




Research Article

# Accounting for Externalities and Financial Performance of Listed Industrial Goods Companies in Nigeria

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## Abstract

Good financial performance of companies gives confidence to shareholders and investors on returns on their investment and guaranteed going concern. However, literature has shown that poor financial performance has made some companies to lose their competitive edge, and inability to achieve growth objective. Accounting for and reporting firms' externalities impact is becoming increasingly important globally, investors have raised the bar on what they consider material to the performance of their investments, expectation of long-term profitability and sustainability of the company. This study examined the effect of accounting for externalities on financial performance proxied by Return on Asset (ROA) of listed industrial goods in Nigeria. The study adopted Ex-post facto research design. The population for the study comprised of fifteen (15) Industrial Goods companies listed on Nigeria Stock Exchange as at 31st December, 2021. The Panel data were sourced from audited annual reports for the period of ten (10) years spanning from 2012-2021. Data were analyzed using descriptive and inferential statistics. The findings of the study revealed that accounting for externalities had significant effect on ROA ( $\text{Adj}R^2 = 0.6010$ ,  $F(3,96) = 3.99^{**}$ ;  $p = 0.0100$ ). The study concluded that accounting for externalities has significant effect on financial performance of listed industrial goods companies in Nigeria. It was recommended that standard-setting bodies in Nigeria like the Financial Reporting Council of Nigeria should develop mandatory guidelines and standards for accounting and reporting of externalities to foster a more sustainable and responsible business environment.

## Keywords

Economic Costs, Environmental Cost, Externalities, Return on Asset, Social Costs

## 1. Introduction

Traditionally, financial reporting has primarily focused on capturing internal financial information, neglecting the broader impacts of external industrial activities, as a result the true costs and benefits of these activities, both positive and

negative are not adequately captured in financial statements [4, 27]. Financial performance is a fundamental aspect of assessing the health and stability of any business entity, for its numerous stakeholders, and policymakers, as it provides

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**Received:** 22 April 2024; **Accepted:** 10 May 2024; **Published:** 6 June 2024



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insights into the company's realistic profitability and contribution to the overall economy [12].

The failure to incorporate both internal and external costs and benefits either positive or negative into financial reporting could lead to a misrepresentation of a company's true financial health and long-term sustainability [1]. The sustainability and long-term viability of companies are closely tied to their ability to manage internal and external costs and benefits either positive or negative that have significant impacts on a company's financial performance and reputation. As society becomes increasingly concerned about sustainability and responsible business practices, there is a growing recognition of the need to account for externalities in financial reporting [22, 11]. Externalities refer to the costs and benefits associated with a company's activities that are not reflected in market prices and are borne by society and the environment.

Accounting for externalities refers to the process of recognizing and measuring the positive or negative impacts of an economic activity on parties that are not directly involved in the transaction or economic act, but the actions of the activities have ripple effects beyond the original intention which according to Merton (1976) is referred to as the law of unintended consequences.

The integration of externalities into financial reporting has emerged as a critical aspect of evaluating the financial performance and sustainability of companies. Accounting for externalities, has become increasingly important in understanding the financial performance of companies. The integration of externalities into financial reporting provides stakeholders with a comprehensive view of a company's impact on the environment and society, it provides stakeholders with a more comprehensive understanding of a company's performance, risks, and opportunities. According to a study companies that proactively manage and disclose their environmental and social impacts are more likely to build stakeholder trust [11]. It is primarily the responsibility of companies that generate externalities to account for them.

Some companies have faced severe financial consequences for not accounting for externalities which lead to their ruin. The Volkswagen emission scandal (2015) resulted in billions of dollars in fines and settlements, loss of brand reputation and customer trust, stock price plummeted, recalls and repairs for millions of vehicles. The management's decision to install software in diesel vehicles to cheat emissions tests lead the company to sell cars that exceeded legal pollution limits, resulted in loss of profit through costs that far outweighed the potential profits for the short-term decision. BP Deepwater Horizon Oil Spill (2010), the company did not adequately address safety measures and underestimated the potential environmental risks associated with deep-sea drilling. The externalities of the spill resulted in immense financial cleanup costs, tarnished brand image and reputational damage. To avoid maintenance costs, in Pacific Gas & Electric (2018, 2017), the company's obsolete and poorly maintained power

lines ignited several wildfires in California, causing loss of many lives and billions of dollars in damages which resulted in the company bankruptcy filing due to wildfire liabilities.

In Nigeria numerous oil spills have occurred in the Niger Delta, a region rich in oil resources. These spills have devastated the environment, polluting water sources, destroying ecosystems, and impacting the livelihoods of local communities who depend on fishing and farming. This led to the era of militants, a group that used arms to hold to ransom companies that operated in the region by kidnapping their management personnel, the companies had to pay high costs as ransom to release their personnel.

The need to accounting for externalities is increasingly apparent as stakeholders, including investors, regulators, and the public, are demanding more transparency and accountability in relation to environmental and social impacts. Furthermore, the integration of externalities into financial reporting can provide a more holistic view of a company's value creation, risks, and opportunities [28]. Externalities may include environmental issues like pollution, waste generation, and natural resource depletion, as well as social factors such as labor practices and community engagement [29, 1].

As companies strive to balance economic objectives with sustainability and responsible business practices, there is a lack of comprehensive understanding regarding the extent of externalities associated with their operations [29]. The absence of a standardized and mandatory reporting framework for externalities makes it challenging for companies to measure, disclose, and integrate these impacts into their financial reports [1]. This gap in reporting externalities raises questions about the reliability and completeness of the financial information presented to stakeholders.

Additionally, the lack of transparency in disclosing externalities may impact investor decision-making. Without considering externalities, the financial performance of companies may be inaccurately portrayed. Key stakeholders, including investors, may lack critical information to make well-informed decisions regarding the sustainability, long-term risks and opportunities associated with investing in these companies [1].

From the point of view of sustainable development, the external effects is associated with three basic pillars: the environmental pillar, the social pillar, and the economic pillar; [8, 11, 36]. Companies may fail to identify and address potential economic, environmental, and social risks in terms of costs and benefits, which can impact their long-term viability and license to operate [29].

Various researchers in the past have examined the link between accounting for externalities and financial performance of corporations with mixed findings. Some have found a positive link, some a negative link and some found no link between the variables. The study of [24] examines the impact of improved environmental performance on firm financial performance. The study finds evidence of a positive relationship, indicating that companies with better environmental performance experience improved financial outcomes. The

research underscores the potential financial benefits of accounting for externalities in corporate reporting. Similarly, [26] focusing on the social aspects of externalities, this study investigates the relationship between addressing social externalities and firm financial performance in China. The findings suggest that firms that actively address social externalities tend to achieve better financial performance. The study highlights the significance of considering social impacts in financial reporting for corporate success.

The study of [37] examined the relationship between corporate social responsibility, environmental investments, and financial performance: evidence from manufacturing companies, the study found a positive but insignificant relationship between external environmental investments and financial performance of manufacturing companies in Nigeria.

The study of [10] investigated the relationship between corporate sustainability performance and financial performance. The authors find that firms with better sustainability practices tend to exhibit superior financial performance over the long term. The study emphasizes the importance of considering environmental and social factors in financial reporting to better understand a firm's overall performance. The study of [31] investigated sustainable accounting practices and their influence on the financial performance of industrial goods firms. The findings shed light on the significance of integrating sustainability practices in financial reporting for enhanced financial performance.

The study of [4] investigated the relationship between proactive environmental strategies adopted by corporations and their financial performance. The researchers found evidence that companies implementing environmentally responsible practices experienced improved financial outcomes.

The current state of accounting for externalities and its impact on the financial performance of listed industrial goods companies in Nigeria necessitates further investigation. Addressing the challenges of reporting externalities and integrating them into financial performance evaluation is crucial for fostering sustainable business practices, meeting stakeholder expectations, and ensuring informed decision-making in Nigeria's industrial goods sector. This study therefore examines the effect of accounting for externalities and financial performance of listed industrial goods companies in Nigeria.

## 2. Literature Review

### 2.1. Accounting for Externalities

Externalities comprise of economic, social, and environmental impacts arising from the activities of an entity that are borne by others and do not feedback directly into short-term financial consequences for the entity but have a long-term effect on the profitability and sustainability of the company [41]. Accounting for externalities refers to the process of recognizing and measuring the positive or negative impacts of

an economic activity on parties that are not directly involved in the transaction or economic act [44]. It entails incorporating into financial reporting and decision-making processes both the positive and negative consequences that a company's operations have on the environment and society [35].

Accounting for externalities goes beyond the conventional focus on financial profits and losses. It aims to provide a more comprehensive picture of a company's performance and its broader impact on society. By recognizing these external impacts, companies can improve their transparency, identify potential risks, and enhance their social and environmental responsibility [20]. legal and economic obligations. It involves integrating sustainable practices into the company's business strategies and operations to contribute positively to society and the environment while maintaining ethical behavior and accountability [16]. It centers on the concerns companies have for their clients, workers, shareholders and the environmental impressions of their activities or operations to their host communities [40]. The failure to account for externalities may lead to poor decision-making and an inaccurate representation of the impact of an organization [2].

#### 2.1.1. Positive and Negative Externalities

An externality can be either positive or negative and can stem from either the production or consumption of a good or service, externalities are ubiquitous [17, 13].

A negative externality is one that creates side effects that could be harmful to either the public directly or through the environment. The concept of negative externalities is the dominant frame in environmental policies, most externalities are negative [13]. Pollution is a well-known negative externality Externalities are negative when the social costs outweigh the private costs.

A positive externality is an unpaid benefit that extends beyond those directly initiating the activity, for instance when a group voluntarily chooses to create a benefit, such as a community park, others may benefit without contributing to the project. Positive externalities occur when there is a positive gain on both the private level and social level. Positive externalities have public or social returns that are higher than the private returns [3].

#### 2.1.2. Social Cost

Social cost refers to the total cost to society of an economic activity, which includes both private costs and any external costs imposed on third parties who are not directly involved in the transaction [27]. Social cost accounting refers to the firm's commitment to meet the needs of society as a good business neighbor to ensure the long run success of the firm as a going concern. It includes the company's investment in delivering social services like healthcare, education, employment, any type of empowerment or capacity building, training for staff, meal subsidies and other employee incentives, safety, the provision of community social amenities, scholarships for community members, and tax-related financial support to the

government [25, 31]. Social cost accounting broadens the scope of financial reporting to cover social welfare initiatives (such as employee perks and incentive programs), where businesses are accountable to all stakeholders in addition to their shareholders [7].

The goal of social cost accounting is to periodically identify and assess the firm's net social contributions, taking into consideration both internal and external social benefits that have an impact on different social groups [5].

### 2.1.3. Economic Cost

Economic cost refers to the total expenses incurred by individuals, businesses, or society when making a particular economic decision. It includes both explicit costs, which are the direct and measurable monetary expenses, and implicit costs, which are the opportunity costs or foregone alternatives that result from the chosen economic activity. Economic cost refers to the financial expenses and potential opportunity costs associated with a company's efforts to implement socially responsible initiatives and sustainable practices [42, 43]. These expenses include investments in sustainable business practices, employee well-being programs, community development projects, environmental conservation efforts, and other activities aimed at addressing social and environmental impacts [39]. Economic costs are not just limited to financial expenditures but also encompass the potential opportunity costs of allocating resources to socially responsible initiatives rather than traditional profit-generating activities [28].

### 2.1.4. Environmental Cost

Environmental cost refers to the expenses and negative impacts incurred by society and the environment because of human activities that deplete or harm natural resources, pollute the environment, or contribute to environmental degradation. It encompasses both the direct costs associated with environmental damage and the indirect costs incurred due to the depletion of natural resources, loss of biodiversity, and adverse effects on human health and ecosystems [38]. Environmental cost is a crucial consideration in sustainable development and decision-making processes. Recognizing and quantifying these costs is essential for developing effective environmental policies, encouraging businesses to adopt eco-friendly practices, and promoting corporate social responsibility. By internalizing environmental costs, stakeholders can make informed choices that balance economic growth with environmental protection and the well-being of society [37].

Environmental cost refers to the cost incurred by society because of environmental damage caused by economic activities. It is a measure of the negative externalities that are not reflected in the market price of goods or services and includes the costs of pollution, resource depletion, and other environmental impacts [34]. Environmental costs are those incurred by companies, directly or through third parties, to prevent, reduce or repair damage to the environment arising from their operating activities.

These costs are often tracked by or are hidden in the overhead accounts within the traditional management accounting systems, but they can be a significant component of a firm's overall cost structure [43].

### 2.1.5. Financial Performance

Financial performance is a detailed evaluation of a company's ability to successfully use the resources from its primary business means to generate profit. It is an organization's degree of performance at a particular point in time, as appraised by overall profits and losses or asset utilization [5]. Financial Performance is measured to give an account of the stewardship of the management team of the corporation to all the stakeholders [21]. Financial performance is the extent to which the financial goals of a company have been realized [15, 30, 32]. Traditionally, financial performance has been measured through many metrics including Return on Assets (ROA) which typically do not account for externalities. Return on Assets provides a snapshot of a company's efficiency in utilizing its assets to generate profits [15]. By integrating externalities into the ROA analysis, stakeholders like investors, regulators, and consumers can gain more comprehensive understanding of a company's true financial performance and long-term sustainability.

### 2.1.6. Accounting for Externalities and Return on Assets

The impact of externalities on financial performance was investigated by [30, 6]. According to the findings, there is a link between economic, environment and social costs and financial performance as assessed return on asset. The study of [19] investigated the impact of corporate social responsibility on the financial performance of Ghanaian oil marketing firms. The outcomes of their investigation show that there is a link between corporate social responsibility and financial performance, social and environmental implications of corporate social responsibility was also shown to be positively associated with an increase in return on asset. The study of [14] investigated environmental accounting and corporate performance. The key findings of the study show that there are statistically significant positive relationships between environmental accounting and return on asset. The study of [20] investigated the impact of social responsibility accounting on the performance of corporate organizations in Nigeria. The findings revealed that social responsibility accounting has a positive association with an organization's corporate performance in terms of return on assets.

The study of [18] examined environmental labeling certification and firm environmental and financial performance, the study indicates that environmental disclosure has no significant effect on ROA. Also, [36] investigated how corporate social responsibility affected Indian companies' financial performance, the findings indicated a negative association between return on assets.

## 2.2. Theoretical Review

### 2.2.1. Legitimacy Theory

Legitimacy theory is derived from the concept of organizational legitimacy which is condition or status which exists when an entity's value system is congruent with the value system of the larger social system of which the entity is a part. The legitimacy theory was developed by Dowling and Pfeffer in 1975. Legitimacy is conferred when stakeholders (both internal and external audience affected by organizational outcomes) endorse and supports an organization's goals and activities.

The reporting of environmental information could be used to demonstrate that an organization is acting responsibly with the implicit objective of influencing the public or community [14]. According to [9] the disclosures might be made to show that the organization is conforming to community expectations, or alternatively, they might be made to alter societal expectations. Legitimacy theory suggests that whenever managers consider that the supply of resource or information is crucial to organizational survival, then they will pursue strategies to ensure the continued supply of that information to gain or maintain legitimacy [9]. Legitimacy theory states that for organizations to survive, they need to legitimize their existence to society and environmental reporting enables them to be legitimate.

### 2.2.2. Signaling Theory

The problem of information lopsidedness is explained in the Signaling theory. The issue of information asymmetry arises when information available to the company management and the investors are unevenly distributed, information disclosure is majorly meant to reduce asymmetrical information [22]. The sustainability performance of a company can be regarded as such asymmetric information since it is difficult, for example, for parties outside the company to gain credible information on these aspects. In signaling theory companies disclosure sustainability-related activities to ensure legitimacy, to show their good performance and distinguish themselves to the public and reduce information asymmetry, thereby enhance their reputation and public opinion. In sum, a greater exposure to a large number of (potentially powerful) stakeholders (and media coverage) could influence a company's need to actively secure its legitimacy by signaling sustainability efforts in respective reports.

## 3. Materials and Methods

### 3.1. Design and Data

This research used ex-post facto research design and data was gathered from existing secondary source. The population of the study consists of thirteen (13) Industrial Goods companies listed on Nigeria Stock Exchange as at 31st December, 2022. Eleven (11) industrial goods firms would represent the sample size for this study. This study employed purposive sampling technique where specific elements which satisfy

some predetermined criteria such as industrial goods firms that had complete data in the financial statement for the six-year (6) period from 2012 to 2021; firms whose stock are actively traded on the floor of stock exchange for the study period; firms that consistently filed their annual reports for the study period; firms that have embraced sustainability reporting in line with global best practices and have integrating sustainability information in their annual reports.

### 3.2. Model Specification

$$Y = f(X)$$

$$FPER = f(AFE)$$

$$Y = y_1$$

$$X = x_1, x_2, x_3$$

Where:

$x_1$  = Social Cost (SCT)

$x_2$  = Economic Cost (ECT)

$x_3$  = Environmental Cost (ENC)

$y_1$  = Return On Assets (ROA)

The functional representation of the study is shown below:

$$ROA = f(SCT, ECT, ENC) \text{ (i)}$$

Mathematical representation is shown below:

$$ROA = \beta_0 + \beta_1 SCT + \beta_2 ECT + \beta_3 ECN + \varepsilon$$

Where:

$Y$  = Dependent Variable = Financial Performance (FPER)

$X$  = Independent Variable = Accounting for Externalities (AFE)

$\beta_0$  = Value of the Intercept

$\beta_1, \beta_2$  = Coefficient of the Explanatory Variables

$\varepsilon$  = Error term

$i$  = Number of sampled companies

$t$  = Period

### 3.3. Hypothesis

The null hypothesis would be tested to examine the influence of accounting for externalities on financial performance proxied by ROA.

Ho1: Accounting for externalities had no significant effect on Return on Asset (ROA) of listed industrial goods companies in Nigeria.

## 4. Data Analysis and Results

### 4.1. Descriptive Statistics

Table 1 The result of the descriptive statistics indicates that on average, the selected industrial goods companies in Nige-

ria have the have mean of 5.558455 on return on asset with standard deviation of 24.96791 and ranges from 108.9 and -179.92. Social cost has mean of 60.77864 with standard deviation of 13.32747 and maximum and minimum are 85.71 and 14.29 respectively. In addition, economic cost hovers around 10 and 0 with an average value of 0.4813636 and standard deviation of 1.864337. Lastly, environmental cost has the minimum value of 0 and a maximum value of 87.5 with the mean of 41.81818 and standard deviation of 15.8328.

**Table 1.** Descriptive Statistics.

Variables	Obs	Mean	Std. Dev.	Max	Min
ROA	110	5.558455	24.96791	108.9	-179.92
SCT	110	60.77864	13.32747	85.71	14.29
ECT	110	0.4813636	1.864337	10	0
ENC	110	41.81818	15.8328	87.5	0

Source: Researcher's Computation (2023)

## 4.2. Interpretation of Regression Result

### 4.2.1. Correlation Analysis Interpretation

The correlation matrix in [Table 2](#) shows the degree of multicollinearity among the independent variables of the study. The results showed that correlation between SCT and ECT was -45.2%, correlation between SCT and ENC was 35.2% while correlation between ECT and ENC was -34.8% which were in absolute term less than the 80% multicollinearity threshold. Thus, the study established that there is no existence of the problem of multicollinearity among the independent variables. The result of the Variance-Inflation Factor (VIF) in [Table 2](#) buttressed the results derived from the correlation matrix that there exists no problem of multicollinearity among the independent variables since the VIF of the variables showed a mean of 1.28 which is lower than 5 or 10 thresholds.

**Table 2.** Correlation Analysis.

Correlation Matrix	Variance Inflation Factor				
	SCT	ECT	ENC	VIF	1/VIF
SCT	1.0000			1.33	0.752867
ECT	-0.4516	1.0000		1.32	0.755368
ENC	0.3519	-0.3478	1.0000	1.20	0.831356
Mean VIF = 1.28					

Source: Researcher's Computation (2023)

### 4.2.2. Interpretation of Regression Result

The result of the Hausman Test (Chi = 18.98, p= 0.0003) in [Table 3](#) which is less than the 5% level of significance chosen for the study showed that fixed effect estimator is the appropriate estimator for the model. The econometric issues suffered by the model determined the estimation technique used for the model.

**Table 3.** Random-Effect: Dependent Variable: ROA.

Variable	Coefficient	Standard Error	t-stat	Prob.
SCT	0.5006348**	0.2624688	2.00	0.049
ECT	4.283443**	1.354533	3.16	0.002
ENC	-0.1413919	0.1710097	-0.83	0.410
Constant	-21.01859	16.48756	-1.27	0.205
R-Square		0.6110		
Adjusted R-Square		0.6010		
F-Statistic		F (3,96) = 3.99**		
Prob. (F-Stat)		Prob > F = 0.0100		
Diagnostic Tests		Probability		
Hausman Test		chi2(3) = 18.98**		Prob>chi2 = 0.0003

\*\* indicate significant at 5%

Source: Researcher's Computation (2023)

The result of fixed effect regression in [Table 3](#) showed that Accounting for externalities (AFR) proxied by Social Cost (SCT) has significant positive effect on Financial Performance (FPER) measured by Return on Asset (ROA) of listed industrial goods companies in Nigeria ( $\beta = 0.5006348^{**}$ , p=0.049). This result implies that a unit increase in SCT would lead to 0.5006348 unit increase in ROA of the listed industrial goods companies in Nigeria. Also, the result in [Table 3](#) revealed that Accounting for externalities (AFR) proxied by Economic Cost (ECT) has significant positive effect on Financial Performance (FPER) measured by Return on Asset (ROA) of listed industrial companies goods in Nigeria ( $\beta = 4.283443^{**}$ , p=0.002). This result implies that a unit increase in ECT would lead to 4.283443\*\* unit increase in ROA of the listed industrial goods companies in Nigeria. However, the result in [Table 3](#) indicated that Accounting for externalities (AFR) proxied by Environmental Cost (ENC) has an insignificant negative effect on Financial Performance (FPER) measured by Return on Asset (ROA) of listed industrial goods companies in Nigeria ( $\beta = -0.141391$ , p=0.410). This result implies that a unit increase in ENC would lead to about -0.141391 unit decrease in ROA for the listed industrial goods companies in Nigeria. The coefficient of determination

of AdjustedR<sup>2</sup> which is the explanatory power of the model is 0.6010. This showed that the independent variables in the model, accounting for externalities measures (SCT, ECT, and ENC) explained about 60.1% variation in the dependent variable (ROA) while the remaining 39.9% of variations were explained by other factors that could affect the dependent variable. Hence, the coefficient of determination suggests that the independent variables in the model have good explanatory power.

Based on the F-statistic [ $F(3,96) = 3.99; p = 0.0100$ ] and the decision probability of F- statistic which is less than the 5% significance level adopted for the study of listed industrial goods companies in Nigeria, the study thus rejects the null hypothesis for model one which states that accounting for externalities has no significant effect on financial performance measured by Return on Asset (ROA) of listed industrial goods companies in Nigeria and accepted the alternate hypothesis. Thus, accounting for externalities has significant effect on financial performance measured by Return on Asset (ROA) of listed industrial goods companies in Nigeria.

### 4.3. Discussion of Findings

The hypothesis examines the effect of accounting for externalities on Return on Asset (ROA) of listed industrial goods companies in Nigeria. The result of fixed effect regression in Table 3 showed that Accounting for externalities (AFR) proxied by Social Cost (SCT) has significant positive effect on Financial Performance (FPER) measured by Return on Asset (ROA) of listed industrial goods companies in Nigeria ( $\beta = 0.5006348^{**}, p=0.049$ ). This result implies that a unit increase in SCT would lead to 0.049 unit increase in ROA of the listed industrial goods companies in Nigeria. Also, the result in Table 3 revealed that Accounting for externalities (AFR) proxied by Economic Cost (ECT) has significant positive effect on Financial Performance (FPER) measured by Return on Asset (ROA) of listed industrial goods companies in Nigeria ( $\beta = 4.283443^{**}, p=0.002$ ). This result implies that a unit increase in ECT would lead to unit increase in ROA of the listed industrial goods companies in Nigeria. However, the result in Table 3 indicated that Accounting for externalities (AFR) proxied by Environmental Cost (ENC) has an insignificant negative effect on Financial Performance (FPER) measured by Return on Asset (ROA) of listed industrial goods companies in Nigeria ( $\beta = -0.141391, p=0.410$ ). This result implies that a unit increase in ENC would lead to about 0.141391 unit decrease in ROA for the listed industrial goods companies in Nigeria.

The coefficient of determination of AdjustedR<sup>2</sup> which is the explanatory power of the model is 0.6010. This showed that the independent variables in the model, accounting for externalities measures (SCT, ECT, and ENC) explained about 60.1% variation in the dependent variable (ROA) while the remaining 39.9% of variations were explained by other factors that could affect the dependent variable. Hence, the co-

efficient of determination suggests that the independent variables in the model have good explanatory power.

The study predicted a positive and significant relationship between accounting for externalities measured as Social Cost (SCT), Economic Cost (ECT) and Environmental Cost (ENC) as it significantly affects Return on asset in listed industrial goods companies in Nigeria. Therefore, the null hypothesis is rejected, and it is concluded that there is a significant relationship between accounting for externalities and return on asset of listed industrial goods companies in Nigeria. This position is affirmed with the study of [14] the study found a positive and significant relationship to exists between CSR and return on asset of listed industrial goods companies in Nigeria. In [7], the study found that environmental and social accounting practices had significant effect on return on asset of cement companies in Nigeria. The study of [19] found the relationship social, economic, and environmental costs with return on assets to be insignificant. The result of this study did not align with the study of [33] as it found out that there is insignificant relationship between environmental accounting and return on asset. The study of [30] found that environmental disclosure has negative effect on return on assets of manufacturing firms.

## 5. Conclusion

The effect of accounting for externalities on financial performance of listed industrial goods companies in Nigeria was investigated in this study. The study also used inferential statistics to determine the extent to which independent variables influence the dependent variable. Based on the result on hypothesis testing which sought to determine effect of accounting for externalities on return on assets of listed industrial goods companies in Nigeria, the study therefore concluded that accounting for externalities had significant effect on financial performance of listed industrial goods companies in Nigeria.

The study recommends that regulatory authorities mandate companies to internalize externalities to foster sustainable business for stakeholders to make informed decisions and companies should establish prices that systematically measure externality disclosures using standardized industry-specific metrics.

## Abbreviations

ROA	Return on Assets
FPER	Financial Performance
SCT	Social Cost
ECT	Economic Cost
ENC	Environmental Cost
AFE	Accounting for Externalities

## Author Contributions

**Modupeola Morenike Adesemowo:** Conceptualization, Data curation, Funding acquisition, Investigation, Project administration, Methodology, Writing – original draft, Visualization, Resources

**Folajimi Festus Adegbe:** Supervision, Writing – review & editing

**Kolawole Lateef Fijabi:** Data curation, Formal Analysis, Investigation, Validation

**Oladapo John Tawiah:** Funding acquisition, Resources

## Conflicts of Interest

The authors declare no conflicts of interest.

## References

- [1] Adekoya, A. F., & Idowu, A. O. (2021). Accounting for externalities in the Nigerian industrial goods sector: A case for sustainable development. IEEE 15th International Conference on Application of Information and Communication Technologies (AICT) (pp. 1-5). IEEE.
- [2] Antheaume, N., & Bebbington, J. Externalities and decision-making 1st. In Routledge handbook of environmental accounting; 2021, pp. 224-235.
- [3] Antoci, A., Borghesi, S., Galeotti, M., & Russu, P. (2022). Maladaptation to environmental degradation and the interplay between negative and positive externalities. *European Economic Review*, 143, 104023. <https://doi.org/10.1016/j.eurocorev.2021.104023>
- [4] Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2011). Does it really pay to be green? Determinants and consequences of proactive environmental strategies. *Journal of accounting and public policy*, 30(2), 122-144. <https://doi.org/10.1016/j.jaccpubpol.2010.09.013>
- [5] Chen, S., Song, Y., & Gao, P. (2023). Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*, 345, 118829. <https://doi.org/10.1016/j.jenvman.2023.118829>
- [6] Chen, Y. C., Hung, M., & Wang, Y. (2018). The effect of mandatory CSR disclosure on firm profitability and social externalities: Evidence from China. *Journal of accounting and economics*, 65(1), 169-190. <https://doi.org/10.1016/j.jacceco.2017.11.009>
- [7] Daferighe, E. E., Akpanuko, E. E., & Offiong, P. E. (2019). Social accounting practices and profitability of companies in Nigeria. *Archives of Business Research*, 7(5), 233-246. <https://doi.org/10.14738/abr.75.6554>
- [8] Davidavičienė, V., Abou Fayad, C., & Gergess, M. (2024). Integrating sustainable development into their marketing strategy: practices of Lebanese agri-food industries. *Business: Theory and Practice*, 25(1), 24-35. <https://doi.org/10.3846/btp.2024.19457>
- [9] Deegan, C., Rankin, M., & Tobin, J. (2002). An examination of the corporate social and environmental disclosures of BHP from 1983-1997: A test of legitimacy theory. *Journal of Accounting, Auditing & Accountability*, 15(3), 312-343. <https://doi.org/10.1108/09513570210435861>
- [10] Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management science*, 60(11), 2835-2857. <https://doi.org/10.1287/mnsc.2014.1984>
- [11] Eccles, R. G., Krzus, M. P., & Ribot, S. (2015). Models of best practice in integrated reporting 2015. *Journal of Applied Corporate Finance*, 27(2), 103-115.
- [12] Egbunike, C. F., & Okerekeoti, C. U. (2018). Macroeconomic factors, firm characteristics and financial performance: A study of selected quoted manufacturing firms in Nigeria. *Asian Journal of Accounting Research*, 3(2), 142-168. <https://doi.org/10.1108/AJAR-09-2018-0029>
- [13] Fairbrother, M. (2016). Externalities: why environmental sociology should bring them in. *Environmental Sociology*, 2(4), 375-384. <https://doi.org/10.1080/23251042.2016.1196636>
- [14] Fasua, H. K., & Osifo, O. I. U. (2020). Environmental accounting and corporate performance. *International Journal of Academic Research in Business and Social Sciences*, 2(10), 142-154. <http://dx.doi.org/10.6007/IJARBS/v10-i9/7711>
- [15] Fijabi, K., Ogunlalu, A. E., & Modupeola, A. M. (2023). Working Capital Management and Performance Metrics of Quoted Brewery Firms in Nigeria. *Open Journal of Social Sciences*, 11(10), 442-468.
- [16] Gitman, L. J., Juchau, R., & Flanagan, J. (2018). Principles of managerial finance. Pearson Higher Education AU.
- [17] Harris, J. M., & Roach, B. (2021). The Theory of Environmental Externalities. In *Environmental and Natural Resource Economics* (pp. 44-92). Routledge.
- [18] Ren, S., He, D., Yan, J., Zeng, H., & Tan, J. (2022). Environmental labeling certification and corporate environmental innovation: The moderating role of corporate ownership and local government intervention. *Journal of Business Research*, 140, 556-571. <https://doi.org/10.1016/j.jbusres.2021.11.023>
- [19] Hevi, S., Mantey, D., Nkrumah, E., & Ketemepi, G. (2018). Corporate social responsibility (csr) and financial performance: A Critical Assessment of Oil Marketing Companies in Ghana. *Journal of Resources Development and Management*, 50, 1-10.
- [20] Hermundsdottir, F., & Aspelund, A. (2022). Competitive sustainable manufacturing-Sustainability strategies, environmental and social innovations, and their effects on firm performance. *Journal of Cleaner Production*, 370, 133474. <https://doi.org/10.1016/j.jclepro.2022.133474>
- [21] Inyang, W. S., Joel, E. E., Ubi, I. U., Eyo, E. I., Ogenyi, O. J., & Inyang, I. O. (2023). Corporate social responsibility and value of industrial goods manufacturing firms in Nigeria. *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev.*, 8(5), 81.

- [22] Jolink, A., & Niesten, E. (2021). Credibly reducing information asymmetry: Signaling on economic or environmental value by environmental alliances. *Long Range Planning*, 54(4), 101996. <https://doi.org/10.1016/j.lrp.2020.101996>
- [23] Kalyar, M. N., Shoukat, A., & Shafique, I. (2020). Enhancing firms' environmental performance and financial performance through green supply chain management practices and institutional pressures. *Sustainability Accounting, Management and Policy Journal*, 11(2), 451-476.
- [24] Kordsachia, O., Focke, M., & Velte, P. (2022). Do sustainable institutional investors contribute to firms' environmental performance? Empirical evidence from Europe. *Review of Managerial Science*, 16(5), 1409-1436.
- [25] Lyndon M. Etale, Ikechukwu S. Ochuba and Ayaundu E. Sawyerr (2021) Social Cost Accounting and Profitability of Glaxo Smith Kline Nigeria Plc. Listed On the NSE, *European Journal of Business and Innovation Research*, 9(1), 31-52.
- [26] Liu, J., Yuan, X., & Yu, X. (2021). Addressing social externalities and firm financial performance: Evidence from China. *Journal of Cleaner Production*, 297, 126663.
- [27] McCann, L. (2006). Accounting for societal externalities. 1<sup>st</sup>. In *Ethics and the Market*; 2006. pp. 161-178. Routledge.
- [28] Márquez, A., & Fombrun, C. J. (2005). Measuring corporate social responsibility. *Corporate Reputation Review*, 7, 304-308. <https://doi.org/10.1057/palgrave.crr.1540228>
- [29] Ogunode, O. A., & Adegbe, F. F. (2022). Environmental disclosure practices and sustainable performance of quoted manufacturing companies in Nigeria. *Asian Journal of Economics, Business and Accounting*, 22(23), 455-469. <https://doi.org/10.9734/AJEBA/2022/v22i23886>
- [30] Okpala, O. P. (2019). An exploratory study of the level of social and environmental disclosures by listed firms in Nigeria. *Acta Universitatis Danubius. (Economica)*, 15(2), 160-172.
- [31] Oyedele, L. O., Afolabi, A., Owolabi, H. A., & Adenomonu, S. O. (2021). Sustainable accounting practices and financial performance of industrial goods firms in Nigeria. *Journal of Environmental Management*, 290, 112637.
- [32] Pham, D., Do, T., Doan, T., Nguyen, T., & Pham, T. (2021). The impact of sustainability practices on financial performance: empirical evidence from Sweden. *Cogent Business & Management*, 8(1), 1912526. <https://doi.org/10.1080/23311975.2021.1912526>
- [33] Polycarp, S. U. (2019). Environmental accounting and financial performance of oil and gas companies in Nigeria. *Research journal of finance and accounting*, 10(10), 192-202. <https://doi.org/10.7176/RJFA/10-10-21>
- [34] Pysmenna, U. Y., & Trypolska, G. S. (2020). Sustainable energy transitions: Overcoming negative externalities. <https://rep.bntu.by/handle/data/77469>
- [35] Schaltegger, S., & Burritt, R. (2017). Accounting for externalities in life cycle cost analysis and eco-efficiency. *Eco-Efficiency in Industry and Science*, 31-50.
- [36] Selden, T. M., & Song, D. (1994). Environmental quality and development: Is there a Kuznets curve for air pollution emissions? *Journal of Environmental Economics and Management*, 27(2), 147-162. <https://doi.org/10.1006/jeem.1994.1031>
- [37] Shabbir, M. S., & Wisdom, O. (2020). The relationship between corporate social responsibility, environmental investments, and financial performance: evidence from manufacturing companies. *Environmental Science and Pollution Research*, 27(32), 39946-39957. <https://doi.org/10.1007/s11356-020-10217-0>
- [38] Sharma, R., Sharma, A., Ali, S., & Dadhich, J. (2021). Corporate social responsibility and financial performance: Evidence from Manufacturing and Service Industry. *Academic Journal of Interdisciplinary Studies*, 10(3), 301. <https://doi.org/10.36941/ajis-2021-0085>
- [39] Strange, T.; Bayley, A. (2008). Sustainable Development. Linking Economy, Society, Environment; Organization for Economic Cooperation and Development (OECD): Paris, France.
- [40] Sulaiman, A., Ahmadu, A., & Mijinyawa, U. (2018). Effect of Corporate Social Responsibility Expenditure on the Profitability of Listed Oil and Gas Firms in Nigeria. *Journal of Accounting and Management*, 1(2), 148-154.
- [41] Unerman, J., Bebbington, J., & O'dwyer, B. (2018). Corporate reporting and accounting for Externalities. *Accounting and Business Research*, 48(5), 497-522. <https://doi.org/10.1080/00014788.2018.1470155>
- [42] Visser, W. (2008). Corporate Social Responsibility in Developing Countries. In A. Crane, A. McWilliams, D. Matten, J. Moon, & D. S. Siegel (Eds.), *The Oxford Handbook of Corporate Social Responsibility* (pp. 473-487). Oxford University Press.
- [43] Wang, S., Wang, H., Wang, J., & Yang, F. (2020). Does environmental information disclosure contribute to improve firm financial performance? An examination of the underlying mechanism. *Science of the Total Environment*, 714, 136855. <https://doi.org/10.1016/j.scitotenv.2020.136855>
- [44] Ziolo, M., Filipiak, B. Z., Bąk, I., Cheba, K., Tîca, D. M., & Novo-Corti, I. (2019). Finance, sustainability and negative externalities. *An overview of the European context. Sustainability*, 11(15), 4249. <https://doi.org/10.3390/su11154249>