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IMPACT ENVIRONMENTAL ACCOUNTING DISCLOSURE ON THE FINANCIAL PERFORMANCE OF LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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Abstract

The study examined the impact of environmental accounting disclosure on the financial performance of listed industrial goods firms in Nigeria. The study used environmental accounting disclosure as independent variable while return on asset as proxy for financial performance as dependent variable. Population of the study covers the 13 listed industrial goods firms in Nigeria Exchange Group (NGX) with data sourced secondarily from financial statements and for a period of 10 years between 2015 to 2024. The findings of the study showed that environmental prevention disclosure and environmental detection disclosure were significant but not positive on financial performance. However, environmental internal failure disclosure and environmental external disclosure had positive and significant relationships with financial performance of listed industrial goods firms in Nigeria. Therefore, the study concluded that environmental accounting disclosures have varying impact on the financial performance. The study recommended that listed industrial goods firms in Nigeria should invest in effective waste management and contamination control systems.

Keywords: environmental accounting disclosure, financial performance, listed industrial goods firms, Nigeria

1. Introduction

Firms use financial performance as a decision-making tool to establish strengths and weakness and ensure preparedness for future performance. Financial performance is a complete evaluation of a firm's overall standing in categories such as assets, liabilities, equity, expenses, revenue, and overall profitability. It is measured through various business-related formulas that allow users to calculate exact details regarding a company's potential effectiveness (Corporate Financial Institute, 2022).

According to Lenglet (2023), financial performance entails the ability of a firm to make a profit and increase the shareholders' value over time. That is, how well a firm manages available resources to achieve financial objectives. Similarly, Farrukh and Faizan (2016) see financial performance as the level at which the financial health of a firm is measured over time.

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Environmental accounting disclosure (EAD) has emerged as a vital research area linking traditional accounting with environmental preservation, as firms' economic activities, particularly in industrial goods often result in pollution and environmental degradation. It provides a means of measuring, reporting, and allocating environmental costs to ensure accountability and compensation for ecological impacts.

According to Ilelaboye and Alade (2022), EAD identifies and measures environmental activity costs to aid management decisions aimed at mitigating negative effects, while Hansen and Mowen (2000) describe it as encompassing the creation, detection, remediation, and prevention of environmental damage. These costs arise from efforts to protect the environment, comply with regulations, and prevent potential breaches of environmental laws and policies.

According to Getzler and Mathers (2022) as cited in Tennakoon et al. (2024), noted that environmental sustainability is multidimensional, encompassing ecological, economic, and social considerations, with energy efficiency serving as a key metric due to its link to greenhouse gas emissions (Feng et al., 2022). EAD also represents the communication of financial and non-financial environmental information to stakeholders, covering impacts, expenditures, liabilities, and performance metrics that demonstrate a company's sustainability commitment (Gray et al., 2014; Uwuigbe & Jimoh, 2012; IFAC, 2005).

Beyond compliance, environmental disclosure influences investor perception, market value, and legitimacy, serving as a strategic tool to foster customer loyalty, regulatory goodwill, and competitive advantage. Evidence shows that firms with superior disclosure practices enjoy better profitability, reputation, and risk management, making sustainability not only an ethical duty but also a value driver (Deegan & Gordon, 1996; Berthelot et al., 2003; Clarkson et al., 2008; Oba & Fodio, 2013; López et al., 2007).

For analytical purposes, Hansen and Mowen (2000) classify EAD into four categories: prevention, detection, internal failure, and external failure disclosures. Prevention disclosures, for example, cover proactive measures such as supplier evaluation, pollution control, eco-friendly process design, employee training, risk audits, environmental research, recycling, and certification, all of which underscore firms' commitment to reducing environmental harm.

The poor financial performance of Nigerian companies, particularly in the industrial goods sector, has posed significant challenges to investor returns and dividend payments, with about 50% of listed firms on the Nigerian Exchange Group (NGX) failing to pay dividends due to weak performance (Bello, 2018; Kantudu & Ilu, 2020). Dividend payment remains vital to investors as it signals financial health (Luvembe et al., 2014), yet the sector shrank from 17 firms in 2016 to 13 by 2020 (NGX Report, 2016 & 2020). A recent finding such as Reuters (2024) revealed that failure to timely adopt and disclose environmental risks between 2015 and 2023 eroded investor trust, weakened market valuations, discouraged ESG-conscious investors, and reduced capital inflows.

Studies by Abdullahi and Mohammad (2023) and Omeh et al. (2025) further indicate that environmental costs such as cleanup, waste management, and remediation—significantly influence financial performance, with some improving accounting returns (ROA) but reducing market valuations (Tobin's Q). Consistently, NGX (2023) reports between 2010 to 2020 revealed that poor environmental compliance disclosures reduced

profitability through negative impacts on return on assets and where empirical data from firms such as Wapco, Avon Crown, and Austin Laz highlighted negative earnings per share, price-earnings ratios, and profit margins, underscoring widespread financial underperformance.

The Global Reporting Index (2021) notes that Nigeria invests only about $1.9 billion annually in environmental initiatives against a required $17.7 billion, leaving a huge financing gap that stifles industrial productivity and growth. Consequently, poor sustainability disclosure and inadequate environmental investment continue to undermine corporate financial performance, raising urgent concerns on how listed industrial goods firms in Nigeria can standardize environmental accounting disclosure to strengthen accountability, attract ESG investment, and enhance long-term financial outcomes (Millar & Slack, 2024).

This study is motivated by the urgent need to understand how environmental accounting disclosure influences the financial performance of listed industrial goods firms in Nigeria, as the sector continues to grapple with poor profitability, investor distrust, and weak sustainability practices. By examining the link between environmental disclosure and financial outcomes, the study seeks to provide evidence that transparent reporting not only strengthens accountability and regulatory compliance but also enhances long-term value creation, investor confidence, and competitiveness in a rapidly evolving global business environment.

In light of the foregoing, research questions raised to guide the study are as follows:

(i) Does Environmental prevention disclosure have an impact on the financial performance of industrial goods firms in Nigeria?
(ii) Does Environmental detection disclosure have an impact on the financial performance of listed Industrial goods firms in Nigeria?
(iii) What is the impact of environmental internal failure disclosure on the financial performance of listed Industria goods firms in Nigeria?
(iv) Does Environmental external failure disclosure impact the financial performance of listed Industrial goods firms in Nigeria?

The main objective of this study is to assess the impact of environmental accounting Disclosure on financial performance of listed industrial goods in Nigeria. The Specific objectives are to:

(i) Evaluate the impact of environmental prevention disclosure on financial performance of listed industrial goods firms in Nigeria;
(ii) Examine the impact of environmental detection disclosure on financial performance of listed industrial goods firms in Nigeria;
(iii) Determine the impact of environmental internal failure disclosure on financial performance of listed industrial goods firms in Nigeria;
(iv) Ascertain the impact of environmental external failure disclosure on financial performance of listed industrial goods firms in Nigeria;

Based on the objectives of the study, the following null hypotheses are formulated to serve as a guide to hypothesis testing of the study.

H_{01}: Environmental prevention disclosure has no significant impact on financial performance of listed industrial goods firms in Nigeria;

H_{02}: Environmental detection disclosure has no significant impact on financial performance of listed industrial goods firms in Nigeria;

H_{03}: Environmental internal failure disclosure has no significant impact on financial performance of listed industrial goods firms in Nigeria;

H_{04}: Environmental external failure disclosure has no significant impact on financial performance of listed industrial goods firms in Nigeria.

2. Literature Review

Conceptual framework

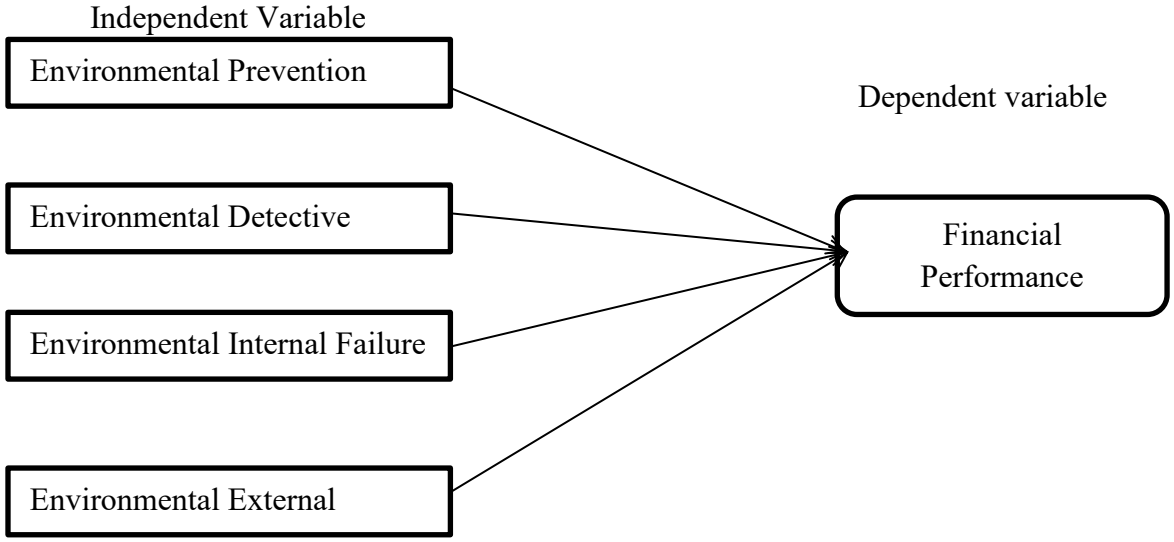


Figure 1

Source: Author's Compilation (2025)

Conceptually, the variables of financial performance and environmental accounting disclosures were defined. Financial Performance can simply be defined as the firm's ability to generate earnings by the efficient and effective utilization of available resources over a given period. It reflects the financial condition and achievement of a firm for a certain period of time (Haryono & Iskandar, 2015). Financial performance is a composite of the firm's financial health and the process of measuring the results and achievements of an organisation's operations in monetary terms.

According to Orlitzky et al. (2003), financial performance has been basically measured in three forms: the accounting measurement which expresses an idea of the organisation's internal efficiency; market measurement which reveals the degree of shareholders' satisfaction; and survey measurements which reflects a kind of subjective estimation of the organization's financial performance. There are two main categories of financial performance measures. The first category of measures is accounting based measure while the second category is the market-based measure. A company with strong financial performance can attract investors, secure funding, and reinvest in its operations for future growth, while a company with weak performance may struggle to meet financial obligations, invest in new opportunities, and maintain its competitive edge (Williams, 2019).

Environmental accounting Disclosure is used to identify the benefits of enterprises gained as a result of the use of the assets already present in nature and the costs occurred as a result of this usage (Bengü & Can, 2009). Environmental accounting disclosure, which is also known as "green accounting" entails the recording of impacts that arise as a result of the manner of use of environmental resources either positively or both economic data and environmental data under the same roof by determining the value of environmental resources within a macroeconomic point of view (Alagöz & Yılmaz, 2001. Soylu & İleri, 2009. Memiş, 2009; Aymaz, 2009. Taşdemir, 2011.; Akcanlı, 2010). From the micro-economic point of view, environmental disclosure ensures environment to be considered in the accounting system by giving it a fiscal nature (Kırlıoğlu and Can, 1998 Eray, 2011).

Considering the investigation of environmental disclosure in macro level, it has been aimed to determine the use of natural resources and take necessary measures to prevent the destruction of these resources so we can use them in the future (Akcanlı, 2010). The investigation of environmental Disclosure in micro level, reductions in natural resources should be evaluated in addition to taking them into account during domestic income calculations (Güney, 2005). Any activity conducted by enterprises in their environments leads to the emergence of environmental accounting disclosure.

Some of the environmental accounting disclosure arise as a result of actions taken to protect the environment and occur as a result of the use of environmental resources. Another part of this disclosure arises due to environmental pollution caused by these companies. Environmental accounting disclosure can be divided into three different groups as follows: reduction disclosure, operating disclosure and damage disclosure (Kırlıoğlu & Can, 1998; Otlu & Kaya, 2010; Gül, 2005; Aslan, 1995; Lutz & Munasingle, 1991, Çalış, 2013).

Environmental prevention disclosure could be defined as conservation, prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities. The environmental impacts are the burden on the environment from business operations or other human activities and potential obstacles which may hinder the preservation of a favorable environment (UN2002). Uncovering and recognizing environmental disclosure associated with a product process, system, or facilitating important decisions for good management. Disclosure incurred to comply with environmental laws are clearly environmental saving costs and costs of environmental saving, pollution control equipment, and non-compliance penalties are all unquestionably environmental prevention disclosure (Eisner, 2004).

Environmental prevention or conservation disclosure refer to the disclosure of expenses incurred by a company in order to mitigate the negative effects of its environmental activities (Mukah, 2021) These disclosures encompass various aspects, including pollution, waste disposal, drainage, regulatory compliance, and other expenses that aim to prevent or minimize environmental impacts resulting from the company's operations (Abubakar, et al., 2022).

Environmental detection disclosure described as activity carried out to ensure that the organisation complies with regulations and voluntary standards. Environmental detection disclosure reduced the negative environmental externalities of production. However, the economic benefits of pollution or waste reduction to the investing firm may not be easily observable and can thus be underestimated by managers (Hart, 1995; King &

Lenox, 2002). Yet, environmental detection disclosure can create competitive advantage and improve economic performance.

The production costs may decrease due to lower material and energy costs as environmental detections disclosure can lead to an improvement in the efficiency of resource use (Barbieri et al., 2016; Dechezleprêtre et al., 2019). Detection may also lower the cost of complying with regulation and help to reduce capital costs or costs of risk management (Ambec & Lanoie, 2008; Dechezleprêtre et al., 2019). The positive implications of pollution abatement on worker productivity and firm profitability are also recognized (Pang, 2018).

Environmental detection disclosure is defined as an investment approach that integrates long-term environmental, social, and governance (ESG) criteria into investment and ownership decision-making with the objective of generating superior risk-adjusted financial returns, Environmental detection disclosure are disclosure resulting from activities to determine if products, processes and other activities within the company are in compliance with appropriate environmental standards. The disclosure includes auditing environmental activities, inspecting products and processes, developing environmental performance measures, testing contamination and measuring contamination level (Basseyet al., 2013).

Environmental internal failure disclosure are the disclosure and costs incurred within a company to address problems arising from negative sustainability-related events before contaminants or waste are released into the environment, such as treating toxic waste or maintaining pollution equipment. It is also referred to as disclosure and costs incurred from performing activities that have produced contaminants and waste that have not been discharged into the environment.

Internal failure disclosure are disclosure and costs incurred by a business to address problems that arise within the company, resulting from negative sustainability related events affecting any company resource (people, materials, processes). These disclosure of costs may include the disclosure of cost to fix technologies or care for employees owing to environmental incidents that may have occurred. Internal environmental failure costs are all costs incurred within an organization to avert or reduce the effects of business activities on the immediate environment, which is primarily concerned with employees' health and safety.

Internal environmental costs are classified into three categories which are direct, indirect, and contingent. Direct expenses include things like recovery and repair, waste management, and other expenditures related to safety and environmental management. Internal failure costs are typically calculated and distributed using common costing models applicable to the company. Direct costs, such as waste disposal or remediation costs at a specific location, can be attributed to a specific product, operation and form of pollution or pollution control program. Indirect costs like environmental education, research and development, employee’s health and safety, data collection and monitoring are assigned to cost centres like goods, offices and activities or projects. (Akinyele, 2022).

Environmental external failure disclosure is disclosure on activities performed after discharging waste into the environment. Environmental external failure disclosure are the activities by a company if it discharges waste into the environment. Examples include the

costs of cleaning up oil spills or cleaning a polluted river. A company may also incur fines or other penalties or lose sales if it acquires a poor environmental reputation. The method of reporting and expressing a monetary value of externalities allows one to estimate the environmental external failure disclosure.

The external failure disclosure includes, for example is the disclosure of cost of disposing of the product at the end-of-life cycle, in addition to the environmental degradation caused by the emissions, pollutants and waste from production. Another group of external disclosure comprises the disclosure of cost of health care due to the problems caused by harmful materials and ingredients (Ewelina et al., 2019). Environmental external failure disclosure is the reporting of cost which is paid mostly by the society through taxes, accident compensation, medical payments, insurance payments and also through losses in the environmental quality and natural capital. External failure disclosure appears when a company's economic, social, environmental activities have an impact on one or more different entities that is not fully recognized or compensated for by the generated entity (Dascălu et al., 2010).

Empirically, studies on environmental accounting disclosure proxies and financial performance were reviewed. Odesa et al. (2016) examined the impact of environmental prevention disclosure on business performance. He analyses a few Nigerian manufacturing and oil and gas industries. Data was for the period 2010 to 2014. After a regression analysis, it was demonstrated that there is a positive and substantial relationship between environmental prevention disclosure, corporate social responsibility, employee health and safety costs, waste management, and firm performance. In order to improve their corporate reputation and preserve positive relationships with their host communities, the report advises businesses to make more investments in the development of these communities. The data used for the research is not within the period scope of the current study.

Enekwe et al., (2023) examine the effect of environmental detection disclosure on the financial performance of listed oil and gas companies in Nigeria. The ex-post facto research design was employed for the collection of financial statements of four listed oil and gas companies in Nigeria for ten years from 2010 to 2019. The purposive sampling technique was used for the study. The Panel Ordinary Least Square of the multiple regression model was conducted using the E-views version 9.0 statistical software package. The findings revealed that staff development costs have a negative but insignificant effect on listed Nigerian oil and gas companies' return on assets, while community development costs and environmental detection disclosure have a positive but insignificant effect.

This implies that the amounts of these costs incurred by the studied companies are too small to have an impact on their performance metrics. However, studies are based on the quantity of information provided by a small number of companies, and as a result, these studies may be influenced by the costs that these companies incur as well as the extent to which they report those costs. The study is limited to only the oil and gas sector and some specific environmental cost variables. The utilization of environmental cost variables and the use of financial performance. The contribution of this study will be to help create a well-articulated employee health and safety cost detection cost system to provide the conflict-free working environment that managers and employees need for maximum productivity.

Asuquo (2012) analysed the financial implications of environmental internal regulations on the operation of a few significant oil businesses in Nigeria's Niger Delta

area. The least square regression approach was used to evaluate the data for this study, which came from both primary and secondary sources. Firms' competitiveness and environmental internal regulations were independent variables while profitability captured corporate performance. Environmental internal regulations, firm competitiveness, and firm profitability were discovered to be closely associated in the research study. Furthermore, environmental internal regulations on businesses that provide appropriate environmental information gain a competitive edge, high quality, and lower long-term environmental costs. As a result, the study recommends that businesses should design and execute environmental internal policies, as well as embrace standardized environmental reporting and disclosure standards, with the aim to improve their competitiveness and corporate performance.

Etale, and Otuya (2018) studied Environmental external Responsibility Reporting and Financial Performance of Quoted Oil and Gas Companies in Nigeria. This study examined the relationship between environmental external responsibility reporting and financial performance of quoted oil and gas companies in Nigeria. The study used secondary data obtained from the annual reports of 13 oil and gas companies quoted on the floor of the Nigeria Stock Exchange (NSE) for the years 2012- 2017. The study adopted the ordinary least square (OLS) regression method as the basic technique of data analysis. The study found significant positive relationship between financial performance and environmental external responsibility reporting in the oil and gas sector of Nigeria.

The findings of Musa et al. (2015) that studied Environmental external cost Accounting Disclosure Practice of Nigerian Quoted Firms: A study of selected quoted consumer goods companies in Nigeria with a sample of 8 quoted companies out of 19 consumer goods companies listed on the Nigerian Stock Exchange. Using one way analysis variance, it was discovered that accounting standards do not significantly influence environmental external cost accounting disclosures, the non-existence of the standard leads to lack of uniformity in disclosure and variations obtained in testing the hypothesis. It is recommended that with pressures, companies are likely to disclose every information about their operations, it would also be proper if the international accounting standards setting body comes up with a uniform standard on how companies should disclose their environmental external cost accounting information.

Theoretically, isomorphism and institutional theories that explain financial performance and environmental accounting disclosures were reviewed. Maggio & Powell (1983) considered theory of isomorphism as the concept that best describes the homogenization process. The authors believed that the organization's characteristics will be changed to match the features of the environment. The institutional theory of isomorphism deals with three elements: coercive isomorphism, simulated isomorphism, and normative isomorphism.

The legal and regulatory agencies are primary determinant of EAD adoption. Enterprises may face the pressure of institutional pressure, and they must apply EAD to satisfy the expectations and requirements of stakeholders, especially those with strong influence, such as regulators or owners; even coercive pressures come from customers, investors, competitors, etc. Environmental accounting disclosure serves as a mediating mechanism that links institutional pressures to financial performance.

Coercive, normative, and mimetic forces encourage firms to disclose environmental information, and such disclosure strengthens legitimacy, reduces uncertainty, and builds stakeholder trust (Fernando & Lawrence, 2014). These benefits translate into improved financial performance through enhanced reputation, reduced costs of compliance and capital, and increased competitive advantage (Cormier & Magnan, 2015).

Institutional theory, particularly the concept of isomorphism, underpins the relationship between EAD and financial performance. Firms disclose environmental information not solely for internal efficiency but largely in response to institutional pressures that promote legitimacy and survival. By complying with coercive regulations, adhering to normative standards, and imitating industry leaders, organizations strengthen stakeholder's confidence and mitigate risks, which can enhance their financial performance. This theoretical framework highlights the essence of institutional environments in shaping corporate sustainability practices and provides a robust foundation

3. Methodology

This study adopts a correlational research design to assess the extent to which environmental accounting disclosures influence financial performance, using a deductive quantitative approach under the positivist philosophy, as it allows statistical testing of relationships between variables. The population as shown in table 1 comprises the 13 listed industrial goods firms on the Nigerian Exchange Group as of 31st December 2023, with criteria sampling applied to exclude firms lacking complete financial statements within 2014–2023. Secondary data will be extracted from audited annual reports of selected firms to measure environmental prevention disclosure (EPPD), environmental detection disclosure (EDD), environmental internal failure disclosure (EIFD), environmental external failure disclosure (EEFD), and financial performance proxied by Return on Assets (ROA).

Data were collected through content analysis of annual reports, while descriptive statistics will summarize variable distributions, and correlation and multiple regression analyses will test the hypothesized roelationships. The dependent variable, ROA, is measured as profit before tax divided by total assets (Kantudu & Ilu, 2020; Dachomo et al., 2020), while the independent variables are coded dichotomously: EPPD (waste and pollutant reduction at source), EDD (compliance monitoring), EIFD (internal waste management), and EEFD (post-discharge remediation), with disclosure scored as 1 and non-disclosure as 0, consistent with prior studies (Okere et al., 2022; Amalahu, 2018; Babieri, 2016; Akinyele, 2022; Leanne & Rina, 2020).

Table 1

Listed Industrial Goods Firms in Nigeria

S/N	Company Name	Year Listed	Year Incorporated	Remarks
1	Austin Laz & Company Plc	2012	1982	Selected
2	Berger Paints Plc	1973	1959	Selected
3	Beta Glass Plc	1986	1974	Selected
4	BUA Cement Plc	2020	2014	selected
5	CAP Plc	1979	1965	Selected
6	Cutix Plc	1987	1982	Selected
7	Dangote Cement Plc	2010	1992	Selected
8	Greif Nigeria Plc	1978	1940	Selected
9	Lafarge Africa Plc	1979	1959	Selected
10	Portland Paints & Products Nigeria Plc	1979	1985	selected
11	Meyer Plc	1979	1960	Selected
12	Notore Chemical Industries Plc	2018	2005	selected
13	Tripple Gee & Company Plc	1991	1980	Selected

SOURCE: Nigerian Exchange Group Website, 2025.

4. Result and Discussion

Descriptive Statistics

The descriptive statistics provide an overview of the financial performance and environmental accounting disclosure practices of listed industrial goods firms in Nigeria.

Table 2

Descriptive Result

Variable	Obs	Mean	Std. Dev.	Minimum	Maximum
ROA	**120**	**0.1052**	**0.2935**	**-0.8737**	**0.9566**
EPPD	**120**	**0.6117**	**0.2937**	**0**	**1**
EDD	**120**	**0.5875**	**0.2619**	**0**	**1**
EIFD	**120**	**0.6240**	**0.2329**	**0**	**1**
EEFD	**120**	**0.6104**	**0.2840**	**0**	**1**

Source: Extract from STATA 16.0 Output file, 2025

The descriptive results in table 2 show that the average Return on Assets (ROA) for sampled industrial goods firms was 0.1052, indicating an average 10.5% return on total assets. However, the high standard deviation (0.2935) and wide range (–0.8737 to 0.9566) reflect mixed financial health across firms, with some experiencing heavy losses and others

strong profitability. For environmental accounting disclosures, firms demonstrated moderate to high practice levels, with mean disclosure rates ranging from 58% to 62%.

Environmental Prevention Disclosure (EPPD) averaged 0.6117, Environmental Detection Disclosure (EDD) 0.5875, Environmental Internal Failure Disclosure (EIFD), the highest at 0.6240 with consistent reporting, and Environmental External Failure Disclosure (EEFD) 0.6104, showing moderate variation. Overall, these findings suggest that listed industrial goods firms in Nigeria are increasingly responsive to environmental concerns, driven by regulatory expectations and stakeholder pressures, with disclosures serving as both a compliance mechanism and a strategic tool for reputation, investor confidence, and financial performance.

Correlation Matrix

Table 3

Pairwise Correlation Matrix

Variable	ROA	EPPD	EDD	EIFD	EEFD
ROA	1				
EPPD	0.1504	1			
	0.1012				
EDD	0.1580	0.1366	1		
	0.0848	0.1370			
EIFD	0.2402*	0.1024	0.1288	1	
	0.0082	0.2658	0.1608		
EEFD	0.2981*	0.0351	0.0475	0.1018	1
	0.0009	0.7032	0.6064	0.2688	

Source: Extract from STATA 16.0 Output file, 2025

The correlation analysis in table 3 shows that Return on Assets (ROA) is positively associated with all dimensions of environmental accounting disclosure, though at varying strengths. Very weak correlations exist between ROA and Environmental Pollution Prevention Disclosure (EPPD, $r = 0.1504$) as well as Environmental Detection Disclosure (EDD, $r = 0.1580$), while weak but statistically significant positive correlations are observed with Environmental Internal Failure Disclosure (EIFD, $r = 0.2402$, $p < 0.05$) and Environmental External Failure Disclosure (EEFD, $r = 0.2981$, $p < 0.01$).

These results imply that firms with stronger financial performance are more inclined to disclose activities related to internal waste management and external remediation, which directly reflect environmental accountability. The weak interrelationships among disclosure variables suggest minimal overlap, reducing concerns of multicollinearity. Overall, profitability appears more closely linked to internal and external failure disclosures than to prevention or detection practices.

Table 4

Shapiro-Wilk Test for Normal Data

Variable	Obs	W	V	Z	Prob>Z
Residuals	120	0.98524	1.421	0.787	0.21576

Source: Extract from STATA 16.0 Output file, 2025

The Shapiro–Wilk test for normality presented in table 4 shows that the residuals of the model are normally distributed. With 120 observations, the test produced a W statistic of 0.9852, a z-value of 0.787, and a corresponding probability value of 0.2158. Since the p-value is greater than the conventional 5% significance level ($p > 0.05$), the null hypothesis of normality cannot be rejected. This indicates that the residuals do not significantly deviate from a normal distribution, satisfying one of the key assumptions of regression analysis and confirming the suitability of the dataset for further inferential statistical procedures.

Table 5

Variance Inflation Factor

Variable	VIF	1/VIF
EDD	1.03	0.967030
EIFD	1.03	0.967368
EPPD	1.03	0.973619
EEFD	1.01	0.988015
Mean VIF	1.03	

Source: Extract from STATA 16.0 Output file, 2025

The multicollinearity test results presented in table 5, based on the Variance Inflation Factor (VIF), show that all the explanatory variables have VIF values ranging between 1.01 and 1.03, with a mean VIF of 1.03. According to the rule of thumb suggested by Gujarati and Porter (2009), a VIF value greater than 10 indicates serious multicollinearity, while values between 5 and 10 may suggest moderate concern.

Since all the variables in this study have VIFs close to 1, it indicates the absence of multicollinearity among the independent variables. This suggests that each environmental disclosure measure (EPPD, EDD, EIFD, and EEFD) captures distinct dimensions of environmental accounting disclosure, and none of them poses a threat to the stability or reliability of the regression estimates.

Table 6

Breusch-Pagan/ Cook-Weisberg Test for Heteroskedasticity

Chi2(1)	Prob>chi2
0.41	0.5221

Source: Extract from STATA 16.0 Output file, 2025

The Breusch–Pagan/Cook–Weisberg test for heteroskedasticity in Table 6 produced a chi-square value of 0.41 with a probability value of 0.5221. Since the p-value is greater than the 5% significance level ($p > 0.05$), we fail to reject the null hypothesis of homoskedasticity. This implies that the error terms have constant variance across observations, indicating the absence of heteroskedasticity in the model.

According to the rule of thumb highlighted by Gujarati and Porter (2009), if the p-value exceeds 0.05, the data can be assumed to be homoskedastic, whereas values below 0.05 suggest the presence of heteroskedasticity. Thus, the results confirm that the regression estimates are efficient and the associated standard errors and test statistics are valid for inference.

Table 7

Hausman Specification Test

Chi2(4)	Prob>chi2
0.20	0.9955

Source: Extract from STATA 16.0 Output file, 2025

The Hausman specification test presented in table 7 yielded a chi-square statistic of 0.20 with a probability value of 0.9955. Since the p-value is far greater than the 5% significance level ($p > 0.05$), we fail to reject the null hypothesis that the random effects model is appropriate. By rule of thumb, if the p-value is less than 0.05, the fixed effects model is preferred due to correlation between the regressors and the error term, but if it is greater than 0.05, the random effects model is considered more efficient and consistent (Hausman, 1978; Gujarati & Porter, 2009). Therefore, the result indicates that the random effects estimator is the suitable model for analyzing the relationship between environmental accounting disclosure and financial performance of listed industrial goods firms in Nigeria.

Table 8

Breusch and Pagan Lagrangian Multiplier Test for Ransom Effects

Estimated results:	Var	Sd = sqrt (Var)
Roa	0.0012	0.0346
E	0.0010	0.0323
U	0.0001	0.0072
Var(u) = 0		
Chibar2(01)	0.03	
Prob>chibar2	0.4349	

Source: Extract from STATA 16.0 Output file, 2025

The Breusch and Pagan Lagrangian Multiplier (LM) test for random effects presented in table 8 produced a chibar^2 value of 0.03 with a corresponding probability of 0.4349. Since the p-value is greater than the 5% significance level ($p > 0.05$), we fail to reject the null hypothesis that the variances across entities are zero, implying that there are no significant panel (random) effects.

By rule of thumb, if the probability value is less than 0.05, the random effects model is preferred over pooled OLS, but if it is greater than 0.05, the pooled OLS estimator is more appropriate (Baltagi, 2005; Gujarati & Porter, 2009). Therefore, the results indicate that pooled OLS is adequate for analyzing the impact of environmental accounting disclosure on the financial performance of listed industrial goods firms in Nigeria, as firm-specific effects do not significantly influence the outcome.

Table 9

Summary of Regression Results

ROA	Coef.	Std. Err	t	P>|Z|
EPPD	0.0075	0.0061	1.24	0.219
EDD	0.0074	0.0060	1.22	0.224
EIFD	0.0139	0.0064	2.16	0.033
EEFD	0.0192	0.0061	3.14	0.002
_cons	0.1135	0.0073	15.56	0.000
R-sq	0.1586			
F-stats	5.42			
Prob>F	0.0005			

Source: Extract from STATA 16.0 Output file, 2025

The regression results reveal mixed effects of environmental accounting disclosures on financial performance of listed industrial goods firms in Nigeria. Environmental Pollution Prevention Disclosure (EPPD) and Environmental Detection Disclosure (EDD) both show positive but statistically insignificant relationships with Return on Assets (ROA), suggesting that while such disclosures may enhance stakeholder trust and compliance transparency, they do not yield immediate financial benefits. In contrast, Environmental Internal Failure Disclosure (EIFD) demonstrates a significant positive effect, indicating that proactive management of waste and internal environmental risks contributes to efficiency gains and profitability.

Similarly, Environmental External Failure Disclosure (EEFD) exhibits the strongest and most significant positive impact, implying that transparent reporting on remediation efforts and post-discharge activities enhances reputation, stakeholder confidence, and financial outcomes. Overall, the findings suggest that while preventive and detection-related disclosures are important for legitimacy, it is the internal and external failure disclosures that provide more tangible financial advantages for firms in the industrial goods sector.

5. Conclusion and Recommendations

The study establishes that environmental accounting disclosures have varying effects on the financial performance of listed industrial goods firms in Nigeria. While prevention and detection disclosures enhance compliance and stakeholder legitimacy without translating into immediate financial gains, internal and external failure disclosures significantly improve profitability by promoting operational efficiency, transparency, and corporate reputation. This underscores that firms in environmentally sensitive industries can achieve stronger financial outcomes when they actively manage and disclose their internal waste control and external remediation practices, thereby aligning sustainability with long-term value creation.

Based on the findings, the study recommended that listed industrial goods firms in Nigeria strengthen their internal environmental practices by investing in effective waste management and contamination control systems, as such internal failure disclosures were shown to significantly improve efficiency and profitability.

Firms should also enhance external remediation efforts and transparently report costs related to community development, penalties, and cleanup, as these disclosures build trust, improve reputation, and yield measurable financial benefits. Although preventive and detection disclosures did not show immediate financial impact, companies should continue to adopt them since they reduce long-term liabilities and enhance sustainability credibility.

In line with Isomorphic theory, management should adopt comprehensive and transparent disclosure practices that address the needs of both financial and non-financial stakeholders to foster legitimacy and investor confidence. Nevertheless, regulators such as the Nigerian Exchange Group (NGX) should not only enforce sustainability disclosure requirements but also provide incentives, such as tax reliefs or access to green financing, for firms that consistently disclose environmental accounting information, thereby encouraging stronger alignment of sustainability with financial performance.

Reference

Abdullahi, M., & Mohammad, I. (2023). Environmental costs and financial performance of Nigerian firms. *Journal of Accounting and Sustainability Studies*, 15(2), 45–60.

Akinyele, S. T. (2022). Corporate disclosure practices and firm performance in Nigeria. *African Journal of Finance and Accounting, 14*(1), 67–83.

Amalahu, M. A. (2018). Sustainability disclosure and profitability of listed firms in Nigeria. *International Journal of Economics and Business, 6*(3), 210–221.

Annual Reports. (2010–2020). Wapco, Avon Crown, and Austin Laz Plc.

Babieri, C. (2016). Environmental reporting and financial outcomes. *European Accounting Review, 25*(4), 563–590.

Baltagi, B. H. (2005). *Econometric analysis of panel data* (3rd ed.). John Wiley & Sons.

Bello, A. (2018). Dividend policy and firm performance in Nigeria. *Nigerian Journal of Management Research, 10*(1), 112–124.

Berthelot, S., Cormier, D., & Magnan, M. (2003). Environmental disclosure research: Review and synthesis. *Journal of Accounting Literature, 22*, 1–44.

Branco, M. C., & Rodrigues, L. L. (2007). Positioning stakeholder theory within the debate on corporate social responsibility. *Electronic Journal of Business Ethics and Organization Studies, 12*(1), 5–15.

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure. *Accounting, Organizations and Society, 33*(4–5), 303–327.

Corporate Finance Institute. (2022). *Financial performance – definition and metrics*. Retrieved from https://corporatefinanceinstitute.com

Dachomo, M. M., Ayuba, H., & Danjuma, S. (2020). Firm attributes and financial performance of Nigerian listed companies. *Journal of Accounting and Taxation, 12*(5), 85–92.

Deegan, C., & Gordon, B. (1996). A study of the environmental disclosure practices of Australian corporations. *Accounting and Business Research, 26*(3), 187–199.

Farrukh, K., & Faizan, H. (2016). Measuring firm financial health through performance ratios. *Asian Journal of Business and Finance, 8*(2), 50–64.

Feng, Y., Hao, W., & Qian, L. (2022). Energy efficiency and corporate sustainability: Evidence from Asian economies. *Journal of Cleaner Production, 330*, 129912.

Freeman, R. E. (1983). *Strategic management: A stakeholder approach*. Pitman.

Getzler, J., & Mathers, A. (2022). The multidimensionality of sustainability: Corporate challenges in environmental reporting. In Tennakoon, H., Silva, P., & Fernando, A. (Eds.), *Global perspectives on sustainability disclosure* (pp. 23–41). Routledge.

Gray, R., Kouhy, R., & Lavers, S. (2014). Corporate social and environmental reporting: A review of the literature. *Accounting, Auditing & Accountability Journal, 9*(2), 47–77.

Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill Irwin.

Hansen, D. R., & Mowen, M. M. (2000). *Cost management: Accounting and control* (3rd ed.). South-Western College Publishing.

Hansen, D. R., & Mowen, M. M. (2006). *Cost management: Accounting and control* (5th ed.). South-Western College Publishing.

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica, 46*(6), 1251–1271.

IFAC. (2005). *Environmental management accounting*. International Federation of Accountants.

Ilelaboye, N. O., & Alade, S. O. (2022). Environmental accounting and corporate responsibility in Nigeria. *Journal of Environmental Economics and Policy, 9*(2), 134–148.

Kantudu, A. S., & Ilu, S. A. (2020). Dividend policy and financial performance of Nigerian listed companies. *Journal of Accounting and Taxation, 12*(6), 180–189.

King, M. (2002). *King report on corporate governance for South Africa (King II)*. Institute of Directors in Southern Africa.

Leanne, B., & Rina, S. (2020). Corporate governance and sustainability reporting practices. *International Journal of Corporate Social Responsibility, 5*(1), 1–12.

López, M. V., Garcia, A., & Rodriguez, L. (2007). Sustainable development and corporate performance: A study based on the Dow Jones Sustainability Index. *Journal of Business Ethics, 75*(3), 285–300.

Luvembe, F. O., Mungai, E., & Muriu, P. (2014). Dividend payout and firm financial performance: Evidence from listed companies in Kenya. *European Scientific Journal, 10*(1), 376–392.

Maryana, N., & Yenni, A. (2021). Corporate disclosure, creditor trust, and financing access in emerging markets. *Asian Journal of Accounting Research, 6*(3), 295–309.

Millar, C., & Slack, R. (2024). Sustainability reporting and financial performance: New insights from emerging economies. *Journal of Sustainable Finance & Investment, 14*(2), 221–239.

NGX Report. (2016 & 2020). *Nigerian Exchange Group annual reports*. NGX.

NGX. (2023). *Sustainability disclosure and listed firms' performance in Nigeria*. Nigerian Exchange Group.

Oba, V. C., & Fodio, M. I. (2013). Board characteristics and the quality of environmental reporting in Nigeria. *Journal of Accounting and Management, 3*(3), 1–16.

Okere, W., Egbide, B. C., & Omoye, A. (2022). Sustainability disclosure and financial outcomes of Nigerian listed firms. *International Journal of Economics and Business, 10*(2), 99–113.

Omeh, K. O., Chukwu, P., & Nwambeke, I. (2025). Environmental disclosures and firm financial outcomes in Nigeria. *Nigerian Journal of Sustainable Accounting, 7*(1), 55–72.

Reuters. (2024). *Environmental risks erode investor trust in Nigeria*. Reuters News Agency. Shim, H. (2015). Stakeholder theory and sustainability disclosure. *International Journal of Business Ethics, 12*(4), 223–239.

Tennakoon, H., Silva, P., & Fernando, A. (2024). Environmental sustainability and financial performance: Evidence from global markets. *Journal of Cleaner Production, 355*, 131823.

Uwuigbe, U., & Jimoh, J. (2012). Corporate environmental disclosure in Nigeria. *Journal of Accounting and Taxation, 4*(4), 166–170.