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ENVIROMENTAL ACCOUNTING DISCLOSURE, OPERATIONAL EFFICIENCIES AND FINANCIAL PERFORMANCE OF LISTED BEVERAGES FIRMS IN NIGERIA

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Abstract

The study examined how environmental accounting disclosure affects the financial performance of listed beverage companies in Nigeria. An ex post facto research design was adopted, using secondary data extracted from the annual reports of five beverage firms quoted on the Nigerian Exchange Group for the period 2014–2023. The analysis involved descriptive statistics and inferential techniques, specifically pooled ordinary least squares regression. The findings showed that environmental accounting disclosure has a positive and statistically significant effect on the financial performance of listed beverage firms in Nigeria. Specifically, the study confirmed that greater environmental disclosure is associated with a significant increase in return on assets. This study therefore recommends Beverage firms ought to create strong frameworks for them to align with environmental laws and regulations. Since there is a high positive relationship between compliance and financial performances, firms need to spend more resources on training employees about relevant standards of the environment, as well as resources to ensure that all employees are aware of and adhere to these standards. This will keep them updated on new legislation through regular inspections, awareness campaigns among workers, and working relationships with government agencies.

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1. INTRODUCTION

The Financial performances is a crucial sign of a company's strength to generate revenue, minimise costs, and maximize profit to its shareholders. It is usually assessed using profitability, liquidity, and market-based financial metrics, which help investors and management evaluate a firm's economic strength [1]. In recent years, corporate environmental responsibility has been increasingly linked to financial performance, as firms that

engage in environmental sustainability initiatives tend to experience enhanced operational efficiency, lower regulatory risks, and greater access to investment opportunities. Transparency in environmental disclosures can lead to improved stakeholder trust, which positively impacts

financial performance through increased customer loyalty and investor confidence [2]. Financial performances one the key determinant of a firms long-term success by influences strategic decision making, investment opportunities, and shareholder value. It is often measured using financial indicators such as Returns on Assets (ROA), Returns on Equity (ROE), and Earning Per Share (EPS), which provide insights into a firm's profitability and efficiency [3]. The growing demands on E.S.G influences has led many businesses to integrate sustainability into their FR, with the expectation that environmental transparency can enhance financial outcomes. Empirical research suggests that firm with strong environmental disclosure tend to attract institutional investors, reduce regulatory risks, and gain competitive advantages, which contributes to improved FP [4]. EAD is a crucial aspect of C reporting that has achieved significant indication in recent decades due to the more progressing awareness of environmental issues. It involves the ways by which firms report on the financial and non-financial impacts of their activities on the environment, encompassing resource use, waste generation, and pollution. This form of disclosure provides stakeholders, include investors, regulators, and the public, with important information relating to the firms environmental performance and practices. Environmental accounting disclosure helps bridge the gap between a company's economic objectives with a responsibility towards environmental sustainability [5]. Over the years, environmental accounting has involved from being a voluntarily practice to becoming an integral part of CSR, influencing both the internal and external reporting requirements of firms. The relevant of environmental accounting disclosures has been amplified by the growing emphasis on corporate transparency and accountability. As concerns about climate changes, bio diversities loss with resource depletion increases, investors and shareholders are increases demanding that companies discloses their environmental impact to assess sustainability risks and opportunities. A lack of transparency in environmental matters can undermine stakeholder trust and even result in regulatory penalties [6]. Disclosure allows companies to demonstrates their commitments to environmental stewardship and provide evidence of efforts to mitigate negative environmental impacts. It also serves as a mechanism for self-regulation, guiding firms toward better environmental management practices. Environmental accounting disclosures typically take two forms: financial and non-financial disclosures. Financial disclosures include direct costs related to environmental protection and indirect costs such as fines and remediation expenses. Non-financial disclosures, on the other hand, focus on qualitative and quantitative information regarding a companies environmental policies, practices, and results of those effort. These disclosures may include data on E.C consumption, W.M practices, emissions reduction strategies, and the use of renewable resources [7]. The IFRS and other GG, such as the GRI, providing frameworks to help company's structure their environmental disclosures in a standardized manner. Despite the progress of EAD, problems remain in terms of standardization and consistencies across firms and industries. The lack of universally accepted standards for environmental reporting has led to variability in how companies report their environmental impacts. Additionally, the complexities of environmental datas and the subjective nature of some environmental impacts can make accurate and comprehensive disclosure difficult. To mitigate these challenges, regulatory agencies and non-governmental organizations are working toward developing more comprehensive and uniform reporting standards. The integration's of environmental accounting into mainstreams financial reporting frameworks is seen as a step toward greater corporate accountability and the long-term sustainability of businesses [8]. Growing concerns about environmental degradation and the depletion of natural resources have become a major global issue. The environmental challenges being

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discussed today have implications that extend far beyond what anyone could have envisioned fifty years ago. In Nigeria, beverage manufacturing companies often face unrest from local communities surrounding their operational areas. This tension is largely driven by high unemployment and inadequate social amenities, which in some cases have led to vandalism of industrial facilities. Such problems could be mitigated if beverage firms manage their social and environmental costs more efficiently and transparently [9]. In recent years, Environmental Accounting Disclosure (EAD) has gained growing attention across the world. Organizations now recognize the importance of environmental reporting as part of their strategy for long-term sustainability. By disclosing environmental information within their financial statements, corporations enhance their value and demonstrate accountability to stakeholders. The push for standardized environmental reporting frameworks has crossed national boundaries, reflecting a deeps commitment to sustainable developments in era of globalization [10]. Although good numbers of studies have examined the relationships between EAD and FP, relatively few have specifically examined this connection within the Nigerian beverage industry. Despite prior research efforts, the quality and extent of environmental disclosures among listed Nigerian companies remain low. This highlights the need for further empirical research to emphasize both the importance of environmental conservation and the role of transparent reporting in this sector.This paper, therefore, intends to address the gap by investigating how environmental disclosures influences the financial performances of listed beverage firms in Nigeria. The research is driven by the understanding that a clean environment benefits humanity at large and that effective environmental reporting can contribute significantly to sustainable profitability and growth in the beverage industry.

2. LITERATURE REVIEW

Conceptual Review

Environmental Accounting Disclosures

Environmental disclosures refers to the responsibility of companies to report the steps they take to protects the environments and to communicates those impact to the public (Murdifn et al., 2019). McGuire (2014) describes it as a corporate duty to inform stakeholders and society about how the firm manages and controls waste generated by its operations. In addition, environmental disclosure encompasses the openness and accountability of environmentally sensitive firms involves providing the information stakeholders investors, shareholders, customers, regulators, employees, and others interested in the company's performance need about the firm's environmental actions [11].

Environmental accounting disclosure (EAD) is the practice whereby companies report on their environmental activities and the associated financial effects. This includes information on environmental costs, policies, and performance, aiming to provide stakeholders with transparent insights into how corporate actions impact the environment and, subsequently, the company's financial health. Yao and Liang showed that environmental disclosure and Effective environmental accounting is essential for companies to stay competitive. It helps them meet reporting standards, improves their reputation, and supports their overall business success improving corporate product legitimacy. The two main types of environmental costs are social.

costs and private costs. While societal costs are paid by society, private costs are paid by the individual or business enterprise. Environmental pollution and control policy, energy policy, and waste management are important areas that focus on protecting the environment, managing resources efficiently, and handling waste properly. Management policy (WTP) and compliance and regulations (CLR) are the proxies used for environmental disclosure (EVD) in this study.

Financial Performance

Financial performance measures a firm's economic success, capturing its abilities to earn incomes, manage costs, and give returns to shareholders. It makes stakeholders, investors, managers, and government regulators with insight into a companies profitability and long-terms viability. Both internal choices (for example, strategy and operations) and external conditions (market trends and regulation) influence financial performance. Within the framework of environmental accounting disclosure, financial performance is

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treated as the dependent variable because a company's reporting and sustainability practices can affect its financial outcomes [12]. In this study, Return on assets (ROA) is used as the indicators of financial performances.

Environmental Accounting Disclosures and Financial Performance

Financial performance is not basically dependent on traditional financial indicators but is increases influencing by non financial indicators such as corporate social responsibility (CSR) and sustainability initiatives. From a stakeholder theory perspective, companies that actively engage in environmental accounting disclosures build stronger relationships with customers, investors, and regulators, leading to long-term financial benefits [13]. Transparent environmental reporting can mitigate risks related to regulatory penalties, legal liabilities, and reputational damage, thereby improving a firm's financial stability. Additionally, organizations that proactively disclose environmental information often experience operational efficiencies through better resource management and cost savings, further enhancing their financial performance.

The heightened focuses on environmental accounting disclosures of environmental accounting (EAD) arises by firms' needs to inform stakeholders about their environmental performances in order to strengthen corporate values, create stakeholder value, lay groundwork for future operational and financial improvements, since business activities affect the natural environment.

Theoretical Framework

This research integrates three perspectives: sustainability theory, stakeholders theory, and agency theory. Sustainability theory emphasizes that businesses have an obligation to manage environmental resources so as to preserve ecological quality for future generations. Stakeholder theory argues that firms should conduct operations with attention to how actions affect all parties with an interest in the firm not only shareholders so that value is created for multiple stakeholder groups. Agency theory Jensen and Meckling, conceptualizes the firm as a set of principal agent relationships in which managers (agents) owe fiduciary duties to shareholders (principals) to act in their economic interests and maximize wealth.

These theories collectively justify the focus of the study. Environmental accounting disclosures represents a corporate responsibilities to societies and the ecosystem, particularly in Nigeria where mandatory disclosure rules are lacking. Although reporting is typically voluntary, prior studies indicate that environmental disclosure can significantly influence firm performance. Agency theory helps frame the study's financial performance measures, which include Returns on investments assets and earnings per-share. Empirical support for the theoretical link between environmental and economic performance appears in studies by Mahoney and Tuwaijiri, who report significant relationships especially when disclosure is quantitative.

Empirical review

Carnini-Pulino assessed how environmental, social, and governance (ESG) disclosures affects price earnings ratios and firms performances among larger multinational firms in Europe. Using Italy's regulatory benchmark rooted in Directive 254/2016, the authors analyzed panel data from 2011–2020 with panel regression techniques. They found that greater disclosure enhances stakeholder legitimacy and investor decision-making, which is associated with higher price–earnings ratios.

Conversely, Olowookere studied the impact of environmental accounting disclosures and financial performances for listed cement firms in Nigeria. Using ex post facto designs and nine years of annual report data (2011–2019) from three listed cement companies, the study examined ROA, ROE, firm size, leverage, and EAD. Panel regression results showed that environmental accounting disclosure positively and significantly affected financial performances for the sampled firms [14].

Kurawa and Shuaibu examined the relationship between environmental disclosure and market value for 76 non-financial firms listed in Nigeria. Using a GRI-based disclosure checklist, and earnings per share and Tobin's Q as performance measures, their regression analysis identified a positive association between

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environmental disclosure indices and market value indicators. Their findings align with Jun, who also report positive links between ESG disclosure and firms' intangible capital and market valuation [15].

However, not all studies find positive effects. Igbekoyi reported insignificantly negative relationship between environmental reporting and financial performances, highlighting context-specific variation in results.

Jun used panel regression to evaluate ESG disclosure's effect on market value and intangible capital; they found positive impacts on share market value and Tobin's Q. Their findings echo Pedron. By contrast, Uyar and Kilic found that leverage did not significantly influence voluntary disclosure levels, indicating mixed drivers of disclosure behavior.
Uniamikogbo and Ali analyzed selected Nigerian manufacturing firms and reported that environmental accounting disclosures significantly affect share price, Return On Assets, and Returns On Equity. Ayu examined environmental and social cost disclosures' effects on financial performances, with Earnings managements as a mediator [16]. Using the GRI framework and SmartPLS, they indicates that both environmental and social cost disclosure significantly influence ROA, consistent with stakeholder, legitimacy, and agency explanations. In sum, multiple empirical studies suggest that more extensive environmental and social disclosure can create financial benefits for firms, though results vary by context, measure, and methodology [16].

3. METHODOLOGY

The study was used ex-post facto research design, which involves observing multiple entities over time, to investigate the relationship between environmental accounting disclosure and Financial Performance. The population of the study comprises the five beverage companies listed on the Nigerian Exchange Group (NGX) as of December, 2023. All five companies were selected using purposive sampling [17]. Ten years of validated data (2014–2023) were considered from the audited financial statements and annual reports of the selected companies; 2023 reports were included because earlier studies did not cover that year. Data reliability is supported by the statutory external audits of the financial statements. Both descriptive statistics and inferential analysis using pooled ordinary least squares (POLS) regression were used to the panel data. Hypotheses were tested at the 5% significance level (Table 1).

Table 1: Measurement of Variables

Variables	Proxies	Variable Labels	Measurement	Sources	Expected sign
Dependent					
Financial performance	Return on asset	ROA	Net profit before tax /total asset x 100/1	Henry and Herawaty (2024).	
Independent					
Environmental accounting disclosure	Energy Policy	ENPY	1 for disclosure otherwise 0	Boon and Yee (2014)	±
	Waste management policy	WMTP	1 for disclosure otherwise 0	Nwaimo (2020)	±

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Variables	Proxies	Variable Labels	Measurement	Sources	Expected sign
	Environmental Pollution and Control Policy	EPC	1 for disclosure otherwise 0	Iheburu and Chukwuma (2019)	±
	Compliance	CLER	1 for disclosure otherwise 0	Adekanmi (2015)	±

Source: Researcher's (2025)

Model Specification

The study's model showed the relationship between environmental accounting disclosure as the independent variable and financial performance, measured by return on assets, as the dependent variable.

$$ROA = f(\text{ENPY},, \text{EPC}, \text{WMTP}, \text{CLER}, \mu) \quad \ldots\ldots(1)$$

$$ROA_{it} = \delta_0 + \delta_1 ENPY_{it} + \delta_2 EPC_{it} + \delta_3 WMTP_{it} + \delta_4 CLER_{it} + \varepsilon \quad \ldots\ldots(2)$$

Where:

ROA = Returns on Assets

ENPY = Energy Policies

EPC = Environmental Pollution and Control Policies

WMTP = Waste Management Policies

CLER = Compliance with Environmental Law and Regulations

δ_0- δ_4 = Parameters of the Regression Coefficient

$\varepsilon =$ Error terms

4. RESULTS AND DISCUSSION

The descriptive statistics in Table 2 emphasizes important aspects of the sampled beverage companies' financial status and environmental disclosure practices during the considered period. A ROA average of 10.254 with a span from 0.86 to 26.52 indicates that the sampled companies in general, exhibited commendable profitability during the period. With a standard deviation of 6.76 it is clear that ROA is not consistent across the beverage companies studied. The modest average scores for CLER, ENPY, WMTP, and EPC show that the firms could experience lack of consistent implementation of rigorous environmental practices. Compliance with environmental law and regulation's skewness value of 1.85 is similar to a similar distribution, and the uniform skewness of 1.85 for energy policy, waste management policy and environmental pollution and control policy exhibits positive skewness, which implies that a significant number of firms report zero compliance of these environmental disclosures [18]. Further, the kurtosis values give further insight into the distribution of these disclosures. Both environmental policies and compliance with environmental law and regulations both show high kurtosis [19]. The large Jarque-Bera test results indicate that compliance with environmental law and regulations and environmental policy data fail to be normally distributed ($p < 0.05$), which implies that it might be difficult to obtain uniform environmental disclosure standards across the industry.

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Table 2: Descriptive Statistics

	ROA	CLER	ENPY	WMTP	EPC
Mean	10.254	0.16	0.16	0.16	0.26
Median	10.12	0	0	0	0
Maximum	26.52	1	1	1	1
Minimum	0.86	0	0	0	0
Std. Dev.	6.76	0.37	0.37	0.37	0.44
Skewness	0.54	1.85	1.85	1.85	1.09
Kurtosis	2.59	4.44	4.44	4.44	2.20
Jarque-Bera	2.81	32.99	32.99	32.99	11.32
Probability	0.25	0.00	0.00	0.00	0.00
Observations	50	50	50	50	50

Source: Author's Computation, 2025

From Table 3; it can be observed that a weak positive correlation coefficient of 0.17 between Return On Assets and Energies Policies; though better energy policies contribute to firms having marginally better financial performance. On the other hand, there is very little correlation between ROA and the other measures of environmental policy (EPC, WMTP, and CLER), as evidenced by their low correlation coefficients of -0.03, 0.02, and 0.02 respectively. This weak correlation implies that the financial performances of the firms in this study may not be significantly affected by these environmental policies. It also reflects possible competitive conflicts among different environmental initiatives.

Table 3: Correlation Analysis

	ROA	ENPY	EPC	WMTP	CLER
ROA	1				
ENPY	0.17	1			
EPC	-0.03	0.11	1		
WMTP	0.02	-0.19	-0.01	1	
CLER	0.02	-0.04	-0.13	-0.19	1

Source: Author's Computation, 2025

Table 4: Diagnostic Test

S/N	Tests	Analytical Techniques	Results	Remark
1	Cross section dependence test	Breusch-Pagan	F =0.584; P=0.444	Pool effect is Suitable
2	Heteroscedasticity test	Breusch-Pagan test	Chi = 0.01; p = 0.9216	Free from the problem of Heteroscedasticity test
4	Multi collinearity Test	Variance Inflation Factor	WMTP = 1.08; CLER = 1.06; ENPY = 1.06; EPC = 1.03	Free from the problem of Multi collinearity

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5	Serial Correlation	Breusch-godfrey LM test	Chi = 0.460; p = 0.645	No Serial Correlation Problem

Source: Author's Computation, 2025

Table 5: Pooled Regression Analysis

Dependent Variable: ROA				
Method: Panel Least Squares				
Sample (adjusted): 2015 2023				
Periods included: 10				
Cross-sections included: 5				
Total panel (balanced) observations: 50				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.11	1.27	7.96	0.00
ENPY	1.06	2.35	0.45	0.65
EPC	0.51	0.17	3.05	0.00
WMTP	0.04	0.11	0.39	0.70
CLER	0.31	0.14	2.21	0.03
R-squared	0.33	Mean dependent var		9.83
Adjusted R-squared	0.21	S.D. dependent var		6.52
S.E. of regression	5.80	Akaike info criterion		6.51
Sum squared resid	1245.57	Schwarz criterion		6.84
Log likelihood	-138.57	Hannan-Quinn criter.		6.63
F-statistic	2.64	Durbin-Watson stat		1.86
Prob(F-statistic)	0.03			

Source: Author's Computation, 2025

The overall models explained 33% of the variation in Return of Assets (R-squared = 0.33), but when we adjust for the number of predictors used, the adjusted R-squared drops to 0.21, showing that the models ability to explain the data becomes less strong as more variables are included into consideration. The

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model's statistical significance is shown by an F-statistic of 2.64.A p-value of 0.03 gives more confidence in the results from the regression analysis. Environmental pollution and control policies have a positive impact on the financial performance of companies that are listed on the stock exchange [20].The beverages industry has a t-statistic of 3.05 and a p-value of 0.00. Furthermore, the analysis there is a strong positive link between ROA and following environmental laws Regulations with a value of 0.31 and a p-value of 0.03 show that following environmental rules is significant Standards have a good and important effect on how well a company does financially. However, Waste Management and energy policies are not strongly connected to ROA based on the coefficients. The values are 1.06 and 0.04, with corresponding P-values of 0.65 and 0.70.

4.1 Discussion of Findings

These revealed revealed that a strong positive statistical relationships between environmental pollution and control policy and return on assets with a coefficient of 0.51, a t-statistic of 3.05, and a p-value of 0.00. The evidence makes clear that strict environmental regulation has a great impact on financial performance in the beverage industry [21]. In concurrence with Carnini-Pulino, it is evident that environmental disclosures enhance corporate metrics such as price-earnings ratios. Based on their findings, the adoption of strict environmental controls increases a firm's attractiveness to institutional investors and thus boosts its overall performance. Following these insights, Olowookere showed that environmental disclosures in Nigeria have a positive impact on the financial measures, including Return On Assets and Return On Equity, supporting the notion that compliance with environmental policies can have a positive financial effect. The positive coefficient of 0.31 and the 0.03 p-value related to Compliance with environmental law and regulations indicate an unexpected inverse correlation with ROA. The counterintuitive result underscores the need to understand more closely the effect of regulatory compliance on overall firm profitability [23]. For example, dealing with regulatory compliance may be resource and disruption intensive, but it also offers incentives for firms to become more efficient and adopt forward thinking practices that contribute to sustainable financial success. Furthermore, Udo's perspective validates the argument that promoting stakeholder awareness and corporate transparency through environmental disclosures may enhance a firm's reputation, thus increasing long-term returns despite the regulatory compliance costs in the. The agency theory also implies that effective regulation of externalities by compliance can unite stakeholders to achieve better. Thus, while environmental performance directly translates into improved financial performance, compliance frameworks may provide extra, though indirect, benefits in enhancing firms' economic resilience and market image.

Supporting the work of early theorists such as Freeman, the study reveals how environmental policies and initiatives centered on compliance are vital to strategic connections to organizational success.

5. CONLUSION AND RECOMMENDATIONS

5.1 Conclusion

This research provides a deep analysis of the impact of Environmental Accounting Disclosure (EAD) on the financial results of Nigerian beverages companies. Companies that disclose comprehensive information about the environment enhance their corporate image, strengthen stakeholder trust, and loyalty, and ultimately have better financial results.

The theoretical background emphasizes the importance of sustainability, stakeholder, and agency theories in understanding the relationship between organizations and their stakeholders. Organizations that adhere to sustainability principles attract socially responsible investors and consumers. Stakeholder theory suggests that integrating stakeholder interests leads to a more integrative management approach, resulting in better financial results. Agency theory suggests that matching management interests with stakeholder interests leads to more open operation and governance, crucial for financial performance.

Importantly, the research shows that there is a positive relationship between the levels of environmental accounting transparency and financial indicators. As an example, companies that lead in making their

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environmental efforts transparent are usually able to realize operational improvements and cost reduction, which translates to more financial outcome. The evidence supports prior research that shows a clear correlation between better environmental performance and better economic outcomes, which proves that sustainable practices are critical for effective business strategies. This study affirms that there is need to actively disclose environmental information to contribute to financial efficiency in Nigerian beverage manufacturing firms.

5.2 Recommendations

i. Beverage companies ought to formulate and enforce strict environmental pollution and control policies. Since the findings have indicated positively, it is expected that the companies make an easier priority of investments in technologies and practices that minimize environmental impact, and they should ensure compliance with regulations. In turn, this will enhance their financial performance; hence, institutional investors will be attracted, improving the overall market competitiveness.

ii. Beverage companies ought to create strong frameworks for them to complied with environmental law and regulation. Since indicated a high positive relationship between compliance and financial performances, firms need to spend more resources on training employees about relevant standards of the environment, as well as resources to ensure that all employees are aware of and adhere to these standards. This will keep them updated on new legislations through regular inspections, awareness campaigns among workers, and working relationships with government agencies.

iii. It is necessary that Beverage companies make sustainable practices in these areas. A company should make an in-depth assessment so as to come up with new and effective strategies towards reducing waste and energy consumption. This will improve corporate social responsibility, engaging the stakeholders in such initiatives, and eventually bettering financial performance in the long run.

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