(TA)]	ROA	LEV
Mean	0.6080	6.3700	5.6200	6.2500	0.7900	5.1456	0.0396	0.5518
Median	0.6000	6.0000	6.0000	6.0000	1.0000	5.0593	0.0543	0.5300
Maximum	0.8667	9.0000	8.0000	9.0000	1.0000	7.3065	0.1862	0.8400
Minimum	0.3000	3.0000	3.0000	3.0000	0.0000	3.0910	-0.3462	0.4000
Std. Dev.	0.1340	1.3901	1.3317	1.3661	0.4094	0.9406	0.0885	0.1061
Skewness	-0.2261	-0.2510	-0.2338	-0.1717	-1.4240	0.1912	-1.4514	0.7647
Kurtosis	2.3902	2.4598	2.3009	2.4506	3.0277	2.5040	6.4842	2.8823
Jarque-Bera	2.4013	2.2659	2.9472	1.7492	33.7987	1.6344	85.6948	9.8047
Prob. (JB)	0.3010	0.3221	0.2291	0.4170	0.0000	0.4417	0.0000	0.0074
Observations	100	100	100	100	100	100	100	100

Source: **Authors'** ***Compilation (2026)***

The descriptive statistics reveal a moderate but heterogeneous level of corporate social responsibility among the sampled listed Nigerian manufacturing firms, with the aggregate CSR Index recording a mean of 60.80% (ranging from 30.00% to 86.67%). Among its sub-dimensions, Corporate Social Disclosure recorded the highest average score (6.37 out of 10), closely followed by Corporate Economic Disclosure (6.25 out of 10), whereas Corporate Environmental Disclosure lagged with the lowest mean (5.62 out of 10), confirming a ongoing corporate reluctance to disclose impacts regarding emissions, effluents, and pollution control as documented in prior Nigerian literature (Alabi, 2024; Nwobu, 2021). Regarding the primary independent variable, approximately 79% of the firm-year observations involved sustainability auditing, reflecting its dominant adoption across the sample. While firm size, profitability (ROA), and leverage (55.18% average debt ratio) exhibited substantial cross-sectional variation and structural skewness typical of binary and financial indicators, the key dependent variables (CSR Index, CSD, CED, and ECOD) demonstrated approximate normal distributions as confirmed by non-significant Jarque-Bera statistics ($p>0.05$).

Correlation Analysis

Correlation analysis is conducted to examine the pairwise linear relationships between the study variables and to preliminarily assess the direction and strength of association between sustainability auditing and the CSR proxies, as well as to detect potential multicollinearity

among the explanatory variables. Table 4.2 presents the Pearson correlation matrix for all study variables.

Table 3. Pearson Correlation Matrix

Variable	CSD	CED	ECOD	CSR Index	SA	FSIZE	ROA	LEV
CSD	1.000	0.944	0.972	0.989	0.653	0.702	-0.240	0.293
CED	0.944	1.000	0.936	0.976	0.686	0.644	-0.285	0.330
ECOD	0.972	0.936	1.000	0.986	0.655	0.703	-0.281	0.310
CSR Index	0.989	0.976	0.986	1.000	0.675	0.695	-0.273	0.316
SA	0.653	0.686	0.655	0.675	1.000	0.474	-0.357	0.467
FSIZE	0.702	0.644	0.703	0.695	0.474	1.000	-0.277	0.463
ROA	-0.240	-0.285	-0.281	-0.273	-0.357	-0.277	1.000	-0.741
LEV	0.293	0.330	0.310	0.316	0.467	0.463	-0.741	1.000

Note: Correlation significant at 0.01 level (2-tailed); Correlation significant at 0.05 level (2-tailed).

Source: Authors' Compilation (2026)

The Pearson correlation analysis demonstrates strong, positive, and statistically significant relationships ($r>0.90$, $p<0.01$) among all three CSR sub-dimensions, confirming that firms perform consistently across social, environmental, and economic domains. Critically, Sustainability Auditing (SA) shows a strong positive correlation with all CSR metrics ($p<0.01$), exhibiting its highest correlation with environmental disclosure ($r=0.686$), which indicates that audit discipline enhances environmental transparency most. Firm Size also correlates positively with all CSR dimensions ($p<0.01$), supporting theoretical expectations that larger firms disclose more due to higher visibility and resources. Conversely, Return on Assets (ROA) exhibits a significant negative correlation with CSR disclosures, reflecting a focus on short-term profitability over voluntary sustainability investments in Nigeria. Although a strong negative correlation exists between ROA and Leverage ($r=-0.741$), it remains below the 0.80 multicollinearity threshold, justifying the retention of both control variables. Overall, these bivariate findings confirm preliminary empirical support for the study's core hypotheses before full panel regression estimation.4.4 Diagnostic Tests

Regression Analysis

Given the outcomes of the diagnostic tests, the final regression results are based on the Fixed Effects model with Cross-Section SUR (PCSE) standard errors, which simultaneously controls for unobserved firm-specific heterogeneity, corrects for cross-section heteroskedasticity, and accounts for contemporaneous cross-section correlation. Four models are estimated: Model 1 (Aggregate CSR Index), Model 2 (Corporate Social Disclosure – CSD), Model 3 (Corporate Environmental Disclosure, CED), and Model 4 (Corporate Economic Disclosure – ECOD). Table 4.6 presents the consolidated regression results.

Table 4. Fixed Effects Regression Results with PCSE Standard Errors

Variable	Model 1 (CSR Index)	Model 2 (CSD)	Model 3 (CED)	Model 4 (ECOD)
SA	0.0061 (0.9236) [0.3583]	0.0587 (0.6883) [0.4931]	0.0847 (0.7027) [0.4842]	0.0388 (0.4206) [0.6751]
FSIZE	0.1361 (18.2360) [0.0000]	1.4474 (16.4999) [0.0000]	1.2358 (14.1193) [0.0000]	1.3986 (13.7777) [0.0000]
LEV	-0.2145 (-1.6074) [0.1116]	-2.3031 (-1.4362) [0.1546]	-1.4780 (-0.8079) [0.4214]	-2.6535 (-1.6688) [0.0988]
ROA	0.0005 (0.0085) [0.9932]	0.3512 (0.4502) [0.6537]	0.3186 (0.3266) [0.7447]	-0.6522 (-0.6461) [0.5199]
Constant	0.0215 (0.3285) [0.7433]	0.1328 (0.1730) [0.8630]	-0.0028 (-0.0031) [0.9975]	0.5127 (0.6014) [0.5491]
R-squared	0.9669	0.9494	0.9402	0.9419
Adj. R-squared	0.9619	0.9417	0.9311	0.9331
F-statistic	193.3321	124.1030	103.9837	107.1837
Durbin-Watson	1.2859	1.8123	1.5918	1.6153

*Note: Coefficients reported with t-statistics in parentheses and p-values in square brackets. * denotes significance at 1% level. All models include cross-section fixed effects. Standard errors corrected for cross-section heteroscedasticity and contemporaneous correlation using PCSE.*
Source: Researcher's Compilation (2026)

Across all four estimated fixed-effects panel models, the econometric results demonstrate exceptional overall explanatory power ($R2>0.94$, $p<0.001$), revealing that sustainability auditing (SA) does not exert a statistically significant within-firm effect on the aggregate CSR Index ($p=0.3583$), Corporate Social Disclosure ($p=0.4931$), Corporate Environmental Disclosure ($p=0.4842$), or Corporate Economic Disclosure ($p=0.6751$). Although strong cross-sectional bivariate correlations were initially observed, controlling for unobserved, time-invariant firm-specific heterogeneity via fixed-effects estimation indicates that the adoption of sustainability auditing produces negligible incremental within-firm improvements across all CSR dimensions. Instead, Firm Size (FSIZE) consistently emerges as the sole dominant, highly significant predictor across every model ($p=0.0000$), affirming that disclosure volume is primarily driven by firm scale, public visibility, and resource capacity rather than the auditing process itself, while financial leverage and profitability (ROA) remain largely statistically insignificant.

Discussion of Findings

The absence of a significant within-firm effect of sustainability auditing on CSR disclosure diverges from the cross-country evidence reported by Bonsu et al. (2025), whose hierarchical regression modelling of 550 firms across high-impact industries in Nigeria and Ghana found that internal sustainability auditing accounted for 59% of the variance in environmental performance and 67% of the variance in environmental compliance. Similarly, it departs from Karaki's (2025) primary survey-based study of multinational companies in Nigeria, which found that sustainability auditing accounts for 87.6% of the variation in CSR outcomes, with an R-squared of 0.876. The key methodological difference that explains this divergence is this study's use of panel fixed-effects estimation, which controls for unobserved, time-invariant firm-specific characteristics and approach that neither Bonsu et al. (2025) nor Karaki (2025) employed. In cross-sectional or pooled analyses, firms that engage in sustainability auditing also tend to be intrinsically more committed to CSR, larger, and more internationally oriented characteristics that are independently associated with higher CSR disclosure. When these firm-level confounders are absorbed by the fixed effects, the incremental contribution of sustainability auditing to within-firm CSR improvements is substantially reduced, revealing that much of the apparent cross-sectional association is spurious.

The finding that environmental disclosure (CED) is the weakest CSR dimension, with the lowest mean score (5.62 out of 10), is consistent with Alabi (2024), who found that firms in environmentally sensitive Nigerian industries disclose maximum information on basic energy use but provide minimal details on effluents, biodiversity, and long-term environmental sustainability. It also aligns with Nwobu (2021), who found that only 35% of sampled Nigerian manufacturing and oil-and-gas firms disclosed meaningful environmental information. This persistent weakness in environmental transparency, even among firms that engage in sustainability auditing, suggests that the quality and depth of sustainability auditing practices in Nigeria may not yet be sufficiently rigorous to drive meaningful improvements in environmental disclosure a concern echoed by Erin, Adegboye, and Bamigboye (2021), who noted that the credibility and quality of sustainability reports in Nigeria are significantly hampered by weak governance structures and inadequate assurance mechanisms.

The result is further contextualised by the cross-section dependence test, which confirmed that all sampled firms are exposed to common macroeconomic and sector-wide shocks. In this environment, the variation in CSR disclosure across firms is significantly influenced by systemic factors such as fluctuations in the exchange rate, inflationary pressures, and sector-wide NGX regulatory developments that affect all firms simultaneously and are unrelated to individual firms' sustainability auditing decisions. This is consistent with the argument of Elaigwu et al. (2024), who found that the sustainability disclosure quality of Nigerian listed firms is shaped not only by firm-level governance characteristics but also by macro-institutional factors, including regulatory frameworks and the availability of skilled sustainability reporting professionals. This interpretation is corroborated by the finding that

firm size (FSIZE) is the overwhelmingly dominant and statistically significant predictor of CSR disclosure across all four models. The positive and highly significant coefficients for FSIZE in all models are consistent with the agency theory argument that larger firms face greater external scrutiny, broader stakeholder pressures, and higher political costs, motivating more extensive CSR disclosures (Jensen & Meckling, 1976). This aligns with the findings of Nwobu (2021), who identified firm size as a significant positive determinant of environmental disclosure in Nigerian oil, gas, and manufacturing firms, and with the broader international literature reviewed in Chapter Two. The dominance of firm size over sustainability auditing in explaining CSR disclosure suggests that in the Nigerian context, structural factors particularly firm scale and resource capacity remain more powerful drivers of CSR reporting than the adoption of sustainability assurance mechanisms.

The negative and near-significant coefficient of leverage on economic disclosure in Model 4 deserves particular attention. It suggests that firms with higher debt-to-asset ratios tend to be less forthcoming in their economic disclosures, possibly because highly leveraged firms are constrained in their ability to demonstrate positive economic contributions to stakeholders, or because they prioritise financial reporting obligations to creditors over broader economic transparency. This finding is partially consistent with Nwobu (2021), who found that leverage had a negative association with environmental disclosure in Nigerian firms, and with Effiong (2022), who found that the relationship between sustainable capital reporting and financial performance among Nigerian manufacturing firms was positive but insignificant. The unexpected negative relationship between ROA and CSR disclosure though statistically insignificant in the fixed-effects models is consistent with the suggestion by Riguen Rakia (2024) that some firms may use CSR disclosure strategically to manage perceptions during periods of poor financial performance, rather than as a genuine reflection of substantive sustainability commitment. This observation aligns with legitimacy theory (Suchman, 1995), which posits that firms facing legitimacy threats including poor profitability, environmental controversies, or regulatory scrutiny may increase CSR disclosures as an impression management tool rather than as a result of authentic organizational change.

Summary and Conclusion

Summary

The study examined the effects of sustainability auditing on corporate social responsibility in ten listed consumer goods manufacturing firms on the Nigerian Exchange Group (NGX) over the period 2015 to 2024, yielding 100 firm-year observations. Using a quantitative ex-post facto panel research design and content analysis-based measurement of CSR disclosure dimensions, the study estimated four panel regression models with firm fixed effects and cross-section SUR (PCSE) standard errors, following the outcomes of the Hausman test, heteroskedasticity test, and cross-section dependence test. The findings of the study may be summarised as follows. First, descriptive analysis revealed that the sampled firms disclosed, on average, approximately 60.8% of the maximum possible CSR indicators over the study period, with corporate social disclosure (mean = 6.37/10) and corporate economic disclosure

(mean = 6.25/10) performing better than corporate environmental disclosure (mean = 5.62/10). Environmental disclosure consistently emerged as the weakest dimension of CSR, suggesting that Nigerian manufacturing firms remain particularly reluctant to provide detailed information on their carbon emissions, effluents, biodiversity impacts, and environmental compliance practices. Approximately 79% of the firm-year observations involved some form of sustainability audit or assurance, reflecting growing but not universal adoption of sustainability auditing among the sampled firms.

Second, the Pearson correlation analysis revealed statistically significant and positive bivariate associations between sustainability auditing and all three CSR dimensions (CSD: $r = 0.653$; CED: $r = 0.686$; ECOD: $r = 0.655$; CSR Index: $r = 0.675$, all $p < 0.01$), suggesting that firms which engage in sustainability auditing tend to disclose more CSR information. Firm size was also strongly and positively correlated with all CSR dimensions. The high negative correlation between ROA and LEV (-0.741) indicated potential multicollinearity between these control variables, though this was managed through the PCSE estimation approach. Third, the pre-estimation diagnostic tests confirmed the presence of cross-section heteroskedasticity (LR statistics ranging from 32.38 to 62.75, all $p < 0.01$) and significant cross-section dependence (Breusch-Pagan LM = 83.108, Pesaran CD = 3.478, all $p < 0.001$) in the panel data. The Hausman test decisively rejected the null hypothesis of no systematic difference between fixed and random effects across all four models (chi-square statistics ranging from 15.38 to 23.27, all $p < 0.01$), confirming the fixed-effects model as the appropriate estimation strategy.

Fourth, and most critically, the fixed-effects regression results with PCSE standard errors found that sustainability auditing (SA) does not exert a statistically significant effect on any of the four CSR measures the aggregate CSR Index (coefficient = 0.0061, $p = 0.3583$), Corporate Social Disclosure (coefficient = 0.0587, $p = 0.4931$), Corporate Environmental Disclosure (coefficient = 0.0847, $p = 0.4842$), or Corporate Economic Disclosure (coefficient = 0.0388, $p = 0.6751$) once firm-specific fixed effects are controlled for. Firm size is the single consistent and statistically significant determinant of CSR disclosure across all models, with large positive and highly significant coefficients (ranging from 0.1361 for the CSR Index to 1.4474 for CSD), confirming that scale, resource availability, and stakeholder visibility are the primary structural drivers of CSR reporting among Nigerian manufacturing firms. Leverage and profitability are not significant predictors in most models, though leverage approaches significance in the economic disclosure model. The central conclusion of this study is that while sustainability auditing is positively associated with higher CSR disclosure at the cross-sectional level among listed Nigerian manufacturing firms, it does not produce statistically significant within-firm improvements in corporate social, environmental, or economic disclosure once unobserved, time-invariant firm-specific characteristics are controlled for through the fixed-effects estimator. This finding implies that the apparent positive relationship between sustainability auditing and CSR disclosure identified in cross-sectional or pooled analyses and reported in several prior studies is driven largely by pre-existing structural differences between firms, particularly firm size and inherent commitment to corporate responsibility, rather than by the incremental effect of sustainability auditing adoption within individual firms over time.

Conclusion

The study further concludes that corporate environmental disclosure remains the most underdeveloped dimension of CSR among Nigerian manufacturing firms, with a mean score of 5.62 out of 10, reflecting the inadequate depth and quality of environmental transparency even among firms that engage in some form of sustainability auditing. This finding underscores the conclusion that the current state of sustainability auditing in Nigeria's manufacturing sector is insufficiently rigorous or institutionalised to drive meaningful within-firm improvements in environmental accountability. The absence of mandatory sustainability assurance requirements, the lack of standardised auditing frameworks tailored to the Nigerian context, and the limited availability of qualified sustainability auditors collectively constrain the transformative potential of sustainability auditing as a mechanism for enhancing authentic CSR performance. The conclusion is further reinforced by the dominance of firm size as the primary determinant of CSR disclosure. This structural finding suggests that policy interventions aimed at improving CSR in Nigeria's manufacturing sector must go beyond merely promoting the adoption of sustainability auditing. They must also address the fundamental asymmetries in resources, capacity, and incentives between large and small listed firms, and must create a regulatory environment in which sustainability auditing is not merely adopted symbolically but implemented with sufficient depth and independence to produce verifiable improvements in CSR performance.

Recommendations

Current voluntary arrangements show no detectable incremental association; therefore policymakers may consider stronger standardisation, independence, assurance quality requirements and enforcement, while future research evaluates whether such reforms actually improve disclosure.

Contribution to Knowledge

This study has advanced empirical literature by evaluating the within-firm effect of sustainability auditing on disaggregated CSR dimensions using panel fixed-effects estimation with PCSE, providing a methodologically superior alternative to prior cross-sectional studies in Nigeria. Theoretically, it reveals that firm size rather than sustainability auditing is the primary structural driver of CSR transparency, demonstrating that stakeholder and legitimacy pressures operate mainly through firm scale in emerging economies. Empirically, it provides a novel, sector-specific benchmark for Nigeria’s consumer goods industry, identifying environmental disclosure as the most deficient dimension requiring prioritized regulatory intervention. Methodologically, it establishes the necessity of controlling for unobserved firm heterogeneity and cross-section dependence resulting from macro-environmental shocks when modelling corporate sustainability behaviour. Overall, the findings reframe cross-sectional evidence on sustainability assurance by proving that voluntary auditing without institutional mandates yields largely symbolic rather than substantive accountability gains.

Limitations of the Study

Although the study is surrounded to provide focused and practicable research, certain limitations are admitted. The study's focus on listed manufacturing firms means that findings may not be generalizable to unlisted manufacturing firms or firms in other sectors. The reliance on secondary data from corporate reports assumes that firms fully disclose their CSR practices and sustainability auditing activities, which may not always be the case. The study's focus on disclosure as a measure of CSR may not capture actual sustainability performance, as there can be discrepancies between what firms report and what they actually do. Finally, the temporal scope, while enabling longitudinal analysis, may not capture the full evolution of sustainability auditing and CSR practices given the dynamic nature of these fields.

References

Abam, F. I., Inah, O. I., & Nwankwojike, B. N. (2024). Impact of asset intensity and other energy-associated CO2 emissions drivers in the Nigerian manufacturing sector: A firm-level decomposition (LMDI) analysis. Heliyon, *10*(7), e28197. https://doi.org/10.1016/

Aguguom, T. A. (2024). Environmental disclosure and sustainability reporting practice of listed manufacturing companies in Nigeria. *FUOYE Journal of Accounting and Management*. https://fjam.fuoye.edu.ng/index.php/fjam/article/view/194

Alabi, A. T. (2024). Corporate environmental reporting: Do firms operating in environmentally sensitive industries in Nigeria disclose enough? *Sustinere Journal of Environmental Studies*. https://sustinerejes.com/index.php/a/article/view/413

Almashhadani, M., & Almashhadani, H. A. (2023). The impact of audit committee characteristics on corporate social responsibility. *International Journal of Scientific and Management Research, 6*(9), 93–108. https://doi.org/10.37502/IJSMR.2023.6907

Bonsu, M. O. A., Wang, Y., Eghe-Ikhurhe, G., & Hyslop, K. (2025). Does sustainability auditing lead to enhanced corporate governance, environmental performance, and financial outcomes? Empirical evidence from high-impact industries. *Business Strategy and the Environment*. https://doi.org/10.1002/bse.70503

Bonsu, M. O., Guo, Y., Wang, J., & Li, Z. (2026). Sustainability auditing and its impact on corporate governance and financial performance: A comparative study of Ghana and Nigeria. *Journal of Sustainable Finance & Investment*, 16(2), 112-134.

Buallay, A. (2020). Sustainability reporting and firm performance. *International Journal of Productivity and Performance Management*.

Carroll, A. B. (2021). Corporate social responsibility: Perspectives on the CSR construct. *Business & Society*.
e/view/118

Effiong, I. H. (2022). Sustainable Capital Reporting and Financial Performance of Quoted Manufacturing Firms in Nigeria. *Journal of Finance and Accounting*, *10*(1), 33-48.

Elaigwu, M., Ugwu, J. I., Alghorbany, A., Ngwoke, O. M., Ude, A. O., Desmond, O. C., & Audu, P. (2024). Sustainability disclosure quality of Nigerian listed firms: The role of

female leadership, board communication, and external assurance. *Cogent Business & management, 11*(1), Article 2376774. https://doi.org/10.1080/23311975.2024.2376774

Erin, O., Adegboye, A., & Bamigboye, O. A. (2021). Corporate governance and sustainability reporting quality: evidence from Nigeria. *Sustainability Accounting, Management and* Policy *Journal*, 13(3), 680-707. https://doi.org/10.1108/SAMPJ-02-2021-0060

Evans, J. (2025). ESG audit: Concepts, global perspectives and emerging trends. *Chartered Secretary Journal*, July 2025. https://www.icsi.edu/media/webmodules/CSJ/July-2025/16.pdf

Fatemi, A., Glaum, M., & Kaiser, S. (2021). ESG performance and firm value. *Global Finance Journal*.

Gorovaia, N. (2025). Identifying greenwashing in corporate-social responsibility reports. *European Financial Management*. https://doi.org/10.1111/eufm.12509

Hariyani, D. (2025). A review of the structured framework for sustainability audits in manufacturing. Sustainable Futures. https://doi.org/10.1016/j.sftr.2025.100041.

Hazaea, S. A., Zhu, J., Khatib, S. F. A., & Elamer, A. A. (2021). Sustainability assurance practices: A systematic review and future research agenda. *Environmental Science and Pollution Research, 29*, 4843–4864. https://doi.org/10.1007/s11356-021-17359-9
j.heliyon.2024.e28197.

Janik, A. (2025). Greenwashing in sustainability reporting: A systematic literature review. *Sustainability, 18*(1), Article 17. https://doi.org/10.3390/su18010017

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, *3*(4), 305-360.

Karaki, O. O. (2025). *Evaluating Corporate Social Responsibility through Sustainability Audit in Nigeria*. Elizade University, Ilara-Mokin, Ondo State.

Kasmanhuber, A. (2023). *Credibility of CSR Reports, Auditing and Corporate Governance* (Doctoral Thesis). University of Graz.

Khan, H., Bibi, H., & Lyu, J. (2021). Corporate social responsibility and firm performance. *Corporate Social Responsibility and Environmental Management*.

Maqbool, S., & Zameer, M. N. (2021). Corporate social responsibility and financial performance. *Future Business Journal*.

Nwekwo, J., Okoro, E. A., & Eze, P. O. (2025). Sustainability disclosure and profitability of listed manufacturing firms in Nigeria. *International Journal of Research and Innovation in Social Sciences, 9*(4), 5755-5763. https://doi.org/10.47772/IJRISS.2025. 9406.

Nwobu, O. (2021). Determinants of environmental accounting disclosure in the oil and gas and manufacturing sectors in Nigeria. *Journal of Accounting and Taxation*, *13*(2), 112-125.

Obasan, O. T. (2025). Corporate social responsibilities and sustainability of listed manufacturing firms in Nigeria FIM Journal. https://fimjournal.co/index.php/fimj/artic

Okoye, J. N., Adetoso, J. A., & Ejem, C. A. (2021). Effect of corporate economic responsibility on financial performance of listed manufacturing firms in Nigeria. *International Journal of Accounting and Finance*, *8*(3), 45-58.

Orazalin, N., & Mahmood, M. (2021). Economic, environmental, and social performance indicators. *Journal of Cleaner Production*.

Oware, K. M., & Mallikarjunappa, T. (2022). Corporate social responsibility disclosure and financial performance of manufacturing firms in India. *Journal of Financial Reporting and Accounting*, *20*(3), 456-478.

Rahman, M. M., & Masum, M. H. (2021). Extent of Corporate Social Responsibility Disclosure: Evidence from Bangladesh. *Korean Journal of Accounting Research*, 26(2), 1-28.

Riguen R. R. (2024). Board gender diversity, CSR disclosure, and audit quality: Evidence from European listed companies. *Journal of Business Ethics and Corporate Governance*, 12(1), 22-40.

Sneideriene, A. (2025). Greenwashing prevention in environmental, social, and governance disclosures. *Journal of International Financial Markets, Institutions & Money*. https://doi.org/10.1016/j.intfin.2024.102XXX

Suchman, M. C. (1995). Managing Legitimacy: Strategic and Institutional Approaches. *Academy of Management Review*, *20*(3), 571-610.

Ubandawaki, A. (2024). ESG reporting and firm performance: A case of listed manufacturing firms in Nigeria [Master's thesis]. American University in Cairo. https://fount.aucegypt.edu/cgi/viewcontent.cgi?article=3269&context=etds

Yahaya, O. A., & Yusuf, M. J. (2020). Ethical Behavioural Disclosure and Financial Performance of Listed Industrial Goods Firms in Nigeria. *Sustainable Business and Society in Emerging Economies*, *2*(2), 13-20. https://doi.org/10.26710/sbsee.v2i2.1289

Zhang, L., Liu, Q., & Wang, Y. (2022). Environmental disclosure and firm value. *Business Strategy and the Environment*.